Depósito legal DC2020001347 ISSN 2739-0012

GACETA MEDICA
DE CARACAS

Fundada el 13 de marzo de 1893

por el

DR. LUIS RAZETTI

Organo de la Academia Nacional de Medicina
y del Congreso Venezolano de Ciencias Médicas

VOLUMEN 128 - Supl. 2

Diciembre de 2020

Caracas - Venezuela

Indizada en LILACS, en BIREME OPS/OMS,
Scopus y en SIIC Data Bases (SIIICDB)

Gaceta Médica
de Caracas

Órgano oficial de la Academia Nacional de Medicina
y del Congreso Venezolano de Ciencias Médicas

Fundada el 13 de marzo de 1893

por el

Dr. Luis Razetti

Primer número publicado el 15 de abril de 1893

Editor en Jefe
Dr. Manuel Velasco

Volumen 128 **Suplemento 2** **Diciembre 2020**

Editores Invitados
Drs. Marino J. González R. (Coordinador), Mariano Fernández-Silano

S U M A R I O

EDITORIAL
La pandemia de COVID-19 en América Latina: introducción al suplemento
Drs. Marino J González R, Mariano Fernández-Silano S131

ARTÍCULOS ORIGINALES

ANÁLISIS REGIONAL
La pandemia de COVID-19: una crisis multidimensional
Dr. Friedrich Welsch S137

Impacto de las elecciones en la pandemia COVID-19
Drs. Victoria Eugenia Castro Trujillo, Julio Simón Castro Méndez S149

El mercado laboral en América Latina en el momento de la pandemia COVID-19: impactos, respuestas y perspectivas
Drs. Roxana Maurizio, Fabio Bertranou S156

Respuestas políticas al COVID-19 en países de América Latina: ¿una renta básica universal?
Dra. María Antonia Moreno S172

Seguridad alimentaria y COVID-19 en América Latina: un desafío a superar
Dra. Marianella Herrera Cuenca S188

Efectos y secuenciación de las políticas de control de la pandemia de COVID-19 en América Latina
Dr. Marino J. González R S196

ANÁLISIS POR PAÍS
El SARS-CoV-2 en Colombia: una mirada desde la Academia de Medicina
Dr. Gabriel Carrasquilla S208

Políticas para controlar la pandemia COVID-19 en Costa Rica
Drs. Ronald Evans-Meza, Roger Bonilla-Carrión, Roberto Salvatierra-Durán S218

República Dominicana: La respuesta a la pandemia de COVID-19 en 2020
Dra. Magdalena Rathe S227

Perspectivas de la pandemia en Ecuador
Dr. Hugo Romo S236

Situación del COVID-19 en Honduras: lecciones aprendidas
Drs. Itzel C Fuentes-Barahona, Karla I Henriquez-Márquez, Fausto Muñoz-Lara, Elsa Palou, Tito Alvarado, Ivette Lorenzana, Víctor Manuel Valladares-Rosa, Arturo G. Corrales-Alvarez, Lysien Ivania Zambrano, Manuel Antonio Sierra-Santos S242

Políticas y estrategias implementadas en Paraguay para el control de la Pandemia COVID-19
Drs. María Stella Cabral-Bejarano, Felipe Recalde Ibarra, Eleonor Conill, Diego Ricardo Xavier S251

Pandemia de COVID-19 en Uruguay: evolución, lecciones aprendidas y desafíos
Drs. Alicia Alemán, Lic. Franco González Mora, Ima León, Ana Sollazzo, Rodolfo Vázquez S262

Medidas para el manejo del SARS-CoV-2 en Venezuela: Un análisis de los datos
Drs. Victoria Eugenia Castro Trujillo, Julio Simón Castro Méndez S273

ANÁLISIS DE TÓPICOS-ESPECÍFICOS
Coronavirus, cuidado materno fetal y bioética
Drs. Carlos Cabrera Lozada, Jeiv Gómez, Pedro Faneite Antequi S289

Estrategias de salud en América Latina para el adulto mayor en relación con COVID-19
Drs. Nidia-Johanna Bonilla-Cruz, Lorena Cudris-Torres, Beatriz-Milagros Mendoza-Rincón, Andres-Sebastian Gamboa-Aldana, Jesús Forgiony-Santos S301

Gestión financiera y satisfacción con la vida en colombianos durante el confinamiento por COVID-19
Drs. Lorena Cudris-Torres, Giselle Olivella-López, Silvia E Cuenca-Calderón, Álvaro Barrios-Núñez, Nidia J Bonilla-Cruz, Viana Bustos-Arcón, Ana R Russo De Vivo S312

Epidemiología del COVID-19 en Venezuela, a seis meses de la denuncia de los primeros casos en China
Drs. Carlos D'Suze G., Mariano Fernández-Silano S320

Tecnología educativa y desempeño académico en estudiantes de instituciones educativas públicas durante el confinamiento por COVID-19
Drs. Marisol Cudris-Moreno, Lorena Cudris-Torres, Viana Bustos-Arcón, Giselle Olivella-López, Pedro L Medina-Pulido, Herman A Moreno-Londoño S336

Cultura de paz en la pandemia por SARS-COV-2: confinamiento, tics y las redes sociales
Jesús David Navarro Rodríguez, Oscar Medina-Ortiz, Cleiver Andrade Fossi, Maricarmen Chacín González, Valmore Bermúdez S350

Características del bienestar psicológico en jóvenes universitarios en el marco aislamiento preventivo por COVID-19
Drs. Luis Carlos Ruiz Domínguez, Lida Blanco-González, Franlet Araque-Castellanos, Beatriz-Milagros Mendoza-Rincón, Vivian Vanessa Arenas-Villamizar S359

Gaceta Médica
de Caracas

Official Journal of the National Academy of Medicine
and The Venezuelan Congress of Medical Sciences

Founded March 13, 1893

By

Dr. Luis Razetti

First number published on April 15, 1893

Editor in Chief
Dr. Manuel Velasco

Volume 128 **Supplement 2** **December 2020**

Gest Editors
Drs. Marino J. Gonzalez R. (Coordinator), Mariano Fernandez-Silano

S U M M A R Y

EDITORIAL
The COVID-19 pandemic in Latin America: Introduction to the supplement
Drs. Marino J Gonzalez R, Mariano Fernandez-Silano. S131

ORIGINAL ARTICLES

REGIONAL ANALYSES
The COVID-19 pandemic: A multidimensional crisis
Dr. Friedrich Welsch S137

Impact of elections on the COVID-19 pandemic
Drs. Victoria Eugenia Castro Trujillo, Julio Simon Castro Mendez S149

The labor market in Latin America at the time of the COVID-19 pandemic: impacts, responses and perspectives
Roxana Maurizio, Fabio Bertranou S156

Policy responses to COVID-19 in Latin American countries: A universal basic income?
Maria Antonia Moreno S172

Food security and COVID-19 in Latin America: A challenge to overcome
Dra. Marianella Herrera Cuenca S188

Effects and sequencing of COVID-19 pandemic control policies in Latin America
Dr. Marino J. Gonzalez R S196

COUNTRY ANALYSES
The SARS-CoV-2 in Colombia – A view from the Academy of Medicine
Dr. Gabriel Carrasquilla S208

Policies to control the COVID-19 pandemic in Costa Rica
Drs. Ronald Evans-Meza, Roger Bonilla-Carrion, Roberto Salvatierra-Duran S218

Dominican Republic: The response to the COVID-19 pandemic in 2020
Dr. Magdalena Rathe S227

Perspectives of the pandemic in Ecuador
Dr. Hugo Romo S236

COVID-19 situation in Honduras: lessons learned
Drs. Itzel C Fuentes-Barahona, Karla I Henriquez-Marquez, Fausto Munoz-Lara, Elsa Palou, Tito Alvarado, Ivette Lorenzana, Victor Manuel Valladares-Rosa, Arturo G. Corrales-Alvarez, Lysien Ivania Zambrano, Manuel Antonio Sierra-Santos S242

Policies and strategies implemented in Paraguay to control the COVID-19 Pandemic
Drs. Maria Stella Cabral-Bejarano, Felipe Recalde Ibarra, Eleonor Conill, Diego Ricardo Xavier S251

COVID-19 pandemic in Uruguay: evolution, lessons learned and challenges
Drs. Alicia Aleman, Lic. Franco Gonzalez Mora, Ima Leon, Ana Sollazzo, Rodolfo Vazquez S262

Measures for the management of SARS-CoV-2 in Venezuela: An analysis from the data
Drs. Victoria Eugenia Castro Trujillo, Julio Simon Castro Mendez S273

TOPIC-SPECIFIC ANALYSES
Coronavirus, maternal fetal care and bioethics
Drs. Carlos Cabrera Lozada, Jeiv Gomez, Pedro Faneite Antequi S289

Health Strategies in Latin America for the Elderly in relation to COVID-19
Drs. Nidia-Johanna Bonilla-Cruz, Lorena Cudris-Torres, Beatriz-Milagros Mendoza-Rincon, Andres-Sebastian Gamboa-Aldana, Jesus Forgiony-Santos S301

Financial management and satisfaction with life in colombians during confinement by COVID-19
Drs. Lorena Cudris-Torres, Giselle Olivella-Lopez, Silvia E Cuenca-Calderon, Alvaro Barrios-Nunez, Nidia J Bonilla-Cruz, Viana Bustos-Arcon, Ana R Russo De Vivo S312

Epidemiology of COVID-19 in Venezuela, six months after the reporting of the first cases in China
Drs. Carlos D'Suze G, Mariano Fernandez-Silano S320

Educational technology and academic performance in students of public educational institutions during confinement by COVID-19
Drs. Marisol Cudris-Moreno, Lorena Cudris-Torres, Viana Bustos-Arcon, Giselle Olivella-Lopez, Pedro L Medina-Pulido, Herman A Moreno-Londono S336

Peace cultureduring SARS-COV-2 pandemic: Confinement, ict's and social networks
Jesus David Navarro Rodriguez, Oscar Medina-Ortiz, Cleiver Andrade Fossi, Maricarmen Chacin Gonzalez, Valmore Bermudez S350

Characteristics of psychological well-being in university students in the preventive isolation framework due to COVID-19
Drs. Luis Carlos Ruiz Dominguez, Lida Blanco-Gonzalez, Franlet Araque-Castellanos, Beatriz-Milagros Mendoza-Rincon, Vivian Vanessa Arenas-Villamizar S 359

Academia Nacional de Medicina

Junta Directiva

2020-2022

Presidente: Dr. Enrique Santiago López Loyo

Vicepresidente: Dra. Isis Nézer de Landaeta

Secretario: Dr. Huníades Urbina Medina

Tesorero: Dra. Lilia Cruz de Montbrun

Bibliotecario: Dr. Guillermo Colmenares Arreaza

Individuos de Número

Sillón I:	Dra. Aixa Müller de Soyano	Sillón XXI:	Dra. Claudia Blandenier de Suárez*
Sillón II	Dr. Miguel José Saade Aure	Sillón XXII:	Dr. Huníades Urbina Medina
Sillón III	Dr. Marco Sorgi Venturoni	Sillón XXIII:	Dr. José A. O'Daly Carbonell
Sillón IV:	Dr. Rafael Muci Mendoza	Sillón XXIV:	Vacante
Sillón V:	Dr. Miguel González Guerra	Sillón XXV:	Dr. Felipe Martín Piñate
Sillón VI:	Dr. Saúl Krivoy	Sillón XXVI:	Dr. Claudio Aoün Soulie
Sillón VII:	Dr. Guillermo Colmenares A	Sillón XXVII:	Dr. Mauricio Goihman Yahr
Sillón VIII:	Dr. Leopoldo Briceño-Iragorry	Sillón XXVIII:	Dr. Luis Ceballos García
Sillón IX:	Dr. Otto Rodríguez Armas	Sillón XXIX:	Dr. Julio Borges Iturriza
Sillón X:	Dr. José Ramón Poleo*	Sillón XXX:	Dr. Félix José Amarista
Sillón XI:	Dr. Saúl Kizer Yorniski	Sillón XXXI:	Dr. Enrique López Loyo
Sillón XII:	Dr. Alfredo Díaz Bruzual	Sillón XXXII:	Dra. Ofelia Uzcátegui U.
Sillón XIII:	Dr. José Francisco	Sillón XXXIII:	Dr. Nicolas Bianco Colmenares
Sillón XIV:	Dr. Oscar Beaujón Rubín	Sillón XXXIV:	Dr. Otto Lima Gómez
Sillón XV:	Dr. Víctor Ruesta	Sillón XXXV:	Dr. Ítalo Marsiglia
Sillón XVI:	Dr. Harry Acquatella M	Sillón XXXVI:	Dr. Antonio Clemente H
Sillón XVII:	Dra. Isis Nézer de Landaeta	Sillón XXXVII:	Dr. Juan Antonio Yabur Tarrazzi
Sillón XVIII:	Dr. José M Guevara Iribarren	Sillón XXXVIII:	Dr. Rafael Apitz Castro
Sillón XIX:	Dra. Lilia Cruz de Montbrun	Sillón XXXIX:	Dra. Doris Perdomo de Ponce
Sillón XX:	Dr. Pedro Faneite Antique	Sillón XL:	Dr. Horacio Vanegas

* (Electo)

Miembros Correspondientes Nacionales

1. Dra. Eddy Verónica Mora (Valencia)
2. Dr José Alberto Briceño Polacre (Valera)
3. Dr. Darío Rodolfo Montiel Villasmil (Maracaibo)
4. Dr. José Luis Ceballos
5. Vacante
6. Vacante
7. Dra. Laura C Vásquez de Ricciardi (Valera)
8. Dr. Jesús Enrique González Alfonso (Caracas)
9. Dr. Oswaldo Guerra Zagarzazu (Valencia)
10. Vacante
11. Dr. José Alejandro Corado Ramírez (Valencia)
12. Dra. Evelyn Figueroa de Sánchez (Valencia)
13. Dr. Sergio Osorio Morales (Maracaibo)
14. Dr. Rafael María Rosales Acero (San Cristóbal)
15. Dra. Myriam del Valle Marcano Torres (Valencia)
16. Vacante
17. Dr. Wilmar de Jesús Briceño Rondón (Barinas)
18. Dra. Emely Zoraida Karam Aguilar (Caracas)
19. Dr. Jesús Eduardo Meza Benítez (Valencia)
20. Dra. Elsa Báez de Borges (Caracas)
21. Dr. Jesús Alfonso Osuna Ceballos (Mérida)
22. Vacante
23. Vacante
24. Vacante
25. Dr. Alberto Paniz-Mondolfi
26. Vacante
27. Dr. Raúl Díaz Castañeda (Valera)
28. Dr. Mariano Álvarez Álvarez (Maturín)
29. Dr. José Rodríguez Casas (Caracas)
30. Dr. Manuel de Jesús Velasco (Caracas)
31. Dr. Nelson Urdaneta (Caracas)
32. Dr. Gastón Silva Cacavale (Caracas)
33. Dr. Eduardo Morales Briceño (Caracas)
34. Dra. Laddy Casanova de Escalona
35. Dr. José Ramón Guzmán (Maracaibo)
36. Dra. Mercedes López de Blanco (Caracas)
37. Dr. José T. Nuñez Troconis (Maracaibo)
38. Dra. Enriqueta Sileo Giuseffi (Caracas)
39. Dr. Marino José González Reyes (Caracas)
40. Dr. Luzardo Canache Campos (Aragua)*
41. Dr. Franco Calderaro Di Ruggiero (Caracas)
42. Vacante
43. Dr. José Manuel De Abreu D'Monte (Caracas)
44. Dr. José Andrés Octavio Seijas (Caracas)
45. Dr. Antonio De Santolo (Caracas)
46. Vacante
47. Dr. Andrés Soyano López (Caracas)
48. Dra. Janice Fernández de D'Pool (Maracaibo)
49. Dra. Rosa Cedeño de Rincón (Maracaibo)
50. Dr. Raúl Fachin Viso (Valencia)

*Electo

Miembros Correspondientes Extranjeros

1. Dr. Vladimir Hachinsky (Canadá)
2. Dr. Remigio Vela Navarrete (España)
3. Vacante
4. Dr. Alvaro Rodríguez González (Colombia)
5. Dr. Pedro Grases (Costa Rica)
6. Dr. Igor Palacios (Estados Unidos)
7. Dr. Otto Gago (Estados Unidos)
8. Dr. Francisco López Muñoz (España)
9. Dr. Eduardo Pretell Zárate (Perú)
10. Dr. Harold Zur Hausen (Alemania)
11. Dr. Henry Lynch (Estados Unidos)
12. Dr. Vicente Gutiérrez Maxwell (Argentina)
13. Dr. J. Aurelio Usón Calvo (España)
14. Dr. José Augusto Da Silva Messias (Brasil)
15. Dr. Aloyso de Selles Fonseca (Brasil)
16. Dr. Juan del Rey Calero (España)
17. Dr. Jean Civatte (Francia)
18. Dra. Carmen Luisa García de Insausti (España)
19. Dr. Andrew V. Schally (Estados Unidos)
20. Dr. Terence J Ryan (Inglaterra)
21. Dr. Jean Pierre Delmont (Francia)
22. Dr. Francisco A Kerdel (Estados Unidos)
23. Dr. Jörg G.D. Bikmayer (Austria)
24. Dr. John Uribe M. (Estados Unidos)
25. Dr. José Esparza (Estados Unidos)
26. Dr. Augusto Bonilla Barco (Ecuador)
27. Dr. Kenneth Kenyon (Estados Unidos)
28. Vacante
29. Dr. Janis V. Klavins (Estados Unidos)
30. Dr. Francisco Marty (Estados Unidos)

Invitados de Cortesía

(Dado su carácter todavía no son Académicos)

Dr. Rafael Arteaga Romero
Dra. Elvia Irene Badell Madrid
Dr. César Blanco Rengel
Dra. Alba Cardozo
Dr. Pedro Ignacio Carvallo
Dr. Jaime Díaz Bolaños
Dra. Maritza Durán
Dr. Antonio A Eblen Zaijjur
Dr. Mariano Fernández S.
Dr. Cutberto Guarapo Rodríguez
Dr. Peter Gunczler
Dr. José Félix Oletta López
Dr. Saúl Peña Arciniegas
Dr. Rafael Rangel Aldao
Dr. Rafael Romero Reverón
Dr. Tomás José Sanabria Borjas
Dr. Herbert Stegemann
Dra. María Yanes Herrera

Comité Editorial de la Gaceta Médica de Caracas (Editorial Board)

Comisiones Científicas para el bienio 2018-2020

Los miembros de las Comisiones son **árbitros de la Gaceta Médica de Caracas**

1. CREDENCIALES

Drs. Claudio Aoün Soulie, Antonio Clemente Heimerdinger, Rafael Muci Mendoza, Harry Acquatella, Alfredo Díaz Bruzual, Luis Ceballos García, Ofelia Uzcátegui Uzcátegui e Isis Nezer de Landaeta.

Presidente: Drs. Claudio Aoün Soulie
Secretario: Luis Ceballos García

2. MEDICINA GENERAL Y ESPECIALIDADES MÉDICAS

Drs. Ítalo Marsiglia, Mercedes López de Blanco, Marino González Reyes, Aixa Müller de Soyano, Eduardo Morales Briceño, Rafael Arteaga Romero, Herbert Stegemann y José Rodríguez Casas.

Presidente: Ítalo Marsiglia
Secretario: Eduardo Morales Briceño

3. CIRUGÍA Y ESPECIALIDADES QUIRÚRGICAS

Drs. Enrique S. López Loyo, Saúl Krivoy, Felipe Martín Piñate, Claudio Aoün Soulie, Miguel Saade Aure, Marco Sorgi Venturoni, José A O'Daly Carbonell, Claudia Blandenier de Suárez, Eddy Verónica Mora, José Manuel De Abreu y César Blanco Rengel.

Presidente: Claudia Blandenier de Suárez
Secretario: José Manuel De Abreu

4. PEDIATRÍA Y PUERICULTURA

Drs. Leopoldo Briceño-Iragorry, Huníades Urbina Medina, Luis Ceballos García, José Manuel Francisco, Enriqueta Sileo, Rafael Arteaga Romero, Mercedes López de Blanco y María Eugenia Mondolfi.

Presidente: Enriqueta Sileo
Secretaria: Mercedes López de Blanco

5. OBSTETRICIA Y GINECOLOGÍA

Drs. Alfredo Díaz Bruzual, Ofelia Uzcátegui Uzcátegui, Juan Antonio Yabur, Pedro Faneite, Saúl Kízer.

Presidente: Saúl Kízer
Secretaria: Ofelia Uzcátegui Uzcátegui

6. MEDICINA SOCIAL Y SALUD PÚBLICA

Drs. Antonio Clemente Heimerdinger, José Francisco, Marino González Reyes, Juan Antonio Yabur, Eduardo Morales Briceño, Herbert Stegemann, Mariano Fernández, Saúl Peña y María Yanes.

Presidente: Antonio Clemente Heimerdinger
Secretaria: María Yanes

7. CIENCIAS BÁSICAS Y BIOÉTICA Y PRAXIS MÉDICA

Drs. Harry Acquatella M, José A. O'Daly Carbonell, Lilia Cruz Rodriguez, José Guevara, Felipe Martin Piñate, Isis Nézer de Landaeta, Julio Borges Iturriza, Mauricio Coihman, Horacio Vanegas, Rafael Apitz Castro y Andrés Soyano López

Presidente: Isis Nézer de Landaeta
Secretaria: Lilia Cruz Rodriguez

8. CULTURA Y HUMANISMO

Drs. Leopoldo Briceño-Iragorry, Enrique López Loyo, Lilia Cruz Rodríguez, Mauricio Goihman, Jesús Rodríguez Ramírez y Rafael Romero Reverón.

Presidente: Mauricio Goihman
Secretario: Enrique López Loyo

Normas para los autores de publicaciones en la "Gaceta Médica de Caracas"

La revista Gaceta Médica de Caracas (GMC) es una publicación periódica, órgano oficial de la Academia Nacional de Medicina y del Congreso Venezolano de Ciencias Médicas. Se publica cuatro veces al año y recibe manuscritos inéditos que de ser aceptados por el Comité Redactor, no podrán ser publicados parcial o totalmente en otra parte, sin el consentimiento del Comité Redactor de la GMC.

La GMC sigue las Recomendaciones para la realización, informe, edición y publicación de trabajos académicos en revistas médicas, del Comité Internacional de Editores de Revistas Médicas conocidas como Recomendaciones ICMJE [www.ICMJE.org, Gac Méd Caracas. 2020;128(1):77-111]. Las unidades deben presentarse de acuerdo con el Sistema Internacional de Unidades (SI) [Gac Méd Caracas. 2015;123(1):46-71].

En la GMC se dará cabida a los trabajos realizados por profesionales de la medicina o especialidades conexas, presentados en la Academia, en los Congresos de Ciencias Médicas y los que sugiera la Corporación a través del Comité Científico, y aceptación final por la Dirección-Redacción. Todos los manuscritos enviados a la GMC, en ambos idiomas español e inglés, son revisados por el Comité Redactor y de acuerdo con su criterio se enviarán a árbitros externos para su evaluación.

La opinión, crítica y recomendaciones de los revisores son recibidas en forma escrita y anónima y se enviarán a los autores, cuando así lo decida la Dirección-Redacción.

Todos los trabajos deberán ser enviados por Internet y en papel escrito en computadora a doble espacio, letra Times New Roman tamaño 12, por el anverso del papel, tamaño carta, con amplio margen libre en todo el contorno.

La GMC considerará contribuciones para las siguientes secciones:

Artículos de revisión
Artículos originales
Artículos especiales
Casos clínicos
Historia y filosofía de la medicina
Información epidemiológica
Bioética
Comunicaciones breves
Perlas de observación
Noticias y cartas al editor
Varios

Los trabajos enviados deberán cumplir con los requisitos que se describen a continuación.

EDITORIALES

Esta sección estará dedicada al análisis y la reflexión sobre los problemas de salud de la población, los distintos enfoques preventivos y terapéuticos, así como los avances logrados en el campo de la investigación biomédica y otros que considere la Dirección-Redacción.

ARTÍCULOS ORIGINALES

Deberán contener en la página frontal, el título conciso e informativo del trabajo; nombre(s) y apellido(s) de cada autor; grados académicos de los autores e institución en la cual se realizó el trabajo; nombre y dirección actual del autor responsable de la correspondencia; un título corto de no más de 40 caracteres (contando espacios y letras) y las palabras clave.

Los trabajos originales, revisiones sistemáticas y metanálisis deben tener un resumen estructurado, como se indica a continuación:

Debe contener un máximo de 250 palabras, y los siguientes segmentos:

- Introducción: ¿Cuál es el problema principal que motivó el estudio?
- Objetivo: ¿Cuál es el propósito del estudio?
- Métodos: ¿Cómo se realizó el estudio? (selección de la muestra, métodos analíticos y observacionales).
- Resultados: ¿Cuáles son los aspectos más importantes? (datos concretos y en lo posible su significancia estadística)
- Conclusión: ¿Cuál es la más importante que responde al objetivo?

Al final se anotarán 3 a 6 palabras clave.

Resumen en inglés

Debe corresponderse con el resumen en español. Se sugiere que este sea revisado por un traductor experimentado, a fin de garantizar la calidad del mismo.

Introducción

Incluir los antecedentes, el planteamiento del problema y el objetivo del estudio en una redacción libre y continua debidamente sustentada por la bibliografía.

Método

Señalar claramente las características de la muestra, el o los métodos empleados con las referencias pertinentes, de forma que se permita a otros investigadores, realizar estudios similares.

Resultados

Incluir los hallazgos importantes del estudio,

comparándolos con las figuras estrictamente necesarias y que amplíen la información vertida en el texto.

Discusión

Relacionar los resultados con lo reportado en la literatura y con los objetivos e hipótesis planteados en el trabajo.

Conclusión

Describir lo más relevante que responda al objetivo del estudio.

Agradecimientos

En esta sección se describirán los agradecimientos a personas e instituciones así como los financiamientos.

Referencias

Se presentarán de acuerdo con las Recomendaciones ICMJE.

Indicarlas con números arábigos entre paréntesis en forma correlativa y en el orden en que aparecen por primera vez en el texto, cuadros y pie de las figuras. En las citas de revistas con múltiples autores (más de seis autores), se deberá incluir únicamente los 6 primeros autores del trabajo, seguido de et al.,

a. Artículos en revistas o publicaciones periódicas: apellido(s) del autor(es), inicial del nombre(s). Título del artículo. Abreviatura internacional de la revista: año; volumen: páginas, inicial y final. Ejemplo: Puffer R. Los diez primeros años del Centro Latinoamericano de la Clasificación de Enfermedades. Bol. Of San Pam. 1964;57:218-229.
b. Libros: apellido(s) del autor(es), inicial(es) del nombre(s). Título del libro. Edición. Lugar de publicación (ciudad): casa editora; año. Ejemplo: Plaza Izquierdo F. Doctores venezolanos de la Academia Nacional ade Medicina. Caracas: Fundación Editorial Universitaria, 1996. (No lleva "Edición" por tratarse de la primera).
c Capítulo de un libro: apellido(s) del autor(es), inicial(es) del nombre. Título del capítulo. En: apellido(s) e inicial(es) del editor(es) del libro. Título del libro. Edición. Lugar de publicación (ciudad): casa editora; año.p. página inicial y final. Ejemplo: Aoün-Soulie C. Estado actual de la salud en Venezuela. En: Aoün-Soulie C, Briceño-Iragorry L, editores. Colección Razetti Volumen X. Caracas: Editorial Ateproca; 2010.p.87-124- (No lleva "Edición por tratarse de la primera).

Fotografías

Las fotografías de objetos incluirán una regla para calibrar las medidas de referencia.

En las microfotografías deberá aparecer la ampliación microscópica o una barra de micras de referencia.

Congreso de Ciencias Médicas

Se publicarán únicamente trabajos originales de presentaciones en Congresos de Ciencias Médicas. Serán enviados a la Gaceta por los coordinadores, quienes se responsabilizarán de la calidad, presentación de los manuscritos, secuencia y estructura, incluyendo un resumen general en español y en inglés, en formato libre y que no excedan de 250 palabras. Cada contribución no excederá de 10 cuartillas y deberá apegarse a lo señalado en estas instrucciones a los autores.

Artículos de revisión

Versarán sobre un tema de actualidad y de relevancia médica. El autor principal o el correspondiente deberá ser una autoridad en el área o tema que se revisa y anexará una lista bibliográfica de sus contribuciones que avale su experiencia en el tema.

Las secciones y subtítulos serán de acuerdo con el criterio del autor. Incluir un resumen general en español y en inglés que no exceda de 150 palabras. La extensión máxima del trabajo será de 20 cuartillas. Las ilustraciones deberán ser las estrictamente necesarias, no siendo más de seis, la bibliografía suficiente y adecuada y en la forma antes descrita.

Artículos especiales

Son aquellas contribuciones que por su importancia el Comité Redactor considere su inclusión en esta categoría.

Casos clínicos

Deberán constar de resumen en español e inglés (máximo 100 palabras) en formato libre. Constará de introducción, presentación del caso, discusión, ilustraciones y referencias, con una extensión máxima de 10 cuartillas y apegadas a las instrucciones a los autores.

Historia y filosofía de la medicina

En esta sección se incluirán los artículos relacionados con aspectos históricos, filosóficos, bases conceptuales y éticas de la medicina. Aunque su estructura se dejará a criterio del autor, deberá incluir resúmenes en español e inglés (máximo 100 palabras) en formato libre, referencias bibliográficas citadas en el texto y en listadas al final del manuscrito, siguiendo los lineamientos citados para los manuscritos de GMC.

Actualidades terapéuticas

Se informará sobre los avances y descubrimientos terapéuticos más recientes aparecidos en la literatura nacional e internacional y su aplicación en nuestro ámbito médico. La extensión máxima será de cuatro cuartillas y con un máximo de cinco referencias bibliográficas. Deberá incluir resúmenes en español en inglés, en formato libre (máximo 100 palabras).

Información epidemiológica

Será una sección de información periódica sobre los registros epidemiológicos nacionales e internacionales, destacando su importancia, su comparación con estudios previos y sus tendencias proyectivas. La extensión máxima será de cuatro cuartillas y deberá incluir resúmenes en español en inglés (máximo 100 palabras), en formato libre.

Comunicaciones breves

Serán considerados en esta sección, los informes preliminares de estudios médicos y tendrán la estructura formal de un resumen como se describió previamente (máximo 150 palabras). Se deberán incluir 10 citas bibliográficas como máximo.

Bioética

Se plantearán los aspectos éticos del ejercicio profesional y aquellos relacionados con los avances de la investigación biomédica y sus aplicaciones preventivas y terapéuticas. Su extensión máxima será de cuatro cuartillas y cuatro referencias bibliográficas, deberá incluir resúmenes en español e ingles (máximo 100 palabras) en formato libre.

El médico y la ley

Esta sección estará dedicada a contribuciones tendientes a informar al médico acerca de las disposiciones legales, riesgos y omisiones de la práctica profesional que puedan conducir a enfrentar problemas legales. Su máxima extensión será de cuatro cuartillas y no más de cinco referencias bibliográficas. Deberá incluir resúmenes en español e inglés (máximo 100 palabras).

Noticias y cartas al editor

Cartas al editor son breves informes de observaciones clínicas o de laboratorio, justificadas por los datos controlados pero limitado en su alcance, y sin suficiente profundidad de investigación para calificar como artículos originales. Al igual que los artículos originales, estos manuscritos están sujetos a arbitraje. Las cartas al editor son accesible para búsquedas bibliográficas, y citadas como artículos originales, reuniendo lo siguiente:

1. Ser breve. Llenar 2 páginas en la revista impresa, aunque los manuscritos que excedan este pueden ser ocasionalmente aceptados para su publicación en la discreción de los editores. En general, una Carta al Editor no debe exceder de 1 000 palabras, sin incluir las leyendas, figuras y referencias. Tener en cuenta: que al superar significativamente estos límites puede ser devuelto a los autores para acortar antes de la revisión.
2. Título breve y relevante en una página.
3. Resumen corto que integre las conclusiones del informe para un público con orientación clínica.
6. Nombre(s) del autor(es), títulos académicos, instituciones(s) y ubicación.
7. Un máximo de nueve referencias.
8. Se limitará a un total de 2 figuras y/o cuadros.

Presentación del manuscrito

El manuscrito debe ir acompañado de una carta, dirigida al editor, en la que todos los autores aceptan, con su firma, que han participado activamente en su desarrollo y ejecución, y que el manuscrito está siendo enviado a la consideración de la GMC. En esta carta, los autores deben indicar que la obra presentada es original, que no ha sido publicada previamente, y que no está bajo consideración para publición en otra revista, que no existe conflictos de interés, y que tiene la aprobación del Comité de Bioética de la institución donde se efectuaron las investigaciones en humanos o en animales de experimentación. La aprobación para su publicación conducirá a ceder los derechos de autor a la GMC. Las opiniones contenidas en el artículo, son responsabilidad de los autores. La GMC, no se hace responsable de las opiniones emitidas por los autores.

El orden de la autoría acreditado debe ser una decisión conjunta de los coautores.

Los trabajos se deben enviar en versión electrónica a: acamedve880@gmail.com en un archivo de Microsoft Word y dos ejemplares impresos a la siguiente dirección: Apartado de Correo 804-A, Caracas 1010-A, Venezuela. Academia Nacional de Medicina, Palacio de las Academias, Bolsa a San Francisco. Caracas 1010. Venezuela.

No se aceptarán artículos para su revisión si no están preparados de acuerdo a las Instrucciones para los Autores. Se enviará un recibo electrónico al autor y en tiempo oportuno se le comunicará el dictamen del Editor.

Suscripciones, correspondencia y canjes deben solicitarse y dirigirse al Apartado de Correo 804, Caracas 1010-A Venezuela.
Academia Nacional de Medicina, Palacio de las Academias, Bolsa a San Francisco - Caracas 1010- Venezuela.
Teléfono: 482.18.68 483.21.94. e-mail: acamedve880@gmail.com • sitio web. http:/www.anm.org.ve
Biblioteca Academia Nacional de Medicina. Teléfono: 481.8939. e-mail: bibliotanm@yahoo.es

Textos, arte y publicidad: ATEPROCA. Teléfono: (+58-212) 793.51.03 Fax: (+58-212) 781.17.37
http:/www.ateproca.com • E-mail: ateproca@gmail.com

Gac Méd Caracas 2020;128(Supl 2):S131-S136

The COVID-19 pandemic in Latin America: introduction to the supplement

Guest Editors

Drs. Marino J. Gonzalez R. (Coordinator)[1], Mariano Fernandez-Silano[2]

After almost a year of the COVID-19 pandemic, Latin America is the most affected region in the world. Of the 69.5 million cases reported through December 4, 2020, 13.2 million (1) have been reported in Latin America, equivalent to 20 %. An examination of mortality caused by COVID-19 shows that 455 033 people have died in the region (1), corresponding to 30 % of the 1.52 million deaths worldwide. The disproportionate impact on Latin America is very evident given that the region represents 8 % of the world's population.

The effects of the pandemic in Latin America are diverse and profound. In addition to the drama for families of the sick and the dead, the consequences are expressed in social deprivation, economic recession in all countries, unemployment for millions of people, and increased uncertainty about the immediate future. Without a doubt, the region is experiencing a severe humanitarian crisis (2), unparalleled by the widespread in the 20 countries that make up the region, and with immense requirements to guarantee the protection of more than 600 million Latin Americans (3).

[1]Professor, Simón Bolívar University (USB), Venezuela. National Corresponding Member Nº 39 of the National Academy of Medicine. Member of the Latin American Academy of Sciences (ACAL). Associate Researcher, University of La Rioja, Spain. E-mail: marinojgonzalez@gmail.com
ORCID: 0000-0002-6204-272X

[2]Professor, School of Public Health, Faculty of Medicine, Central University of Venezuela (UCV), Courtesy Guest of the National Academy of Medicine. E-mail: mferna@gmail.com
ORCID: 0000-0002-5233-8818

The National Academy of Medicine of Venezuela, sharing these great concerns for the well-being of Latin America, took the initiative to publish this supplement of the Gaceta Médica de Caracas dedicated to exploring different facets that a crisis of these dimensions has placed on the public agenda. We are especially grateful for the invitation of the Academy's Board of Directors and the Editor-in-Chief, Dr. Manuel Velasco, to prepare this supplement, as well as for the great support received from the Senior Editor, Dr. Anita Stern Israel.

Three purposes guided the development of this supplement. The first is the importance of documenting the various impacts that the pandemic has had on the region. Despite the speed of events, which has led to the emergence of multiple new, often changing, areas of knowledge, it is imperative to order and analyze these changes, with the high probability that they will be modified in a short time. The second purpose is to examine, within the information and resource constraints imposed by the pandemic, the lessons learned, especially because, if communicated, they may be useful in other contexts, within and outside the region. Finally, the third purpose is to identify challenges and new perspectives required for the next stages in the control of the pandemic, especially in what it may mean for research and exchange priorities of academic centers.

Three types of topics were identified for the preparation of the supplement. First, those aspects that required a focus on the region as a whole, which is why they are called regional

analyses. The second type corresponds to the review of the impacts of the pandemic on the specific contexts of the countries in the region. These inputs constitute the country analyses. The third type includes inputs derived from research on the consequences of the disease in specific areas. They are therefore included as analyses of specific topics. Some of the specific topics are concentrated in particular countries, others in the region, and others prioritize certain aspects of pandemic management.

The supplement is composed of 21 papers (6 regional analyses, 8 country analyses, and 7 topic-specific analyses). Sixty-one authors, specialists in multiple areas of knowledge in Latin America, have participated in the preparation of the papers. We wish to express to all the authors the broadest appreciation of the National Academy of Medicine of Venezuela, and the Gaceta Médica of Caracas, for their willingness to participate, as well as for the dedication and quality of their contributions. To ensure the widest dissemination of these contributions in the global academic community, many of the articles are published in English.

The regional analyses review various general aspects of the pandemic. Welsch discusses the relationship between government responses and political system type characteristics, as well as the resulting differences in early action and the severity of control strategies. Welsch also points out some of the catalytic effects of the pandemic in areas such as learning, working from home, tourism, and trade. Castro and Castro discuss the relationship of the pandemic to the holding of national or local elections. They compare the evolution of indicators in countries that have held elections this year with those that have not. This analysis is especially relevant given that elections will be held in several countries in the region in the coming months. Maurizio and Bertranou examine the effects of the pandemic on labor markets, noting especially the widening of labor and income gaps in different population groups, as well as the importance of occupational safety and health for recovery strategies with safe and healthy employment.

In the regional analysis prepared by Moreno, the implications of adopting Universal Basic Income (UBI) as an alternative to minimize the socio-economic impact of the pandemic are described. This paper examines how, given the potential constraints on UBI implementation, other options such as less universal and unconditional cash transfers can be explored. In the regional analysis on the relationship between food security and the pandemic, Herrera proposes two levels of policy: one of an immediate nature aimed at the attention of the vulnerable population, and the other dedicated to medium- and long-term structural transformations. In the last regional analysis, Gonzalez analyses the effects and sequences of COVID-19 control policies through the components included in the Government Response Stringency Index (GRSI) developed by the Blavatnik School of Government of Oxford University.

The country analyses correspond to Colombia, Costa Rica, Ecuador, Honduras, Paraguay, Dominican Republic, Uruguay, and Venezuela. In the analysis of Colombia, Carrasquilla presents the results of the early control measures, as well as the processes to ensure adequate preparation for diagnostic tests, and the services to be provided in intensive care units. Carrasquilla also highlights the importance of social communication in the control of the pandemic and the contributions made by the National Academy of Medicine of Colombia. Evans et al. review in detail the control policies implemented in Costa Rica, establishing the differences between the first stage (of greater effectiveness), and the second stage in which there has been a greater growth in cases along with an increase in social discontent due to the economic impact of the pandemic. In the case of Ecuador, Romo describes the impact on health services, expressed in hospital congestion and difficulties in protecting health workers, as well as the excess mortality recorded in the country as a whole. Fuentes-Barahona et al. detail the evolution of the increase in cases in Honduras, indicating the significant impact on adults aged 20-49 years, the collapse of public network services, and the implementation of primary care clinics and mobile medical brigades as alternatives for attending to the population.

Cabral-Bejarano et al., when analyzing the situation of the pandemic in Paraguay, highlight the importance of the articulation of health policies with social policies, as well as the importance of prompt decision making and the inclusion of multiple social actors in control activities. In the analysis of the Dominican Republic, Rathe

details the limitations in the country's pandemic preparedness, expressed in the deficiencies in the areas of prevention, early detection, and case notification, as well as in the underfunding of the first level of care. Alemán et al. describe, in the analysis of Uruguay, the characteristics of the health emergency decreed in the country, as well as the creation of the Coronavirus Fund to finance the required activities. The analysis of Uruguay also emphasizes the increase in diagnostic capacity and home case management, aspects of great relevance to the positive results obtained in the control of the pandemic. Castro and Castro, in analyzing the case of Venezuela, specify the constraints associated with the previous situation of hyperinflation, economic deterioration, and weaknesses of the health system. They also draw attention to the lack of transparency in the policies implemented, as well as the persistence of vulnerability and low preparedness of health services.

Specific topic analyses highlight significant aspects of pandemic control. Cabrera et al. explore the different ethical issues involved in the care of pregnant patients with SARS-CoV-2 infection, focusing on maternal-fetal care. The authors recommend the use of enlightening dialogue and reflective deliberative clinical judgment that takes into account facts, values, and duties to make ethical and humane decisions in the face of the challenge posed by the pandemic during pregnancy in Latin America.

Bonilla-Cruz et al. analyze the implications on the mental health of the elderly of the social confinement measures adopted in the face of the COVID-19 pandemic and the design and implementation of health programs that attempt to mitigate the adverse effects on this vulnerable population group. The research group reports as a finding that despite the fact that many countries prioritized health promotion and disease prevention, they seem to have neglected strategies to deal with the emotional and mental aspects of confinement. Cudris-Torres et al. identified, in a study carried out in Colombia on personal financial management and life satisfaction during confinement, findings that allow us to know the impact on the economic situation of the groups analyzed and the way they consider to face it.

D'Suze and Fernandez present the epidemiological situation of COVID-19 in Venezuela, during the first four months of the pandemic, using tools for the analysis of an epidemic outbreak and the categories of the classic epidemiological description, emphasizing the public health measures during the emergency. Cudris-Moreno et al. focus their attention on education, one of the most affected areas in this emergency, proposing an investigation on the use of educational technologies and academic performance before and during the confinement. For this purpose, they analyzed a group of schoolchildren, measuring their performance, behavior, and appreciation of the technologies used during the confinement period.

Navarro et al. describe the increased use of ICTs and social networks in different areas of social life in the progress of the pandemic, replacing with relative success, work, commercial and educational processes, and providing elements for the use of online and virtual connections for the promotion of peace and the fight against violence. Ruiz-Domínguez et al. report evidence of increased psychological well-being in university students, proposing that this trait is a strength in the face of the effects caused by confinement.

The Gaceta Médica de Caracas and the National Academy of Medicine hope that the analysis and dissemination of these contributions will detail more precisely the effects of the COVID-19 pandemic in Latin America, and also help to motivate new explorations of the topics analyzed, as well as identify aspects that require further research. It is also hoped that all of this effort will be geared toward improving the health and welfare conditions of the hundreds of millions of Latin Americans so affected by the pandemic today.

REFERENCES

1. University of Oxford, Oxford Martin School, Global Change Data Lab. Our World in Data. Coronavirus Pandemic (COVID-19). https://ourworldindata.org/coronavirus
2. The Lancet. COVID-19 in Latin America: A humanitarian crisis. Lancet. 2020;396(10261):1463.
3. Pablos-Méndez A, Vega J, Aranguren FP, Tabish H, Raviglione MC. COVID-19 in Latin America. BMJ. 2020;370:m2939.

La pandemia de COVID-19 en América Latina: introducción al suplemento

Editores invitados

Drs. Marino J. González R. (Coordinador), Mariano Fernández-Silano

Luego de casi un año de pandemia por COVID-19, América Latina es la región más afectada del mundo. De los 69,5 millones de casos reportados hasta el 4 de diciembre de 2020, en América Latina se han registrado 13,2 millones (1), equivalente al 20 %. Al examinar la mortalidad causada por COVID-19, se constata que en la región han fallecido 455 033 personas (1), correspondiendo al 30 % de los 1,52 millones de fallecimientos a escala global. La desproporción de la afectación de América Latina es muy evidente dado que la región representa el 8 % de la población mundial.

Los efectos de la pandemia en América Latina son diversos y profundos. Además del drama para las familias por los enfermos y fallecidos, las consecuen cias se expresan en privaciones sociales, recesión económica en todos los países, desempleo de millones de personas, y en el aumento de la incertidumbre ante el futuro inmediato. Sin dudas, la región experimenta una severa crisis humanitaria (2), sin parangón por la extensión amplia en los 20 países que la conforman, y con requerimientos inmensos para garantizar la protección de más de 600 millones de latinoamericanos (3).

La Academia Nacional de Medicina de Venezuela, compartiendo estas grandes preocupaciones por el bienestar en América Latina, asumió la iniciativa de publicar este suplemento de la Gaceta Médica de Caracas dedicado a explorar distintas facetas que una crisis de estas dimensiones ha colocado en la agenda pública. Agradecemos de manera especial la invitación de la Junta Directiva de la Academia y del Editor en Jefe, Dr. Manuel Velasco, para preparar este suplemento, así como el gran apoyo recibido de parte de la Editora Senior, Dra. Anita Stern Israel.

Tres propósitos orientaron la elaboración de este suplemento. El primero de ellos es la importancia de documentar los distintos impactos que la pandemia ha tenido en la región. A pesar de la rapidez de los acontecimientos, lo cual ha ocasionado el surgimiento de múltiples áreas de conocimientos nuevos, muchas veces cambiantes, es imperativo ordenar y analizar estos eventos, con la gran probabilidad de que sean modificados en corto tiempo. El segundo propósito es examinar, dentro de las restricciones de información y recursos que ha impuesto la pandemia, las lecciones aprendidas, especialmente porque, si se comunican, pueden ser de utilidad en otros contextos, dentro y fuera de la región. Finalmente, el tercer propósito es identificar los retos y nuevas perspectivas que se requieren para las próximas etapas en el control de la pandemia, especialmente en lo que puede significar para prioridades de investigación e intercambio de centros académicos.

Para la preparación del suplemento se identificaron tres tipos de temas. En primer lugar, aquellos aspectos que requerían un enfoque de la región en su conjunto, por eso se denominan análisis regionales. El segundo tipo corresponde a la revisión de los impactos de la pandemia en los contextos específicos de los países de la región. Estos aportes constituyen los análisis de países. En el tercer tipo se incluyen aportes derivados de investigaciones sobre las consecuencias de la enfermedad en áreas específicas. Por ello se incluyen como análisis de tópicos específicos. Algunos de los tópicos específicos están concentrados en países particulares, otros en la región, y otros priorizan determinados aspectos de la gestión de la pandemia.

El suplemento está compuesto por 21 trabajos (6 análisis regionales, 8 análisis de países, y 7 análisis de tópicos específicos). En la elaboración de los trabajos han participado 61 autores, especialistas en múltiples áreas de conocimientos en América Latina. Queremos expresar a todos los autores el más amplio agradecimiento de la Academia Nacional de Medicina de Venezuela, y de la Gaceta Médica de Caracas, por su disposición a participar, así como por la dedicación y calidad de sus contribuciones. Para garantizar la mayor difusión de estos aportes en la comunidad académica global muchos de los trabajos se publican en inglés.

En los análisis regionales se revisan distintos aspectos generales de la pandemia. Welsch analiza la relación entre las respuestas de los gobiernos y las características de tipo de sistema político, así como las diferencias resultantes en las acciones tempranas y en la severidad de las estrategias de control. Welsch también indica algunos de los efectos catalizadores de la pandemia en áreas como aprendizaje, trabajos desde el hogar, turismo, y comercio. Castro y Castro analizan la relación de la pandemia con la celebración de elecciones nacionales o locales. Para ello comparan la evolución de los indicadores en países que han realizado elecciones en este año, con aquellos que no las han celebrado. Este análisis es de especial relevancia dado que en los próximos meses se celebrarán elecciones en varios países de la región. Maurizio y Bertranou examinan los efectos de la pandemia en los mercados de trabajo, señalando especialmente la ampliación de las brechas laborales y de ingreso en los diferentes grupos de población, así como la importancia de la seguridad y salud ocupacional para las estrategias de recuperación con empleo seguro y saludable.

En el análisis regional elaborado por Moreno, se describen las implicaciones de la adopción del Ingreso Básico Universal (IBU) como alternativa para minimizar el impacto socio-económico de la pandemia. Se examina en este trabajo que, dadas las posibles restricciones para la implementación del IBU, se pueden explorar otras opciones como las transferencias monetarias menos universales y no condicionadas. En el análisis regional sobre la relación entre la seguridad alimentaria y la pandemia, Herrera propone dos niveles de políticas: uno de carácter inmediato dirigido a la atención de la población vulnerable, y otro dedicado a las transformaciones estructurales de mediano y largo plazo. En el último análisis regional, González analiza los efectos y secuencias de las políticas de control de COVID-19 a través de los componentes incluidos en el *Government Response Stringency Index* (GRSI) elaborado por la Escuela de Gobierno Blavatnik de la Universidad de Oxford.

Los análisis de países corresponden a Colombia, Costa Rica, Ecuador, Honduras, Paraguay, República Dominicana, Uruguay, y Venezuela. En el análisis de Colombia, Carrasquilla presenta los resultados de las medidas tempranas de control, así como los procesos para garantizar la preparación adecuada para realizar pruebas diagnósticas, y de los servicios a prestar en las unidades de cuidados intensivos. Carrasquilla también destaca la importancia de la comunicación social en el control de la pandemia, y los aportes realizados por la Academia Nacional de Medicina de Colombia. Evans y col. revisan en detalle las políticas de control implementadas en Costa Rica, estableciendo las diferencias entre la primera etapa (de mayor efectividad), y la segunda etapa en la cual se ha registrado un mayor crecimiento de casos junto con el aumento de la disconformidad social por el impacto económico de la pandemia. En el caso de Ecuador, Romo describe la afectación de los servicios de salud, expresada en el congestionamiento de hospitales y en las dificultades confrontadas para la protección del personal de salud, así como el exceso de mortalidad registrado en el conjunto del país. Fuentes-Barahona y col. señalan en detalle la evolución del aumento de casos en Honduras, indicando la afectación destacada de los adultos de 20-49 años, el colapso de los servicios de la red pública, y la implementación de clínicas de atención primaria y brigadas médica móviles como alternativas de atención de la población.

Cabral-Bejarano y col., al analizar la situación de la pandemia en Paraguay, destacan la importancia de la articulación de las políticas de salud con las políticas sociales, así como de la importancia de la prontitud en la toma de decisiones y la inclusión de múltiples actores sociales en las actividades de control. En el análisis de República Dominicana, Rathe detalla las limitaciones en la preparación del país ante la pandemia, expresadas en las deficiencias en las áreas de prevención, detección temprana, y notificación de casos, así como en el sub-

financiamiento del primer nivel de atención. Alemán y col. describen, en el análisis de Uruguay, las características de la emergencia sanitaria decretada en el país, así como la creación del Fondo Coronavirus para el financiamiento de las actividades requeridas. También se enfatiza en el análisis de Uruguay el aumento en la capacidad de diagnóstico y en el manejo domiciliario de casos, aspectos de gran relevancia para los resultados positivos obtenidos en el control de la pandemia. Castro y Castro, al analizar el caso de Venezuela, especifican las restricciones asociadas con la situación previa de hiperinflación, el deterioro económico, y las debilidades del sistema de salud. También llaman la atención sobre la poca transparencia de las políticas implementadas, así como la persistencia de la vulnerabilidad y la baja preparación de los servicios de salud.

Los análisis de tópicos específicos ponen de relieve aspectos significativos en el control de la pandemia. Cabrera y col. exploran las diferentes situaciones éticas que involucra la atención de pacientes gestantes con infección por SARS-CoV-2, centrándose en la atención materno- fetal. Los autores recomiendan el uso del diálogo esclarecedor y el juicio clínico deliberativo reflexivo que tome en cuenta los hechos, valores y deberes para tomar decisiones éticas y humanas ante el desafío que representa la pandemia durante el embarazo en América Latina.

Bonilla-Cruz y col. analizan las implicaciones sobre la salud mental del adulto mayor de las medidas de confinamiento social adoptadas ante la pandemia de COVID-19 y el diseño e implementación de programas en salud que intentan mitigar los efectos adversos sobre este vulnerable grupo de población. El grupo investigador reporta como hallazgo que a pesar de muchos países priorizaron la promoción de la salud y la prevención de enfermedades, parecen haber descuidado las estrategias frente a los aspectos emocionales y mentales del confinamiento. Cudris–Torres y col. identificaron, en estudio realizado en Colombia sobre la gestión financiera personal y la satisfacción con la vida durante el confinamiento, hallazgos que permiten conocer el impacto en la situación económica de los grupos analizados y la forma que consideran para enfrentarlo.

D´Suze y Fernández exponen la situación epidemiológica del COVID-19 en Venezuela, durante los primeros cuatro meses de pandemia, utilizando herramientas de análisis de un brote epidémico y las categorías de la descripción epidemiológica clásica, poniendo de relevancia las medidas de salud pública durante la emergencia. Cudris-Moreno y col. centran su atención en la educación, una de las áreas más afectadas en esta emergencia, planteando una investigación sobre el uso de las tecnologías educativas y el desempeño académico antes y durante el confinamiento. Para ello analizaron un grupo de escolares, midiendo su desempeño, conducta y apreciaciones sobre las tecnologías utilizadas durante el periodo de confinamiento.

Navarro y col. describen el incremento del uso de las TIC y las redes sociales en las diferentes áreas de la vida social en el progreso de la pandemia, sustituyendo con relativo éxito, procesos laborales, comerciales y educativos, y aportando elementos para el uso de las conexiones en línea y virtuales para la promoción de la paz y la lucha contra la violencia. Ruiz-Domínguez y col. reportan evidencias sobre la mayor frecuencia de bienestar psicológico en estudiantes universitarios, proponiendo que este rasgo es una fortaleza ante los efectos provocados por el confinamiento.

La Gaceta Médica de Caracas y la Academia Nacional de Medicina esperan que el análisis y difusión de estas contribuciones detallen con más precisión los efectos de la pandemia por COVID-19 en América Latina, y también contribuyan a motivar nuevas exploraciones sobre los temas analizados, así como identificar aspectos que requieran más investigaciones. También se aspira que todo este esfuerzo esté orientado a mejorar las condiciones de salud y de bienestar de los cientos de millones de latinoamericanos hoy tan afectados por la pandemia.

REFERENCIAS

1. University of Oxford, Oxford Martin School, Global Change Data Lab. Our World in Data. Coronavirus Pandemic (COVID-19). https://ourworldindata.org/coronavirus
2. The Lancet. COVID-19 in Latin America: A humanitarian crisis. Lancet. 2020;396(10261):1463.
3. Pablos-Méndez A, Vega J, Aranguren FP, Tabish H, Raviglione MC. COVID-19 in Latin America. BMJ. 2020;370:m2939.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S137-S148
DOI: 10.47307/GMC.2020.128.s2.2

The COVID-19 pandemic: A multidimensional crisis

Dr. Friedrich Welsch[1]

SUMMARY

The COVID-19 pandemic hit nations in all continents hard with the Americas standing out as the world´s hardest-hit region. Government responses have been varying in timeliness, stringency, and results with outcomes being independent of regime type or political system but influenced by early action and the severity of containment strategies.

The economic and financial impact of the pandemic has been estimated at a US$ 8,8 trillion decrease of the global GDP, more than the economies of Japan and Germany combined, and threatening the destruction of nearly half the global workforce livelihoods. Governments worldwide have announced unprecedented rescue packages to the tune of around US$ 10 trillion 40 percent of the global GDP.

The pandemic hit Venezuela during a generalized humanitarian crisis and the health system in tatters. The real dimension of the pandemic is a mystery due to the opaqueness of the virus-related data published by the government. Due to the shortage of protective gear and disinfectants in run-down public hospitals, the virus-related death toll among medical staff is extremely high. The health authorities miss the minimum testing standards of the WHO.

It is unlikely that our post-pandemic lives will return to their pre-pandemic characteristics, especially in the areas of learning, retail, tourism, and other services. The pandemic may be a catalyst for a new normalcy with teleworking heading toward a working-from-home-economy.

Key words: *Pandemic, COVID-19, health system preparedness, Government Response Stringency Index, containment strategies, government performance, economic/financial impact, Venezuela, working-from-home, new normalcy.*

RESUMEN

La pandemia del COVID-19 ha afectado duramente a las naciones de todos los continentes, destacando América como la región más afectada del mundo. Las respuestas de los gobiernos han variado en cuanto a oportunidad, rigor y resultados. Los impactos han sido independientes del tipo de régimen o sistema político, pero han estado influidos por las medidas tempranas y la severidad de las estrategias de contención.

Se ha estimado que las repercusiones económicas y financieras de la pandemia han supuesto una disminución de 8,8 trillones de dólares del PIB mundial, más que las economías del Japón y Alemania juntas, y que amenazan con destruir los medios de vida de casi la mitad de la fuerza de trabajo mundial. Los gobiernos de todo el mundo han anunciado paquetes de rescate sin precedentes por valor de 10 trillones de dólares o el 40 % del PIB mundial.

La pandemia golpeó a Venezuela en medio de una crisis humanitaria generalizada y el sistema de salud en ruinas. La dimensión real de la pandemia es un misterio debido a la opacidad de los datos relacionados con el virus que ha publicado el gobierno. Debido a la escasez de equipos de protección y desinfectantes en los hospitales públicos deteriorados, el número de muertes de personal médico relacionadas con el virus es extremadamente alto. Las autoridades sanitarias no cumplen los requisitos mínimos de pruebas establecidos por la OMS.

DOI: https://doi.org/10.47307/GMC.2020.128.s2.2

ORCID: 0000-0002-9175-956X
[1]Professor, Political Science, Simon Bolívar University (USB), Venezuela.
E-mail: fwelsch@gmail.com

Recibido: 20 de septiembre de 2020.
Aceptado: 13 de noviembre de 2020

Es poco probable que nuestras vidas en la pos-pandemia vuelvan a sus características pre-pandémicas, especialmente en las áreas de aprendizaje, comercio, turismo y otros servicios. La pandemia puede ser un catalizador para una nueva normalidad con el teletrabajo orientado hacia una economía de trabajo desde los hogares.

Palabras clave*: Pandemia, COVID-19, preparación del sistema de salud, Índice de Rigurosidad de Políticas, estrategias de contención, desempeño del gobierno, impacto económico/financiero, Venezuela, teletrabajo, nueva normalidad.*

The big picture

The novel coronavirus COVID-19 was first identified toward the end of 2019 in Wuhan, a closely connected industrial, commercial, and financial hub in Central China. It spread fast from Asia across the globe (Figure 1) (1), sparing barely a handful of Polynesian microstates, and was recognized as a pandemic by the WHO on the 11th March 2020.

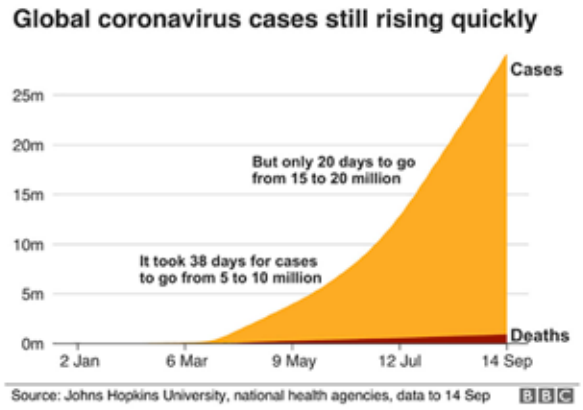

Figure 1.

The pandemic hit nations in all continents extremely hard, with the Americas standing out as the world´s hardest-hit region. According to the statistical update as of mid-September 2020, of the ten countries with the highest mortality rates, 8 were in the Americas. In just a few months, its exponential spread and the authorities´ responses in the form of containment measures such as school, workplace, and restaurant closures, cancellation of public events, restrictions on mass gatherings, travel bans, testing policy, contact tracing, quarantine and border closures have wrought havoc upon mankind.

As of mid-September 2020, the global infection cases count was up to nearly 30 million, with about 1 million deaths. The containment measures triggered the worst recession since the Great Depression. An IMF study from a historical perspective concludes that decades of progress in poverty reduction and education might already have been lost to the pandemic (2). World Bank Chief Economist *Carmen Reinhart* and Stanford University´s *Vincent Reinhart* refer to the slump as the "*pandemic depression*" and think the global economy will never be the same: "*The shared nature of this shock- the novel coronavirus does not respect national borders – has put a larger proportion of the global community in recession than at any other time since the Great Depression. As a result, the recovery will not be as robust as the downturn"* (3).

On the other hand, the pandemic has been a catalyst for social change upending everyday life in a variety of aspects and opening opportunities for further development, from the organization of learning and work to commuting and lifestyles. Lockdowns travel bans, school closures, and increased work, from home helped reduce emissions and pollution, at least a sigh of relief in the climate change that may translate to opportunities for further efforts and investments to make it sustainable once the world returns to a "new normalcy".

Government responses to the coronavirus pandemic have been different in timeliness, stringency, and results. Independent of regime type or political system, some countries have done well while others have not. Even the *Global Health Security Index* scores on the level of preparation to respond to a pandemic are not predictors of good performance in controlling the COVID-19: half of the ten best-prepared systems (Figure 2) (4), the United Kingdom United States, Sweden, the Netherlands, and Canada present mortality rates well above the global average, with one more -Denmark- scores just close to it (Figure 3).

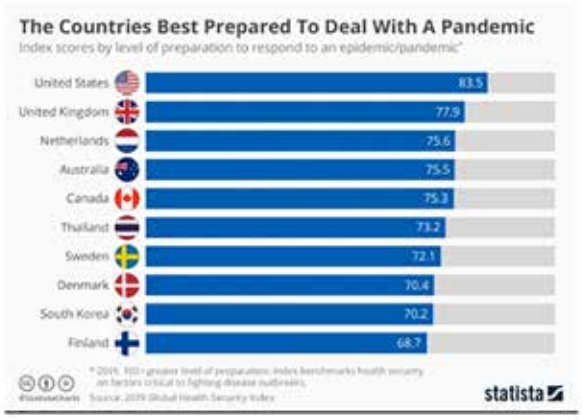

Figure 2.
Source: (4).

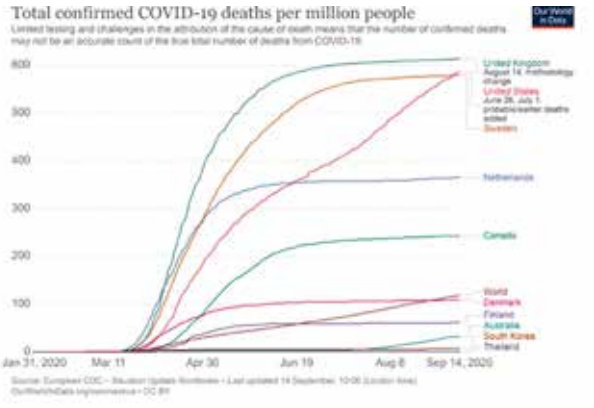

Figure 3.

On the other hand, evidence demonstrates that the timeliness and severity of government strategies designed to control the exponential growth of cases and bend the curve have influenced outcomes. In a multivariate analysis of data covering 194 countries, Leffler et al. (5) found that lower mortality rates were associated with the timing of containment measures as well as the duration of mask-wearing in public and travel bans, while viral testing and tracing policies were not. According to a Columbia University study (6), had the United States responded with its lockdown just one week earlier in March 2020, around 36 000 lives would have been saved, and over 50 000, had the lockdown begun in early March 2020.

A research team at Oxford University´s *Blavatnik School of Government* created a COVID-19 *Government Response Stringency Index* based on 17 indicators covering 180 countries. They caution "*that these indices simply record the number and strictness of government policies, and should not be interpreted as 'scoring' the appropriateness or effectiveness of a country's response. A higher position in an index does not necessarily mean that a country's response is 'better' than others lower on the index* (7), and the dataset actually reflects a mixed picture but still points at a relation between the timing and severity of measures.

By mid-March, shortly after the WHO had declared COVID-19 a pandemic, all in a group of ten countries – five with the highest confirmed case scores as of mid-September, three of them in the Americas and two in Asia (United States, Brazil India, Russia, Peru), and five with low confirmed case scores, four in Asia and one in the Americas (China, Taiwan, Thailand, Vietnam, and Uruguay), all began to impose relatively or very severe containment policies, or had had some in place already before, such as China (Figure 4) (8).

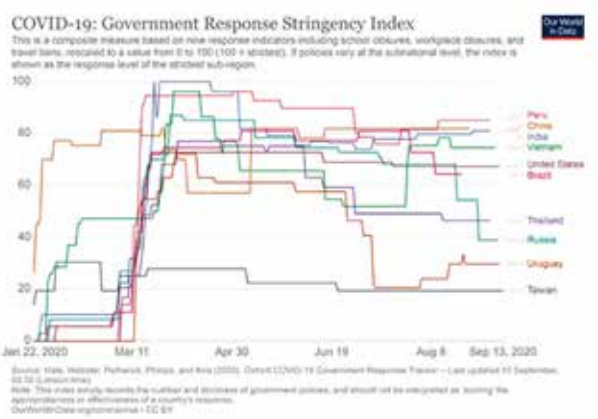

Figure 4.

From the same point of time on, the five countries with low confirmed case scores managed to bend the pandemic curve and keep it roughly flat, except for Vietnam which experienced a slight surge from the end of August,

while the five with high confirmed case scores did not, with their curves surging further from May through September. A closer look reveals that the governments of Thailand, Uruguay, and Taiwan did quite well in mitigating or suppressing the pandemic without imposing extremely severe containment measures, as did China and Vietnam with policies of very high stringency scores throughout the period. Having imposed policies of equally high stringency, Peru, India, Russia, and Brazil fared far worse, as did the United States with its medium-range stringency score policies (Figure 5) (9).

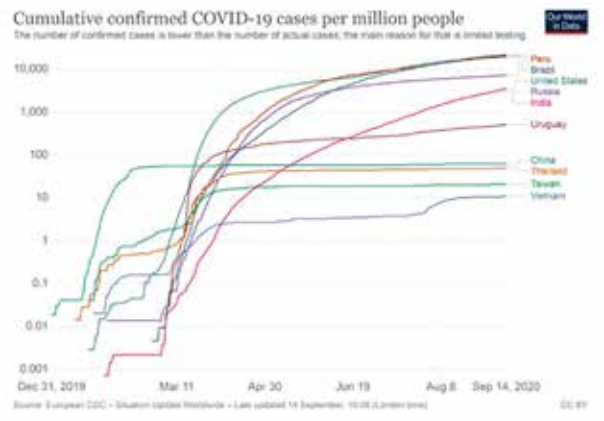

Figure 5.

In a nutshell, the overall stringency score of containment strategies alone does not explain policy outcomes. In a study on national policies and success in bending the rising curve of cases, Migone (10) found that early action was helpful "*independently from how strict the final policies were: Australia, Japan, and South Korea targeted early on the spread of the disease and generally the Stringency Index was relatively low. Countries like Spain and Belgium ramped up their policy measures dramatically but appear to have done so after the window of opportunity had closed and very stringent rules seem to have had limited effect on medical outcomes*".

Politics and the Pandemic

The relationship between politics and the novel coronavirus pandemic is as complex as the phenomenon itself. Scholarly observers agree —as I mentioned above— that the effectiveness of government responses designed to contain and suppress the disease is unrelated to the type of political regime or system type, democratic or not, centralist or federal. Some, e.g. Diamond (11), see a democratic regression and existing autocrats seizing the opportunity of the disease to tighten their control over the public and strengthen their positions but point out that "*democracy was faltering globally even before the pandemic*". In the same vein, Fukuyama (12) adds that it is not a matter of regime type whether a country handles the crisis better than others but that the "*factors responsible for successful pandemic responses have been state capacity, social trust, and leadership"*.

Statistical evidence does not support the Fukuyama thesis convincingly; the problem seems to be more complex. As for state capacity, of the ten countries with top scores in Moscow´s *Higher School of Economics* State Capacity Index (13), only four reports confirmed corona-related deaths per million people below the world average. As for social report, of the top ten countries ranked in the social capital pillar of the *Legatum Prosperity Index* (14), again only four report corona-related deaths per million people below the average.

As for leadership, the picture is still mixed but somewhat more conclusive. Understanding the public´s COVID-19-related leadership perception as a process beginning after the outbreak of the pandemic when containment strategies were in place, I compared the net approval ratings of 13 world leaders from mid-March through the beginning of September 2020 and the outcome of their handling of the pandemic in terms of deaths per million people. Leadership approval should not be confounded with the approval of policies. Using the data series published by *Morning Consult Political Intelligence* (15) and *Our World in Data* (16), I found that eight of those leaders pursued strategies that produced results better than the world average, while five failed to best that average (Table 1).

Table 1

World leaders approval ratings and coronavirus containment policy results

Leader*	Net Approval** 2020 Mid-March	Mid-May	Mid-July	9th Sept	Deaths***
Merkel/Germany	-11	22	23	22	0.05
Moon/South Korea	n.d.	24	11	12	0.07
Abe/Japan	-23	-31	-33	-6	0.08
Trudeau/Canada	-17	30	11	5	0.14
Conte/Italy	n.d.	34	23	27	0.16
Johnson/UK	2	-18	-5	-15	0.19
Morrison/Australia	-19	40	37	31	0.24
Macron/France	-37	-25	-32	-29	0.55
World				0.68	
Modi/India	53	64	58	52	0.84
Sánchez/Spain	n.d.	-6	-9	-11	1.88
Trump/US	-9	-7	-14	-12	2.58
López Obrador/Mexico	30	28	26	26	3.19
Bolsonaro/Brazil	20	-9	0	4	3.74

* Ordered by lowest to the highest death toll

**The share of each country's residents that approve minus the share that disapproves of their respective head of state. Source: (15)

***Daily new confirmed COVID-19 deaths per million people. Source: (16).

Two of the leaders who enjoyed the highest approval ratings throughout the period, namely *Modi* and *López Obrador*, handled the pandemic in ways that were unsuccessful under the terms of this comparison, with *López* having presided over the second-worst outcome, while *Conte* enjoyed high positive ratings consistent with the policy outcome. The ratings of three leaders – *Merkel*, *Trudeau*, and *Morrison*, jumped from quite negative to very positive also consistent with their successful handling of the crisis. *Abe, Macron, Sánchez,* and *Trump* saw negative ratings throughout the period, even though the first two achieved positive results under the terms established here. Of the remaining two, *Johnson´s* approval plummeted despite a better-than-average result while *Bolsonaro* first took a dip and then recovered positive scores despite having presided over the public policy strategy with the worst outcome in the sample.

The leadership perception picture as presented here suggests that Coronavirus-related public policies were in many cases, not the only or even decisive factor being evaluated by public opinion. There seems to be no fit for all pattern for the relationship of politics to the coronavirus pandemic.

Public opinion on their government's handling of the pandemic and trust in the national health authorities also draw a mixed picture as both governments and health authorities that achieved good results in terms of daily new confirmed deaths were consistent with those results in some cases but not in others. For the same selection of countries used in the leaders´ approval ratings, the public opinion varied widely as shown in Table 2.

The publics of Canada and India express very high or the highest government approval and confidence ratings, the first consistent with performance, the second not at all. Best performance does not guarantee the best "marks" (Germany, Japan), and the difference between government approval and confidence in health authorities, often enough appointed by those governments, can be significant (United Kingdom, Spain). The approval of the government increases only in Japan while

Table 2

Evaluation of governments handling the pandemic and confidence in health authorities (2020)

Country*	Government handling pandemic well		Confidence in Health Authorities	
	Beginning of April	End of August	Beginning of April	End of August
Germany	71	70	68	65
South Korea	n.d.	n.d.	86	76
Japan	31	42	45	52
Canada	79	74	80	78
Italy	71	62	78	66
United Kingdom	72	40	81	77
Australia	76	79	69	79
France	40	37	59	49
India	90	77	87	71
Spain	36	36	87	76
United States	51	38	63	47
Mexico	43	31	41	41
Brazil	n.d.	n.d.	57	43

Source: (17).

confidence in the health authorities increases in Australia and Japan. In most cases, both ratings drop slightly and more; the sharpest drop is registered for the approval of the United Kingdom government's handling of the pandemic. Again, a mixed picture.

In their meta-analysis, Devine et al. (18) review several studies focused on the "*relationship between the COVID-19 pandemic, government responses, and political and social trust*". They present their findings in a table which I reproduce here (Table 3).

Economic fallout and financial stimulus

The economic fallout of the coronavirus pandemic is unprecedented. According to the latest IMF World Economic Outlook (June 2020), advanced as well as emerging economies will experience depression up to nearly 13 % of GDP with the only exception of China which is projected to grow 1 %. The global economy will decrease by -4.9 %, with advanced economies plummeting -8 % and emerging & developing economies taking a hit of -3 % (Table 4). The world economy is expected to recover in 2021, in part due to the stimulus packages announced by governments but the IMF (19) warns that "Alternative outcomes to those in the baseline are possible".

A later forecast by the Organization for Economic Cooperation and Development (OECD) (20) that includes the projected impact of the massive rescue programs announced by many governments and the European Union after June is somewhat more optimistic (Table 5).

Due to the lockdown, social distancing, and other restrictions imposed by governments, most sectors were hit hard by the pandemic, especially automobiles, aviation, transportation, education services, and other services, especially tourism. While big companies are in a better position to shoulder the burden, and the IT and online retail giants even profit from the crisis, smaller businesses will suffer most.

At the global level, the *Asian Development Bank* (21) expects the value of the losses inflicted by the pandemic could amount to $8.8 trn, more than the economies of Japan and Germany combined.

The *International Labor Organization* (22) estimates the full-time job losses at around 300 million and warns that "*The continued sharp decline in working hours globally due to*

Table 3

Selected studies on the coronavirus pandemic and trust (February to July 2020)

Area	Findings	Countries	Authors
Implementation	Higher societal and political trust is associated with the later adoption of restrictive policies	European Union countries	Toshkov, Yesilkagit, and Carroll
Compliance	Compliance is greater in those with higher trust, but this may be conditional on trust in those who deliver the orders rather than trust in general. One study finds social trust is negatively related to compliance in the United States.	The United States, Denmark	Goldstein and Wiedermann; Olsen and Hjorth; Han et al.
Risk perception	Risk perception is negatively associated with trust in government. Conversely, risk perception is higher when individuals have low trust in science and medical professionals.	The United Kingdom, the United States, Australia, Germany, Spain, Italy, Sweden, Mexico, Japan, and South Korea	Dryhurst et al.
Mortality	Institutional trust is associated with lower levels of mortality.	European Union countries	Oksanan, Kaakine, Latikka, Savolainen, Savlea, Kovula
Consequences for trust	Personal exposure to COVID-19 is associated with reduced trust; implementation of lockdowns may lead to higher trust (but see below). Higher social trust is a result of political trust. A government that is organized, clear in messaging, and perceived as fair increased trust. Lockdowns even in other countries may increase political trust. Trust was driven by the growing number of those with the virus, not by lockdowns themselves.	European Union countries, Spain, Denmark, 23 countries globally	Balis, Bol, Giani, Loewen; Amat, Falcó-Gimeno, Arenas, Muñoz; Madsen, Mikkelsen, Christensen, Baekgaard; Esaiasson, Sohlberg, Ghersetti, Johanson; Han et al.; De Vries, Bakker, Hobolt, Arcenaux; Schraff

Source: (18).

the COVID-19 outbreak means that 1.6 billion workers in the informal economy —*that is nearly half of the global workforce— stand in immediate danger of having their livelihoods destroyed"*.

To help stimulate post-pandemic recovery, governments have announced rescue programs far beyond the scope of the rescue packages following the 2008 financial crisis. McKinsey (23) estimates the combined value of the programs proposed by 54 governments worldwide at around $10 trillion or 40 % of the global GDP, aimed at maintaining financial stability, household economic welfare, and help companies survive. The biggest stimulus responses in terms of % of GDP are distributed

Table 4

World economic outlook June 2020
GDP growth projections

Real GDP, annual percentage change	2020	2021
World output	-4.9	5.4
Advanced Economies	-8.0	4.8
United States	-9.0	4.5
Euro Area	-10.2	6.0
Japan	-8.8	2.4
United Kingdom	-10.2	6.3
Canada	-8.4	4.9
Other Advanced Economies	-4.8	4.2
Emerging markets and developing economies	3.0	5.9
Emerging and Developing Asia	-0.8	7.4
Emerging and Developing Europe	-5.8	4.3
Latin America and the Caribbean	-9.4	3.7
The Middle East and Central Asia	-4.7	3.3
Sub-Saharan Africa	-3.2	3.4
Low Income Developing Countries	-1.0	5.2

Source: (19).

Table 5

OECD economic outlook September 2020
Real GDP growth, % year-on-year

Country	2020	2021
Canada	-5.8	4.0
China	1.8	8.0
France	-9.5	5.8
Japan	-5.8	1.5
United Kingdom	-10.1	7.6
United States	-3.8	4.0
World	-4.5	5.0
Euro Area	-7.9	5.1
G20	-4.1	5.7

Source: (20).

Table 6

Stimulus responses per country, in % of GDP

Country	% GDP
Germany	33.0
Japan	21.0
France	14.6
United Kingdom	14.5
United States	12.1
Canada	11.8
India	10.0
South Africa	8.6
Brazil	6.5

Source: (23).

as shown in Table 6.

While the bulk of the funds for the rescue and stimulus programs comes from increased government debt, there are also different forms of financing such as Coronavirus bonds issued by entities formed by two or more central governments to promote development for the members (*Sovereign, Supranational, and Agency/* SSA). For its part, the *European Union* reached an unprecedented aid and budget deal worth $ 1.85 trillion, composed of an aid package of over $ 750 billion and a 7-year budget of around $ 1.1 trillion (24).

The Venezuelan nightmare-cum-pandemic

Even before the onslaught of the COVID-19 pandemic, Venezuela had been mired in a political, economic, and humanitarian crisis of historic proportions. With oil production

down to a trickle, the economy ruined, physical infrastructure in tatters, its GDP per capita had plummeted to a bare one-seventh of its peak value before the "revolution", falling back to the handful of poorest countries of Latin America leaving behind only Nicaragua and Haiti. The country´s health system was ill-prepared to adequately handle a pandemic. Fortunately, the virus spread to Venezuela with some delay compared with its neighbors Brazil and Colombia, probably due to its preexisting near-total isolation from international traffic.

The autocratic regime did not waste time to seize the opportunity of "fighting" the pandemic to invoke emergency powers to tighten its control and "legitimize" the already usual brutal repression of social protests against failing services and supply shortages arguing "public safety concerns". Fortunately enough, the early strict response — lockdown, school and university closures, cancellation of events, social distance rules including quarantine, and obligatory face masks in public — helped to contain the spread of the disease, at least initially.

The country´s hospitals are ill-prepared to receive and treat coronavirus patients. Most of them have no running water, insufficient provision of disinfectants, and above all, a severe shortage of protective gear (PPE) for doctors and paramedics. As a consequence, the death toll among health workers in Venezuela extremely high. Around mid-September 2020, the Venezuelan Medical Federation lists 126 deaths of doctors and nurses who had been fighting the spread of the disease under the toughest conditions and without the required protective measures, more than one-fifth of the total coronavirus-related deaths at that time (25). Protests of healthcare workers against their inadequate working conditions were brutally repressed and over a dozen were detained for publicly criticizing the situation (26).

President Maduro rated the country´s health system as excellent, he said: "you´re are given the care that´s unique in the world, humane care, loving, Christian" (26). His henchmen far from convinced. The two dozen of them who got sick with coronavirus preferred to seek treatment in costly private clinics to avoid the deadly risk associated with public health institutions if you are seriously ill.

The real dimension of the pandemic is a mystery. As with all information on government performance, the coronavirus-related data published by the authorities cannot be trusted. Health workers are warned not to reveal any information about cases and the situation in their workplace. Testing is insufficient, getting the results takes too long because there is only one laboratory in the country capable of carrying out the PCR tests. Apart from the information opaqueness, Venezuela is probably the only country where having gotten sick with coronavirus is considered a crime (as long as you are not a regime buddy, of course). People who were fast-tested positive were forcefully quarantined in makeshift quarters without minimum facilities; most of them never received a confirmed test result. Venezuelan migrants who had lost their jobs in Colombia due to the pandemic and who returned to their country were corralled in temporary camps and characterized by official spokespersons as "bioterrorists" who were spreading the disease to the fatherland. Meanwhile, Colombian guerrillas, narcotics, and mining mafias crossed that border without being bothered.

Civilian thugs or "colectivos" heavily armed by the government control the peoples' movements in the densely populated barrios enforcing the lockdown. In the poor communities, where most work in the informal sector, people have simply two options: comply staying at home and starve or defy the lockdown and go out and get some food for sheer survival.

Salomón and Bensayag (27), provide evidence that the Venezuelan health authorities grossly miss the minimum testing standards of the WHO. As a consequence, the official picture of the pandemic must be considered as a flagrant understatement of the real situation. The recent upward trajectory of the curve of confirmed cases underscores that point of view.

Toward new normalcy?

As the pandemic spread and governments the world over responded with severe containment measures, our way of life and habits have changed profoundly. It is unlikely that our post-pandemic lives will return to their pre-pandemic

characteristics. While some of the innovations and changes brought about in this period may be or even better should be scrapped – such as the COVID-19 tracking applications – others have come to stay, especially in the fields of learning, commute, workplace, retail, and tourism and travel industry, among other services.

For this occasion, I focus on one aspect, namely the changes in the workplace, after some comments on the tracking apps. Private and state-owned IT firms and Silicon Valley giants like Google and Apple have developed smartphone contact tracing applications that were launched by dozens of countries, either voluntarily or mandatory as was done in China. Such applications identify the persons the user has come in contact with and alert if any of those contacts turns out to be a confirmed Coronavirus carrier. Obviously, such applications are double-edged swords that may be helping keep the contagion in check but also raise privacy concerns as they allow governments to misuse the information for social control.

O´Neal et al. (28) compare Coronavirus tracking apps around the world, rating them on a five-star scale based on the answers to the following questions:

"Is it voluntary? *In some cases, apps are opt-in—but in other places, many or all citizens are compelled to download and use them.*

Are there limitations on how the data gets used? *Data may sometimes be used for purposes other than public health, such as law enforcement—and that may last longer than COVID-19.*

Will data be destroyed after a period of time? *The data the apps collect should not last forever. If it is automatically deleted in a reasonable amount of time (usually a maximum of around 30 days) or the app allows users to manually delete their data, we award a star.*

Is data collection minimized? *Does the app collect only the information it needs to do what it says?*

Is the effort transparent? *Transparency can take the form of clear, publicly available policies and design, an open-source code base, or all of these".*

For each affirmative answer, they award one star. Of the over 40 apps reviewed, only eleven got five stars; as was to be expected, on average democracies did better than autocracies.

As for the changes in the workplace environment, Stanford economist *Nicholas Bloom* argues (29) that the "*US economy is now a working from home economy… were working from home accounts for around 60 % of economic activity"*. Likewise, the OECD sees the COVID-19 pandemic as a catalyst for the increased use of teleworking in the post-pandemic era (30). Flexible or remote working had been an option which companies worldwide offered some of their staff; a 2019 survey by the *International Workplace Group* (31) of over 15 000 business people across 80 nations found that 62 % of global companies had a flexible workspace policy in place and that three out of four employees considered flexible working as the "new normal".

The lockdown and other restrictive government regulations aimed at suppressing the spread of the Coronavirus forced businesses to innovate and design strategies to introduce or increase working from home. Many employees who had not been included in such schemes before the crisis gained new experiences and became accustomed to their new working environments. Their personal experiences and those of the businesses may be catalysts for further innovations in the post-pandemic era. A survey conducted in May for the Federal Reserve Bank Atlanta (32) found that firms expect remote work to triple, and a post-COVID-19 pandemic forecast by Global Workplace Analytics (33) estimates "*that 25-30 % of the workforce will be working-from-home multiple days a week by the end of 2021*".

The Q1/2020 update of *Global Remote Working Data and Statistics* (34) found that younger employees represent the bulk of remote workers, that working from home (WFH) increased productivity and lowered costs, helped to attract and retain talent, and improved the wellbeing of workers. WFH also produces a positive impact on the environment as workers spent less time and fuel commuting.

Apart from individual feelings reported by remote workers such as loneliness, difficulties to switch off from work, and not being provided

the latest technology by their employers, the downsides of WFH include inequality and the loss of the daily spending of commuters in restaurants and shops. *Bloom* (29) speaks of an *inequality time bomb* only about half of the jobs can be carried out working from home, many employees lack adequate facilities for WFH such as extra rooms, and WFH favors educated high-income employees. Despite the downsides, *Bloom* concludes that WFH is here to stay.

In the September 2020 update of its *Policy Responses to COVID-19 Report* (30), the OECD supposes that telework will be an integral part of the future working environment and that public policies can contribute a great deal to advance it. The report cautions that "*While more widespread telework in the longer-run has the potential to improve productivity and a range of other economic and social indicators (worker well-being, gender equality, regional inequalities, housing, and emissions), its overall impact is ambiguous and carries risks especially for innovation and worker satisfaction.*" And recommends that to "*improve the gains from more widespread teleworking for productivity and innovation, policymakers can promote the diffusion of managerial best practices, self-management, and ICT skills, investments in home offices, and fast and reliable broadband across the country*".

Funding: None

Conflicts of interest: None

REFERENCES

1. BBC News. Covid-19 pandemic: Tracking the global coronavirus outbreak. 2020. https://www.bbc.com/news/world-51235105
2. Jorda O, Sanjay R, Taylor AM. The long economic hangover of pandemics. 2020;57(2):12-15.
3. Reinhart C, Reinhart V. The Pandemic Depression. The global economy will never be the same. Foreign Affairs. 2020. https://www.foreignaffairs.com/articles/united-states/2020-08-06/coronavirus-depression-global-economy
4. McCarty N. The countries best prepared to deal with a pandemic. Statista. 2019. https://www.statista.com/chart/19790/index-scores-by-level-of-preparation-to-respond-to-an-epidemic/
5. Leffler CT, Ing E, Lykins JD, Hogan MC, McKeown CA, Grzybowski A. Association of country-wide coronavirus mortality with demographics, testing, lockdowns, and public wearing of masks. Am J Trop Med Hyg. 2020. doi: 10.4269/ajtmh.20-1015.
6. Pei S, Kandula S, Shaman J. Differential Effects of Intervention Timing on Covid-19 Spread in the United States. Sci Advanc. 2020; eabd6370. DOI: 10.1126/sciadv.abd6370.
7. Blavatnik School of Government, University of Oxford. Coronavirus Government Response Tracker. https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker
8. Our World in Data, University of Oxford. Government Response Stringency Index. 2020. https://ourworldindata.org/grapher/covid-stringency-index?stackMode=absolute&region=World
9. Our World in Data, University of Oxford. Cumulative confirmed COVID-19 cases per million people. 2020. https://ourworldindata.org/coronavirus-data-explorer?zoomToSelection=true&country=~OWID_WRL&region=World&cases&Metric=true&interval = total&hideControls=true&perCapita=true&mo-thing=0&pickerMetric=location&pickerSort=asc
10. Migone A. The influence of national policy characteristics on COVID-19 containment policies: a comparative analysis, Policy Design and Practice. 2020; 3(3): 259-276.
11. Diamond L. Democracy Versus the Pandemic. The coronavirus is emboldening autocrats the world over. Foreign Affairs. 2020. https://www.foreignaffairs.com /articles/world/2020-06-13/democracy-versus-pandemic
12. Fukuyama F. The Pandemic and Political Order. It Takes a State. Foreign Affairs. 2020. https://www.foreignaffairs.com/articles/world/2020-06-09/pandemic-and-political-order
13. Higher School of Economics University. State capacity: How it is measured and compared. https://iq.hse.ru/en/news/298326722.html
14. The Legatum Prosperity Index 2020. Creating the pathways from Poverty to Prosperity. https://www.prosperity.com/rankings
15. Morning Consult Political Intelligence. Global Leader Approval Rating Tracker. https://morningconsult.com/form/global-leader-approval/
16. Our World in Data, University of Oxford. https://ourworldindata.org/
17. You Gov. Covid-19: government handling and confidence in health authorities. 2020. https://today.yougov.com/topics/international/articles-reports/2020/03/17/perception-government-handling-

covid-19

18. Devine D, Gaskell J, Jennings W, Stoker G. Trust and the Coronavirus Pandemic: What are the Consequences of and for Trust? An Early Review of the Literature. Political Studies Review. 2020; 1-12. https://doi.org/10.1177/1478929920948684
19. IMF. World Economic Outlook Update. 2020. https://www.imf.org /en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020
20. OECD. OECD Economic Outlook, Interim Report. Coronavirus (COVID-19): Living with uncertainty. 2020. https://read.oecd-ilibrary.org/economics/oecd-economic-outlook/volume-2020/issue-1_34ffc900-en#page1
21. Asian Development Bank (ADB). Covid-19 economic impact could reach $8.8 Trillion globally. New ADB Report. News release. 2020. https://www.adb.org/news/covid-19-economic-impact-could-reach-8-8-trillion-globally-new-adb-report
22. ILO. ILO: As job losses escalate, nearly half of global workforce at risk of losing livelihoods. Press release: 29 April 2020. https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_743036/lang--en/index.htm.
23. Cassim Z, Handjiski B, Schubert J, Zouaoui Y. The $10 trillion rescue: How governments can deliver impact. McKinsey & Company. 2020. https://www.mckinsey.com/industries/public-and-social-sector/our-insights/the-10-trillion-dollar-rescue-how-governments-can-deliver-impact
24. European Parliament. Covid-19: the EU plan for the economic recovery. News. 2020. https://www.europarl.europa.eu/news/en/headlines/economy/20200513STO79012/COVID-19-the-eu-plan-for-the-economic-recovery
25. Rodríguez Rosas R. Personal sanitario, el más golpeado tras seis meses de pandemiaen Venezuela. Efecto Cocuyo. 2020. https://efectococuyo.com/ coronavirus/personal-sanitario-el-mas-golpeado-tras-seis-meses-de-pandemia-en-venezuela/
26. Kurmanaev A, Herrera I, Urdaneta S. Venezuela deploys security forces in coronavirus crackdown. New York Times. 2020. https://www.nytimes.com/2020/08/19/world/americas/coronavirus-venezuela.html
27. Salomón L, Bensayag S. Epidemia a ciegas. ¿Cómo ha fallado el diagnóstico de covid-19 en Venezuela? Prodavinci. http://factor.prodavinci.com/EpidemiaACiegasEnVenezuela/
28. O´Neill PH, Ryan-Mosley T, Johnson B. A flood of coronavirus apps are tracking us. Now it´s time to keep track of them. Technology Review Feed - Tech Review Top Stories. 2020. https://www.technologyreview.com/2020/05/07/ 1000961/launching-mittr-COVID-tracing-tracker/
29. Bloom, N. How working from home works out: Stanford Institute for Economic Policy Research (SIEPR). Policy Brief. 2020. https://siepr.stanford.edu/research/publications/how-working-home-works-out
30. OECD. Productivity gains from teleworking in the post COVID-19 era: How can public policies make it happen? 2020. https://www.oecd.org/coronavirus/policy-responses/productivity-gains-from-teleworking-in-the-post-COVID-19-era-a5d52e99/
31. International Workplace Group (IWG). The IWG global workspace survey: Welcome to generation flex – the employee power shift. 2019. https://assets.regus.com/pdfs/iwg-workplace-survey/iwg-workplace-survey-2019.pdf
32. Federal Reserve Bank of Atlanta. Firms expect working from home to triple. https://www.frbatlanta.org/blogs/macroblog/2020/05/28/firms-expect-working-from-home-to-triple.aspx
33. Global Workplace Analytics. Work-at-home after Covid-19. Our Forecast. https://globalworkplaceanalytics.com/work-at-home-after-COVID-19-our-forecast
34. Merchan S. Global Remote Working Data & Statistics. Updated Q1 2020. https://www.merchantsavvy.co.uk/remote-working-statistics/

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S149-S155
DOI: 10.47307/GMC.2020.128.s2.3

Impact of elections on the COVID-19 pandemic

Drs. Victoria Eugenia Castro Trujillo[1], Julio Simón Castro Méndez[2]

SUMMARY

The pandemic has affected thousands of activities around the world. Elections are not exempt from this. Although many of the countries that had electoral events scheduled for 2020 have suspended them, many others have decided to hold them despite the implications it may have for the development of the epidemic in their countries.

Based on the scientific evidence of how these events influenced the development of the COVID-19 in the countries that held elections, we attempted to make a projection based on these experiences to determine how the parliamentary elections scheduled in Venezuela for the first week of December 2020 may affect the behavior of the epidemic in the country.

Key words: *COVID-19, elections, pandemic.*

RESUMEN

La pandemia ha afectado la realización de miles de actividades alrededor del mundo. Las elecciones no escapan de esto. A pesar de que muchos de los países que tenían eventos electorales programados para el 2020 los suspendieron, otros tantos decidieron realizarlos a pesar de las implicaciones que pudiese tener en el desarrollo de la epidemia en sus países. Con base en la evidencia científica de cómo estos eventos influyeron en el desarrollo del COVID-19 en los países que realizaron elecciones, intentamos hacer una proyección basada en estas experiencias para determinar cómo las elecciones parlamentarias programadas en Venezuela para la primera semana de diciembre pueden afectar el comportamiento de la epidemia en nuestro país.

Palabras clave: *COVID-19, elecciones, pandemia.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.3

ORCID: 0000-0002-4016-3045
[1]Lic. Estudios Internacionales (UCV) – Especialista en Gerencia Pública (UNIMET). Analista de datos Grupo de Investigación de Enfermedades Tropicales e Infecciosas (GIDETI) / Médicos por la Salud. @medicosxlasalud @vickycastroT
ORCID: 0000-0001-9509-2910
[2]Médico Internista Infectólogo UCV. Profesor Instituto Medicina Tropical Universidad Central de Venezuela.
E-mail: juliocastrom@gmail.com

Recibido: 02 dde noviembre de 2020
Aceptado: 18 de noviembre de 2020

INTRODUCTION

The COVID-19 pandemic has caught the world off guard. When the first cases appeared in Wuhan, China in mid-December 2019, not many imagined the magnitude of this strange disease. By the end of October 2020, the world has accumulated more than 45 million cases and almost 1.2 million deaths. Due to its high level of contagion, the disease has advanced at a speed that has been practically impossible for any country to stop.

This disease has shaken even the most robust health systems in the world and has caused all of humanity to generate all kinds of strategies to control outbreaks. Needless to say, none of them have been very effective so far. However, if we must point out some of those that have achieved greater control over the amount or at least the speed of the contagions, we can name the most basic: use of masks or mouthpieces and hand washing, and also confinement.

Although after the first few months of confinement, the entire world realized that even the most stable economies could not be closed for so long, there is clear evidence in the behavior of the disease indicating that restrictions on the mobility of people and the prohibition of crowds have succeeded in significantly reducing the rate of contagion. More importantly, in the sea of uncertainties that still exist in the world after 8 months of the pandemic, one of the few certainties is that massive events or accumulations of people, in whatever context, inevitably have a high and direct impact on the behavior of the epidemic in any country.

One of the most notable examples was seen in the early stages of the pandemic when, following an event at the Church of Jesus in Shincheonji, South Korea, more than 500 people were infected with COVID-19. The same occurred in Spain and Italy, also in the earlier stage of the pandemic when a high number of infections associated with sporting events were recorded.

Election events in any country cannot escape this, as most are events that generate a high mobilization of people in a very short window of time, resulting in an environment too favorable for the spread of a disease like COVID-19. In this sense, of the electoral events that were scheduled for this year worldwide, 24 were held despite the risks of doing so, while 71 countries decided to suspend them.

In this paper, we analyze the electoral impact of the COVID-19 pandemic in Latin America. This is very important given that the following elections will be held in the region in the first half of 2021: Honduras (general and local elections, both in March), Chile (election of representatives to the Constituent Convention and local elections, both in April), Peru (general election in April), Ecuador (general election in April). For this purpose, the case of the parliamentary elections in Venezuela is selected.

Since Venezuela has scheduled elections for the first days of December 2020, we intend to make a balance of how the holding of elections may affect the behavior of the epidemic towards a worsening of it, also taking into account the conditions of the Venezuelan health system, which is a fundamental element for analysis such as this.

To evaluate the effect that elections could have in the context of COVID-19 in Venezuela, we made a comparison between the behaviors of the epidemic in countries that held national elections versus countries that did not hold electoral events. These countries were compared taking into account that they were similar in geographical location and similar socioeconomic conditions.

Methodological aspects

For this analysis, we will call electoral countries those that did hold elections and control countries those that did not hold electoral events in this period.

The socioeconomic parameters taken into account at the time of the comparison were the following: 1) population, 2) average per capita income, 3) geographical location, 4) Per capita PCR performance rate, and 5) continent. These five aspects were used to make the comparisons as fair as possible and to make the transmission dynamics as similar as possible.

To determine the influence of electoral events on transmission dynamics, we compared the population-adjusted growth rate (weekly new cases per million inhabitants) of both electoral and control countries in weeks 0, 4, and 8 following the electoral event.

We also use a calculated growth rate that we call a growth factor in which we compare the growth rates of cases in weeks 4 and 8 versus week 0.

It is important to point out the limitations of the scientific and methodological level that we found to be able to do this study.

First, the definition of "cases" is not homogeneous worldwide. While in some countries, a patient with a positive diagnostic test is considered a "case", in others a patient with a clinical diagnostic picture is considered a "case". There are also cases in countries that have changed their definition of "cases" as the epidemic has evolved.

On the other hand, the capacity of diagnosis through tests is not the same in all countries and this inevitably affects the number of reported

Table 1. Characteristics: electoral countries and control countries

CASES					CONTROL				
Country	Continent	Per capita GDP	Population density	Population	Country	Continent	Per capita GDP	Population density	Population
Afghanistan	Asia	1.803,99	54,42	38.928.341	Iraq	Asia	15.663,99	88,13	40.222.503
					Georgia	Asia	9.745,08	65,03	3.989.175
Bangladesh	Asia	3.523,98	1.265,04	164.689.383	Philippines	Asia	7.599,19	351,87	109.581.085
					Vietnam	Asia	6.171,88	308,13	97.338.583
Burundi	Africa	702,23	423,06	11.890.781	Rwanda	Africa	1.854,21	494,87	12.952.209
					Somalia	Africa	225,00	23,50	15.893.219
Cameroon	Africa	3.364,93	50,89	26.545.864	Ghana	Africa	4.227,63	126,72	31.072.945
					Tunisia	Africa	10.849,30	74,23	11.818.618
Croatia	Europe	22.669,80	73,73	4.105.268	Bulgaria	Europe	18.563,31	65,18	6.948.445
					Slovenia	Europe	31.400,84	102,62	2.078.932
Czech Republic	Europe	32.605,91	137,18	10.708.982	Romania	Europe	23.313,20	85,13	19.237.682
					Sweden	Europe	46.949,28	24,72	10.099.270
Dominican Republic	America	14.600,86	222,87	10.847.904	Panama	America	22.267,04	55,13	4.314.768
					Puerto Rico	America	35.044,67	376,23	2.860.840
France	Europe	38.605,67	122,58	65.273.512	Germany	Europe	45.229,25	237,02	83.783.945
					Italy	Europe	35.220,09	205,86	60.461.828
Guinea	Africa	1.998,93	51,76	13.132.792	Niger	Africa	926,00	16,96	24.206.636
					Rwanda	Africa	1.854,21	494,87	12.952.209
Iran	Asia	19.082,62	49,83	83.992.953	Egypt	Africa	10.550,21	98,00	102.334.403
					Iraq	Asia	15.663,99	88,13	40.222.503
Ireland	Europe	67.335,30	69,87	4.937.796	Finland	Europe	40.585,72	18,14	5.540.718
					Norwega	Europe	64.800,06	14,46	5.421.242
Israel	Asia	33.132,32	402,61	8.655.541	Bulgaria	Europe	18.563,31	65,18	6.948.445
					Greece	Europe	24.574,38	83,48	10.423.056
Macedonia	Europe	13.111,21	82,60	2.063.380	Albania	Europe	11.803,43	104,87	2.877.800
					Bosnia and Herzegovina	Europe	11.713,89	68,50	3.280.815
Mali	Africa	2.014,31	15,20	20.250.834	Niger	Africa	926,00	16,96	24.206.636
					Senegal	Africa	2.470,58	82,33	16.743.930
Poland	Europe	27.216,45	124,03	37.846.605	Sweden	Europe	46.949,28	24,72	10.099.270
					Ukraine	Europe	7.894,39	77,39	43.733.759
Russia	Europe	24.765,95	8,82	145.934.460	Germany	Europe	45.229,25	237,02	83.783.945
					Italy	Europe	35.220,09	205,86	60.461.828
Serbia	Europe	14.048,88	80,29	6.804.596	Bulgaria	Europe	18.563,31	65,18	6.948.445
					Slovenia	Europe	31.400,84	102,62	2.078.932
Singapore	Asia	85.535,38	7.915,73	5.850.343	Cambodia	Asia	3.645,07	90,67	16.718.971
					Malaysia	Asia	26.808,16	96,25	32.365.998
South Korea	Asia	35.938,38	527,97	51.269.183	Japan	Asia	39.002,22	347,78	126.476.458
Surinama	America	13.767,12	3,61	586.634	Curacao	America		362,64	164.100
					Barbados	America	16.978,07	664,46	287.371
Taiwan	Asia	25.000,00	656,00	23.816.775	Cambodia	Asia	3.645,07	90,67	16.718.971
					Vietnam	Asia	6.171,88	308,13	97.338.583
Slovakia	Europe	30.155,15	113,13	5.459.643	Bulgaria	Europe	18.563,31	65,18	6.948.445
					Slovenia	Europe	31.400,84	102,62	2.078.932

Source: Center for Systems Science and Engineering (CSSE) at John Hopkins University, own calculations.

Table 2. Comparison between electoral countries and control countries. Cases variability per million.

	Cases	Control		
Per capita GDP	23.226,00	19.336,00		
Population density	565,00	154,00		
POPULATION (average)	33,00	26,00		
Cases per million habitants. Week 0	112,00	89,00	23	VARIATION OF CASES PER MILLION
Cases per million habitants. Week 4	183,00	120,00	63	
Cases per million habitants. Week 8	149,00	100,00	49	
Growth rate of cases (average)	48,00	17,00	25%	

Sources: Center for Systems Science and Engineering (CSSE) at John Hopkins University, own calculations.

cases. Also, it is extremely complex to evaluate a phenomenon like this because it is what we technically call a time-dependent variable.

It is also important to note that transmissibility is influenced by the different measures that each government may or may not impose on its population: mandatory use of masks, the prohibition of gatherings of people, limitation of internal mobility, the closing of borders, etc. Therefore, for this comparison, it is assumed that in general the measures were adopted more or less simultaneously at the regional level and that therefore; this should not distort the analysis too much.

The information used in this analysis was obtained through data science, epidemiology, and medical statistics obtained from the global data repository of John Hopkins University, which is updated and audited daily. For this analysis, data were taken from January 1 to September 30, 2020.

Implications of an electoral process

In strictly epidemiological terms we have that an electoral process is a phenomenon that involves the interaction of a large number of people, in short windows of time. Not only during Election Day as such but in a series of pre- and post-election activities that also generate mobilization and interaction of people at different levels.

In what would be a "normal" electoral event we could be talking about at least 90 activities ranging from the call and administrative activities to logistical activities, campaign events, Election Day, and audits. All of these take place for approximately four months.

This same dynamic involves different groups including both electoral authorities, political parties, and civil society. It also includes forces of public order or anybody responsible for security operations on Election Day and the safeguarding of election materials.

If we must point out two moments where the danger of contagion is increased due to high exposure of people during an electoral event, we have "D" day or Election Day, but we also have all the acts that comprise the electoral campaign. Regardless of whether it is a one-time event such as a house-to-house or a mass event, this involves direct contact between people which significantly increases the danger of contagion.

In the specific case of Venezuela, we are talking about an electoral registry of around 20 million people and currently, our electoral system does not have figures such as distance or early voting, so we are talking about the mobilization of a very large number of people during a 12-hour day. Taking into account that there are approximately 15 000 electoral centers and 45 000 voting tables, we are talking about an influx of around 70 to 100 people per hour per table in the same space. Also taking into account that most of the electoral centers in Venezuela are schools, therefore, closed spaces that do not favor social distancing.

Additionally, especially on "D" day, it is not only the electorate that is mobilized, but the Army, under the figure of the "Plan República", also moves throughout the national territory together with the personnel of the National Electoral Council, both for the delivery and collection of electoral material as well as for the custody of the centers on election day.

In general, very few events worldwide generate the same mobilization of people at the same time as an electoral event, wherever it may be.

RESULTS

For this comparison, we assume as a base date the day of the election, when in theory there has been no event that has affected the natural course of the epidemic. At this point, which we will call moment zero, electoral countries have an average of 112 cases of COVID-19 per million inhabitants, while control countries have an average of 89 cases per million inhabitants, representing 25 % more cases in electoral countries than in control countries already at moment zero.

Interestingly, the electoral countries enter into this comparison with a higher number of cases than the control countries, a hypothesis that could explain this would be precise all the activities associated with elections that take place in the months leading up to "D" day.

For weeks 4 and 8 after zero, there is a very noticeable trend of increasing cases per million

inhabitants in the electoral countries compared to the control countries. In week 4, the electoral countries reported an average of 183 cases of COVID-19, while the control countries reported 120. This translates into a 163 % increase in cases in the electoral countries relative to the zero moments and a 29 % difference against the control countries, where the growth was 134 %

Figure 1. Comparison between electoral and control countries. Cases per million.
Sources: Center for Systems Science and Engineering (CSSE) at John Hopkins University, own calculations.

during the same period.

By week 8 after the elections, electoral countries had an average of 149 COVID-19 cases per million inhabitants, while control countries had 100, a difference of 14 % of electoral cases over controls.

In the case of Venezuela, to project what it would mean to hold an electoral event in terms of additional cases that we would have, versus not going to an electoral event, we took the data from the projections of the Academy of Physical, Mathematical and Natural Sciences and the projections of the Institute for Health Metrics and Evaluation (1,2), where without the influence of an electoral event, Venezuela would have an estimate of between 10 000 to 11 500 cases per day for the first week of December, 13 400 to 15 410 cases for January, and 13 400 to 15 560 cases for the first week of February.

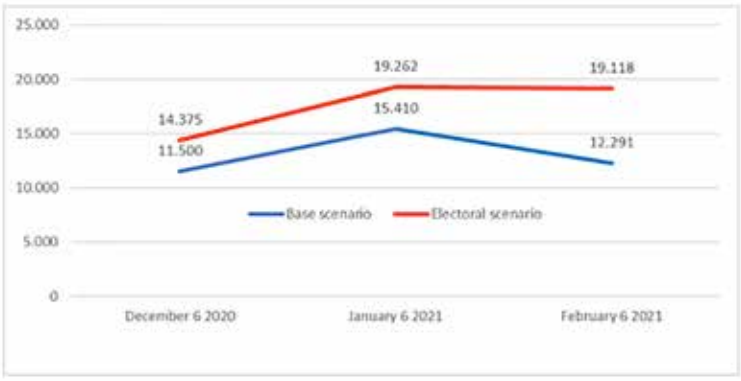

Figure 2. Venezuela: comparison between electoral and non-electoral scenarios.
Sources: Center for Systems Science and Engineering (CSSE) at John Hopkins University, own calculations.

On this basis, and applying the rates of increase of cases in the experiences of the electoral countries versus the control countries, we have that the 29 % excess of cases presented by the electoral countries in week 4 after having held elections, in Venezuela would represent an estimated 12 500 to 14 375 daily cases of COVID-19.

For week 8, given that the evidence shows a 14 % excess of cases in electoral countries, in Venezuela, this would mean 16 750 to 19 262 COVID-19 cases per day for the first week of January 2021 and between 11 055 and 12 712 cases per day for the first week of February 2021.

In broader terms, holding the parliamentary elections in the first week of December would mean an "excess" in the 8 weeks following Election Day of 278 804 COVID-19 cases. If, also the official average fatality rate is maintained (0.8 %), we are talking about around 2 788 additional deaths than would be the case in a non-electoral scenario.

The 2020 municipal elections in Uruguay were held later than Venezuela's estimate described above. We include the figure with the evolution of new cases of COVID-19 in Uruguay as it helps to illustrate the effect of electoral events on the development of the epidemic.

Figure 3. Cases of COVID-19 in Uruguay.
Sources: Center for Systems Science and Engineering (CSSE) at John Hopkins University, own calculations.

By-election day, Uruguay had 37 cases of COVID-19 per million inhabitants. By week 4 following Election Day, Uruguay reported 93 cases per million populations, representing a 248 % increase in cases registered from week zero to week 4.

One of the variables we must take into account in this analysis is that not all countries held elections at the same time as the epidemic. In other words, we have places like Afghanistan or Guinea where the elections were held at the beginning of the epidemic, and others like the Dominican Republic where the electoral event took place in the middle of an exponential phase. We also have the cases of France, the Czech Republic, and Poland, which held their elections when there was apparent control over the disease and a decrease in cases. This last group is without a doubt where we can observe much more the influence of the electoral event on the behavior of the epidemic, since it is where we see that, after having controlled it, elections are held and the infection curves shoot up again.

Another element that is of vital importance when projecting what may happen in Venezuela in the coming months is that the Venezuelan health system lacks the robustness of other countries

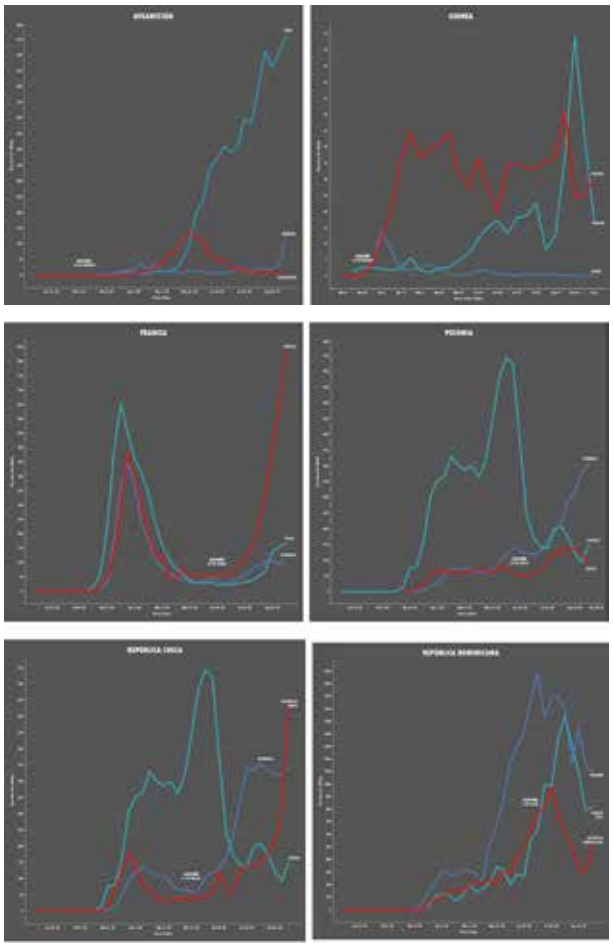

Figure 4. Cases evolution in electoral countries.
Sources: Center for Systems Science and Engineering (CSSE) at John Hopkins University, own calculations.

we are analyzing; therefore, the scenario of an increase of cases in an already collapsed hospital system is not at all encouraging. According to an analysis made by John Hopkins University (3), Venezuela would be 176th out of 195 in the world and last in the American continent in the General Index of Health System Readiness.

On the other hand, the monitoring of the National Survey of Hospitals in its application for COVID-19 has demonstrated the low capacity of specialized attention in intensive care units, as well as the low capacity to carry out CRP and the low provision of personal protection equipment for health equipment. This, although not new or attributable to the pandemic, does directly affect the response capacity of the Venezuelan State through its health system in an emergency like this and highlights the danger of an abrupt increase in cases.

In an environment as complex and full of uncertainties as to the one we are living in, it seems one of the few certainties that an electoral event will undoubtedly affect the development of an epidemic of this nature, always with a tendency towards the worsening of the situation. This, applied to a context like Venezuela's, in a complex humanitarian crisis and a health system incapable of handling "normal" demand, seems to be the perfect recipe for an unmanageable crisis. Unlike many of the previous crises that Venezuela has gone through, in its very complex history of the last 20 years, the COVID-19 epidemic is impossible to solve using repression. The patients and the dead are very difficult to hide and what happens in Venezuela due to the parliamentary elections with the development of the epidemic will be very evident.

Funding: None

Conflicts of interest: None

REFERENCES

1. Academia de Ciencias Físicas, Matemáticas y Naturales. 2do Informe COVID-19 en Venezuela. 09-09-2020. acfiman.org/2do-informe-COVID-19-en-venezuela-09-09-2020/
2. Institute for Health Metrics and evaluation. https://COVID-19.healthdata.org/venezuela-(bolivarian-republic-of)?view=total-deaths&tab=trend
3. 2019 Global Health Index https://www.ghsindex.org/

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S156-S171
DOI: 10.47307/GMC.2020.128.s2.4

The labor market in Latin America at the time of the COVID-19 pandemic: impacts, responses and perspectives

Roxana Maurizio*, Fabio Bertranou**

SUMMARY

Latin America is experiencing an unprecedented crisis in its labor markets because of the COVID-19 pandemic. This is reflected in a drastic contraction of employment, hours worked, and income. The outlook is even more worrying when considering that these impacts have been unequal and that the path of recovery, which is slowly emerging in the region, could be accompanied by a widening of labor and income gaps across different population groups. This crisis, therefore, would be exacerbating the high levels of inequality that existed before the outbreak of the pandemic, even though countries have made significant efforts to rapidly implement a set of policies aimed at sustaining employment and incomes. It is crucial to strengthen the labor institutional framework, particularly with regard to active labor market policies. Likewise, occupational health and safety have become a relevant element for any recovery strategies with safe and healthy employment.

Key words: *Latin America, COVID-19, employment, unemployment, labor policies, income policies, labor institutions.*

RESUMEN

América Latina experimenta una crisis sin precedentes en sus mercados de trabajo como consecuencia del COVID-19. Esto se refleja en una drástica contracción del empleo, de las horas trabajadas y de los ingresos. El panorama resulta aún más preocupante al considerar que dichos impactos han sido desiguales y que el lento sendero de recuperación podría ir acompañado de una amplificación de brechas laborales y de ingresos entre los diferentes grupos de población. Esta crisis, por lo tanto, estaría exacerbando los elevados niveles de desigualdad existentes antes de la irrupción de la pandemia, aun cuando los países han realizado importantes esfuerzos para implementar rápidamente un conjunto de políticas tendientes a sostener el empleo y los ingresos. Resulta crucial fortalecer la institucionalidad laboral, particularmente en lo que refiere a las políticas activas del mercado de trabajo. Asimismo, la seguridad y salud en el trabajo se ha convertido en un elemento relevante para las estrategias de recuperación con empleo seguro y saludable.

Palabras clave: *América Latina, COVID-19, empleo, desocupación, políticas laborales, políticas de ingreso, instituciones laborales.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.4

*Instituto Interdisciplinario de Economía Política de Buenos Aires (IIEP-BAIRES)
Universidad de Buenos Aires (UBA)-CONICET
ORCID: 0000-0002-5114-6531

**Organización Internacional del Trabajo (OIT)
ORCID: 0000-0001-7619-1841
E-mail: bertranou@ilo.org

Recibido: 05 de octubre de 2020
Aceptado: 13 de noviembre de 2020

Introduction: an unprecedented labor crisis

The COVID-19 pandemic has generated an economic recession in Latin America of unprecedented magnitude and extension. The latest projections by the International Monetary Fund (IMF) estimate a contraction in regional GDP of -9.4 % by 2020, with falls of -11 % in Mexico, -9.1 % in Brazil, -9.9 % in Argentina, -7.5 % in Chile, -7.8 % in Colombia and -13.9 % in

[1]This article is a summarized version of the note prepared by the authors in (1).

Peru. The September update by the Organization for Economic Cooperation and Development (OECD) for the G20 countries further sharpens the picture for Argentina, with a projected drop of -11.2 %, while suggesting a less pessimistic outlook for Brazil and Mexico, with projections of -6.5 % and -10.2 %, respectively.

At the same time, the outbreak of the pandemic in the region is taking place in a context already characterized by an economic slowdown and a slowdown or reversal of the labor improvements achieved in previous years, where structural characteristics associated with high labor informality, low average wages, significant wage gaps and weaknesses in social protection and health systems in terms of coverage and adequacy of benefits persist.

It is not surprising, therefore, that the macroeconomic crisis is having a very intense impact on the region's labor markets and, especially, on some segments of the population, amplifying existing labor and social gaps. One difference that emerges most strongly in this crisis is between those individuals and families who continue to receive all or part of their income and those who do not. This is not only a consequence of the fact that they have lost their jobs or are unable to develop their professions or work activities, but also because a significant number of people who continue to be employed are absent from their jobs without obtaining compensation, especially self-employed workers, or are receiving only partial compensation due to the reduction in the workday.

Given the scarce labor alternatives in this critical context and the supply shock associated with the confinement measures, job losses have not fully translated into transitions into unemployment but rather into exits from the labor force. This is why the short-term adjustments of labor market variables are being different from previous crises, in which, in general, there were strong increases in the unemployment rate and informality. Thus, the dynamics observed and discussed for this note may not fully reflect the dynamics that may occur in the medium and long term, when lockdown restrictions are relaxed and people re-enter the labor market.

The current labor scenario is even more worrisome because the expected recovery for 2021 and beyond is weaker than that seen in previous crises, and will likely occur at different speeds depending on how the prolonged pandemic affects different sectors of the economy. The IMF estimates growth for Latin America next year in the order of 3.7 %, significantly lower than the growth observed, for example, in 2010 (6.3 %) at the regional level, when the economy recovered more robustly from the 2008/9 crisis.

This paper provides an analysis of the labor dynamics caused by the COVID-19 pandemic, and the policy responses, including a typology of three types of interventions that seek to maintain jobs and support the incomes of workers and families. Finally, considerations are made about relevant issues that have emerged on the agenda of labor and social policies in the region.

Adjustments to job loss: transitions to unemployment and exits from the labor force

Given that the start of the pandemic in most of the countries of the region took place around the middle of March 2020, the most significant impacts on employment, unemployment, and economic participation, particularly, occurred during the second quarter of this year[2].

The average employment rate of the 9 Latin American countries for which updated information is available for the first half of 2020 (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, Paraguay, and Uruguay)[3] was 51.1 %, representing a reduction of 5.4 percentage points (pp) compared to the record for the first half of last year[4]. The drop is even more intense when comparing the first two quarters of 2020, which is about 9 pp for this group of countries

[2]It is important to note that analyzing labor dynamics in this particular context for the region as a whole is not without its difficulties because the pandemic spread in countries at different speeds. Therefore, the way in which statistics began to reveal these changes in the labor markets shows some differences.

[3]Together, these countries accounted for 80 % of total employment in Latin America and the Caribbean in 2019.

[4]Due to changes in the information collection mechanism (through telephone calls) in employment surveys and household surveys, there may be problems of comparability with data from previous periods.

(Figure 1)[5]. This represents a historic low and meant that about 34 million workers lost their jobs in the first half of the year.

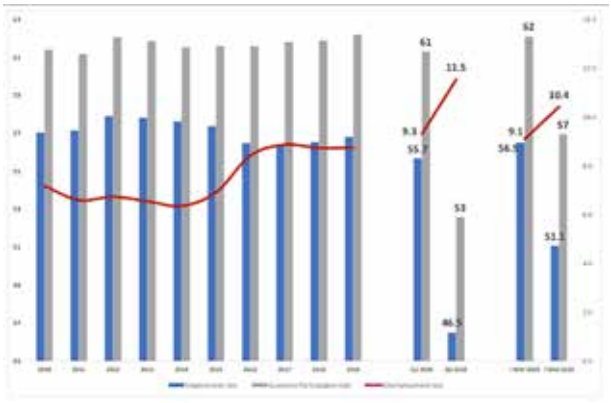

Figure 1. Employment rate, Unemployment rate, and Economic Participation rate in nine Latin American countries, 2010-2020.
Source: Author's elaboration based on SIALC/OIT.

This drastic fall in the magnitude of employment implied transits towards unemployment and mostly strong exits from the labor force. In effect, the participation rate also registered a record low, falling from 61.3 % to 52.6 % between the first and second quarters of this year in all nine countries. In the second quarter of 2019, this rate had been 62.2 %. This meant that 32 million people were no longer economically active during the first half of 2020. As noted, the significant fall in the economically active population (EAP) is due both to measures of confinement and social distancing and to unfavorable expectations about the functioning of labor markets that reduce incentives to seek employment for those who lost a job.

These transits, therefore, significantly moderated the impact of the reduction in employment on unemployment. This is why, unlike other economic crises, the unemployment rate very partially reflects the magnitude of the difficulties the region is going through and therefore needs to be complemented with other labor indicators to have a more complete picture of the underutilization of the labor force. Even so, this average indicator for the nine countries considered was 11.5 % during the second quarter, 2.2 pp higher than in the first quarter of this year. This translated into an additional 2 million or so people who were unemployed and continued to look for work. Once again, and even under these circumstances, this figure represents a maximum that even exceeds the values recorded in previous crises in the region.

Table 1 shows the variation in the employment rate between the first and second quarters of this year, broken down for the 9 countries considered. It also shows the percentage that the increase in the number of unemployed people and the increase in those outside the labor force represent the drop in the number of employed people. It can be seen that the reduction in employment was expressed in massive net outflows from the labor force, with these outflows representing 94 % of total job losses. The remaining 6 % implied increases in the number of unemployed people. The cases of Paraguay and Uruguay show a difference with the rest of the countries, as the total number of unemployed even decreased (also in Brazil, although very weakly)[6], so the only group that increased in a net way has been the non-economically active population[7].

Therefore, if the population that lost its job - in some cases temporarily - had remained in the labor force (as unemployed) the impact on the unemployment rate would have been significantly higher. In the group of countries considered, it would have reached 24 % in the second quarter of this year. What this counterfactual exercise is intended to reflect is the magnitude of the potential labor supply that is likely to return to the labor market as job search restrictions are relaxed. This situation has begun to be verified

[5]Although the comparison between these two quarters may be affected by the presence of seasonality, it is used to observe in greater detail the short-term impacts of the economic crisis.

[6]It could be conjectured that this responds to a discouraging effect because the unfavorable economic situation discourages people who lost their jobs from continuing to actively search. This assumption will have to be evaluated later in time based on the availability of information for the coming months.

[7]There is still not enough information to identify the transits that people have actually made between these labor states during the first half of this year in these countries. That is why the net variations in the number of people in each one of them are compared.

Table 1

Change in Employment Rate and Transitions to Unemployment or out of the Workforce. Nine countries in Latin America, Quarter 1 - Quarter 2 2020[8]

COUNTRY	Employment rate			Percentage of transits from occupation to:		
	Q1	Q2	Var. (pp)	Unemployment	Out of the labor force	Total
Argentina	52.5	42.8	-9.7	2 %	98 %	100 %
Brazil	53.5	47.9	-5.6	-1 %	101 %	100 %
Chile	57.3	45.6	-11.8	11 %	89 %	100 %
Colombia	53.8	43.7	-10.2	34 %	66 %	100 %
Costa Rica	55.5	43.7	-11.8	51 %	49 %	100 %
Mexico	57.8	47.0	-10.8	3 %	97 %	100 %
Paraguay	65.6	61.6	-3.9	-15 %	115 %	100 %
Peru	66.6	41.3	-25.3	2 %	98 %	100 %
Uruguay	55.6	52.9	-2.8	-14 %	114 %	100 %
TOTAL	55.7	46.5	-9.2	6 %	94 %	100 %

Source: Author's elaboration based on SIALC/OIT

with effective impacts on labor indicators and can be seen more clearly from the availability of data corresponding to the third and fourth quarters of 2020.

The briefness of workforce outflows during the first months of the pandemic in 2020 appears to be supported by the significant increase in people who are in this situation but declare themselves available for work. In Mexico, for example, in a context where the total non-economically active population increased by 30 % between March and April of this year, the increase in the subset of available persons was 240 % while the number of those not available decreased. Between those two months, the first group went from representing 15 % to 40 % of the non-EAP. In June, although lower, it still accounted for 29 % of the total non-working population. In Uruguay, on the other hand, in March, about 19 % of the inactive people who were available to work but did not seek work declared that they did not do so because of the economic situation. This percentage rose to 36 % in May, 28 % in June, and 22 % in July.

Therefore, to the extent that these transits into the labor force are more intense than the generation of jobs, the rate of unemployment will probably continue its upward trend. The climate of great macroeconomic uncertainty, together with unfavorable expectations regarding economic growth for the region in 2021, makes that scenario more likely.

Employment contractions have not been of equal magnitude for the different population groups in each of the countries surveyed. In fact, in all cases, it was women, more than men, and young people (up to 24 years of age), more than adults, who suffered, in relative terms, the most intensely from the loss of employment. Thus, while the range of falls in male employment goes from 3 % to 34 %, the female fall extends from 7 % to 43 %. Likewise, in the four countries for which we have additional information on the evolution of employment by age group, the loss of employment among adults has hovered between 5 % and 20 %, but has reached a maximum of 45 % among young people[9].

[8]For example, in Chile, outflows from the labor force accounted for 89 % of the total drop in employment while transits to unemployment accounted for the remaining 11 %. In Uruguay or Paraguay, on the other hand, unemployment instead of being a "net recipient" also reduced the number of people in this state, those who joined the flow of workers who lost their jobs and left the workforce.

[9]The perspective could be different if the variations in percentage points were analyzed due to the significant divergences that population groups exhibit in the initial employment rates.

As mentioned, these trends significantly exacerbate the employment gaps that existed before the pandemic. In the case of women, this is associated with their greater presence in certain economic sectors that have been heavily affected by this crisis, the higher rate of informal employment (which, as will be seen below, has been reduced more intensely than total employment) and the growing difficulties in reconciling paid work with family responsibilities in a context where education and care services have been profoundly altered by health measures to distance and reduce people's mobility.

As noted in (2), by 2019 women were over-represented in some of the sectors of activity severely affected by this crisis, such as hotel and restaurant services, other service activities, and the household sector as employers, where the average female presence for the region was in the order of 61 %, 59 %, and 81 %, respectively[10]. Indeed, the different sectoral composition of employment between men and women has been one of the key factors through which the impacts of employment reduction were channeled according to gender. For example, in Costa Rica, the five most affected productive sectors accounted for more than half of female employment in 2019. Among them, domestic service, which reduced total employment by almost 46 % between April and June (3). The contraction of employment in this sector has also been very abrupt in the case of Chile, where the drop was almost 48 % between those same months (4). In Bolivia, for its part, while total employment in urban areas fell 16 % between February and May, it fell 22.% in domestic service.

Additionally, the proportion of formal salaried workers in the mentioned sectors of activity is extremely low: between 19 % and 26 %. This panorama is even more complex if we consider that, on average, the segment of workers in high-risk activities (that is, sectors where the level of economic activity has been greatly reduced) or medium-high, where these activities are included, receive reduced labor income, below the average for all workers. This is associated, in part, with the higher incidence of informality among salaried workers and self-employment, especially self-employment where the incidence of informal workers is also very high.

Consequently, the loss of employment in these productive sectors with a greater presence of women is associated with both the abrupt fall in the levels of economic activity and the greater instability of certain jobs. The fact that labor income is relatively low suggests that those who lose their jobs do not have sufficient prior financial resources to sustain adequate living standards in the absence of a source of labor income.

Finally, while women also predominate in activities with a low risk of employment reduction in the context of the pandemic, such as health and social services, they are disproportionately exposed to risks of infection and/or extended working hours. In particular, health care workers, many of whom are women, face increased professional demands as family care demands have increased (5).

In the case of young people, the greater loss of employment is also associated, at least in part, with their sectoral insertion (6). In particular, the incidence of youth employment is high in hotels, commerce, personal services (except for public administration, health, and education), and construction, activities strongly affected by the pandemic.

Additional information reports dissimilar impacts among employees with different levels of education. In Metropolitan Lima, for example, in the May-July quarter, the year-on-year reduction in the total number of employed persons was 40 %, but the loss reached 52 % among those with an elementary level of education, while it was 32 % among those with a university level of education. In Costa Rica, there was also a more intense reduction among those with incomplete secondary education or less. This may be linked to the higher probability that people with lower levels of education have of inserting themselves in informal jobs, the lower probabilities of teleworking, and its higher incidence in certain productive sectors strongly affected by this crisis.

As mentioned, a significant part of the job losses resulted in outflows from the labor force.

[10]Although the presence of women in the education and health sectors, which were less affected by the crisis, is also high, this has not compensated for the heavy loss of employment in other economic activities.

Again, these transits have not been homogeneous among the population, but have been stronger among women, youth, and those with lower levels of education. While falls in the case of men range from 3 % to 30 %, in the case of women the range is 11 %-42 %. A similar picture emerges among young people for whom job losses have led to exit from the workforce. In particular, the reduction in the economic participation rate of people between 15 and 24 years of age has represented 2 to 3 times the drop registered among people 25 years and older.

While, as noted, the significant reduction in employment is not entirely reflected in increases in unemployment, the unemployment rate increased in almost all of the countries considered. Again, and as a correlate of the above, these transits have been different according to population group. In effect, the increase in unemployment has been proportionally more intense among men, which means that the abrupt loss of jobs, particularly among women, implied a greater intensity in leaving the labor force, while men remained in greater proportion in search of employment.

A similar perspective appears when comparing adults with youth, where the gap in unemployment incidence narrowed between both groups. In particular, adults - with lower rates of previous unemployment than young people - experienced relative increases in this indicator that represented between 1.3 and 2 times more than those recorded by people under 25 years of age.

It is therefore clear that the "adjustments" in the labor market in the face of unemployment have been different between men and women, on the one hand, and between young people and adults, on the other. These movements could slow down or even reverse previous trends such as the growing incorporation of women into the world of work, due to the more pessimistic scenario and the fewer opportunities that the labor market presents, and will present, in addition to the already mentioned fact that education and care services have been severely affected, increasing the weight of family responsibilities.

This situation adds to the greater historical difficulties experienced by young people in the region's labor markets. Indeed, they face greater labor intermittency explained, in part, by the intense inflows and outflows of the labor force. The greater occupational instability, in turn, is associated with their greater prevalence in informal, precarious, low-skilled activities. For those adolescents who enter the labor market early and, in general, for young people with low work experience and less development of work skills, the high occupational turnover attempts against the possibility of accumulating specific qualifications, thus making their future work trajectory more difficult. In turn, the lower experience reduces, especially in contexts of low labor demand, the probability of accessing a job and increases the chances of being fired. This situation may be accompanied by an increase in the discouragement effect that results in fewer incentives both to seek employment and to begin or continue studies.

Finally, when both dimensions -gender and age- are combined with socioeconomic level, the labor panorama becomes even more complex, since young low-income women tend to be more likely to move and stay out of the labor force, or tend to face greater difficulties in accessing a job. Therefore, these movements in the labor market can generate significant unfavorable distributional impacts not only in the short term but also in the long term.

The drastic contraction of hours worked, increased suspensions, and absenteeism

As was pointed out, in the context of this economic crisis with its characteristics, neither the unemployment rate nor the employment rate is complete measures of the significant difficulties faced by the labor markets. That is why another key indicator is the hours worked. Indeed, the variation in the average number of hours worked by the working-age population may be affected not only by the destruction of jobs (which reduces to zero the hours worked) destined for unemployment or inactivity but also by temporary suspensions (which also lead to zero this value) and by the reduction of the working day (which partially reduces it). Therefore, the average hours worked reflect in aggregate the overall underutilization of the labor force, not only because it is not occupied but also because it is not fully occupied.

This is why the ILO has been estimating the

loss of hours worked in the world and by region. The latest estimates from September (7) show that Latin America is the region with the greatest contraction in working hours worldwide, with an estimated loss of around 20.9 % for the first three quarters of 2020 compared to the fourth quarter of 2019. This figure is almost double the global estimate of 11.7 %. It is interesting to note that, consistent with the evolution of other labor indicators already analyzed, the greatest contraction in hours worked was seen in the second quarter of this year (-33.5 %) while in the third quarter the fall was less intense (-25.6 %). Once again, the gaps with the world average are very significant, where the reductions were 17.3 % and 12.1 % in these two quarters, respectively.

In the countries of the region with available information, it can be seen that the reduction in hours worked and the increase in absenteeism -that is, those who have not been working in the reference period but who continue to have a labor relationship with their employer or have expectations of returning to work in the case of independent workers- was especially intense in the second quarter of the year. The employment support measures implemented by the region's countries have helped maintain the employment relationship even when workers are temporarily not performing the tasks.

In Colombia, for example, the proportion of informal self-employed workers without income rose from 4.2 % in May 2019 to 30 % in May 2020. Among formal self-employed workers, these figures were 1 % and 21 %, respectively. A similar panorama, although with less intensity, is observed among wage earners where these values were 1 % and 18 % among the informal, and 0.4 % and 5.2 % among the formal.

In Argentina, on the other hand, the rate of suspensions of formal employees in the private sector has experienced a growing trend and recorded historical highs since March. In July 2020, the percentage of suspended workers was 8.4 % (0.8 % in March 2020) while 19 % of companies had applied suspensions (5 % in March). In turn, in this same country, the proportion of absent workers in total employment was 21 % in the second quarter of this year, compared to 2.6 % in the same period in 2019.

In Paraguay, as of June 18, 2020, some 94 000 jobs had been suspended, equivalent to 18.5 % of formal workers in the private sector. In Chile, absentee workers represented around 19 % of total employment in the May-July 2020 moving quarter, more than doubling its value in the last 12 months. In Mexico, the incidence of temporarily absent employment with employment ties was only 3.8 % of total employment in July 2019. This figure rose to 22 % in April of this year. Although after that peak this percentage began to fall, in July of this year it was double that of the previous year.

In Uruguay, the employed temporarily absent from their jobs represented 9.4 % of the total employed in March, having been 5.4 % in the same month of the previous year. This figure rose even higher in April, reaching a maximum of 23.7 %. Although the figures for the following two months were lower than this record (16 % in May and 10.6 % in June), in all cases they continued to be high in the year-on-year comparison. The latest available figure for July was 8.6 %, lower than the March record (9.4 %). On analyzing the composition of the reasons for absence in April, suspension or quarantine due to COVID-19 was the main reason (explaining around 37 %), followed by those covered by unemployment insurance. In the following three months this last cause explains most of the absences (37 % in July) while the first one reduces its relative importance (15 %).

In addition to the higher incidence of absenteeism, the reduction of the effective working day among the employed present has also been another way of adjustment in some countries of the region.

In Costa Rica, 20.5 % of people were underemployed in the second quarter of 2020, representing an increase of 10.3 pp over the same quarter of the previous year. In turn, 26.8 % in the second quarter worked fewer hours per week than they normally do. In Mexico, the underemployment rate was 7.9 % in July 2019 and rose to 30 % in May of this year, with 20 % in June and 18.4 % in July.

In Metropolitan Lima, the visible underemployment rate also experienced a sustained increase in recent months in relation to the February-April 2020 quarter, when 13.3 %

of the employed population involuntarily worked less than 35 hours a week. That value was about 18 % in the May-July quarter of this year.

Finally, in Chile, in the May-July quarter, the number of effective hours worked fell by 32 % compared to the same quarter last year. In Paraguay, underemployment did not vary significantly in the second quarter of 2020 (7.7 %) compared to the same period in 2019 (7.9 %). However, it was somewhat higher than in the first quarter of this year (6.6 %), explained by what happened in rural areas.

The adjustment mechanism turned off: the massive loss of informal and self-employment jobs

In this exceptional context, some adjustment channels in the labor markets are cushioned while others are exacerbated. It is frequent that when salaried employment falls, self-employment plays a counter-cyclical role. In fact, this has been the case in recent years and previous crises. However, this "traditional mechanism" is weakened or disappears in this situation, where these occupations as well as informal wage-earners have been strongly affected.

A significant portion of the independent workers was not framed in the exception of the distance and reduced mobility and, in turn, many of them are self-employed who did not work from home and for whom the possibility of teleworking is reduced. In turn, the transit between this type of occupation and economic inactivity is usually very frequent in the countries of the region. This is explained both by a lower rate of retention of informal jobs or self-employment (greater occupational instability) and by higher rates of exit from the labor force once they leave these types of jobs. These behaviors were exacerbated in the context of confinement. Given this panorama, the countries of the region have quickly implemented or expanded income transfer programs to reach the most affected population, many of whom were previously employed informally.

In Costa Rica, for example, self-employment accounts for 22 % of total employment but accounted for around 28 % of the drop between the first and second quarters of 2020 (3). The impact of the pandemic has also been differentiated in Mexico, where the proportion of dependent employment increased by about 6 pp between March and May of this year compared to the reduction in the other occupational categories (8). Something similar was seen in Argentina, where the share of self-employment fell from 22.3 % to 19.8 % between the first and second quarters of this year, after experiencing an upward trend during 2019.

In Colombia, however, a different situation arises, since between May 2019 and the same month in 2020 the number of self-employed workers fell by 19 %, while salaried workers fell by about 26 %. When a detailed analysis is made of each of these two groups, it can be seen that it was the informal workers, that is, the workers of private sector companies and domestic workers, who suffered the greatest reductions (-50 %), followed by the formal self-employed (-32 %). However, these figures must be considered together with those corresponding to the hours worked. In particular, informal self-employed workers are the group with the highest rate of absence from work, where about one-third of them did not work for temporary reasons, mostly associated with confinement and restrictions on mobility (9). Once again, this points to the insufficiency of a single labor indicator to explain this situation and, therefore, the need to consider a broad set of indicators in order to better dimension and understand the specific impacts of this crisis on the region's labor markets.

In that sense, as mentioned, the dynamics that have followed formal and informal employment differ, in many cases, from those observed in previous economic crises. In fact, despite the measures to contain formal wage-earning employment implemented in a large number of countries, which have undoubtedly contributed to limit job losses, the data emerging from administrative records also show significant drops in this type of occupational insertion. In fact, the evidence seems to suggest that the negative impacts of the economic crisis on formal employment were more intense in April and May. In the cases for which subsequent information is available, a certain stability is observed in the number of formal employees. As will be analyzed later, some of the countries in the region have implemented mechanisms to sustain this type of

employment. Therefore, the dynamics of formal employment in the coming months will depend, among other factors, on the maintenance of these policies together with the evolution of the level of activity and the demand for labor.

With even greater intensity than that observed in the fall informal jobs, there has been a reduction in informal wage employment and, even more so, in self-employment, most of which is also informal. This greater contraction has meant that the rate of informality has fallen (temporarily) in all countries with available information, in the context of the widespread collapse in demand for labor, especially in the early months of the pandemic (Figure 2).

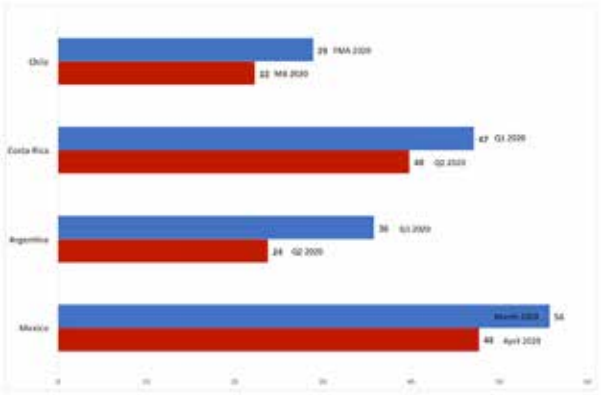

Figure 2. Informality rate before and immediately after COVID-19, selected Latin American Countries*.
* The blue bars reflect the situation before COVID-19, while the red bars reflect the situation immediately after.
Source: Author's elaboration based on employment and household surveys of the considered countries

Therefore, the counter-cyclical adjustment mechanism on the part of informal jobs, often observed in the region in the face of weak formal job creation, has been strongly cushioned at this particular juncture. This is explained by a multiplicity of factors. Among others, the higher rate of informality was shown by some productive sectors that had to stop their activities because they were not included among the essential ones. In addition, it is easier to interrupt a non-registered wage-earning relationship and the greater incidence of this type of occupation in smaller, less productive businesses, which find it more difficult to endure long periods of inactivity. On the other hand, and as mentioned, the measures to sustain formal employment are also a fundamental factor in explaining these divergent dynamics.

In summary, the region's labor markets have experienced the impacts of the economic crisis as a result of the COVID-19 pandemic mostly during the second quarter of this year. This crisis is exceptional in both its magnitude and characteristics. This is even more problematic considering that informal workers, women, young people and those with lower levels of education are those who have generally experienced the loss of a job with greater intensity. Given that these workers, on average, are located in the lower half of the distribution, that they generally do not have sufficient economic support to endure long periods without a source of employment, and that income from work represents a majority of family income, the contraction in the demand for labor ends up having very unfavorable distributional impacts.

The massive loss of labor income

As a result of the sharp contraction in employment and hours worked, the world and the region have been experiencing a deep contraction in income from the labor market. Recent estimates by the ILO (7) suggest a global loss of 10.7 % in labor income during the first three quarters of 2020, which is equivalent to 5.5 % of the first three-quarters of global GDP in 2019. However, consistent with the above, the contraction in total labor income is significantly higher in Latin America, on the order of 19.3 %.

In Metropolitan Lima, nominal income from labor fell in the March-May 2020 moving quarter, on average, 8.1 % compared to the same quarter in 2019. This, added to the contraction of employment, resulted in a fall of more than 50 % in the wage bill. This downward dynamic continued to be strongly observed in the following months, with a 48 % year-on-year drop during the May-July quarter.

According to the ILO (10), the level of income fell back to the levels of 2014, that is, six years ago. In Mexico, the proportion of employed people with incomes up to the minimum wage increased from 22.0 % to 26 % between March and April 2020.

In Argentina, for the first time, the variation in the average income of formal employees in the private sector between March and May was negative, with the fall being even greater in real terms due to inflation. This, in part, reflects the wage reduction for private-sector employees who were suspended, but also the wage reductions for some of those who continued to work.

According to Chile's Remuneration Index, average labor income decreased by 1.3 % during April compared to the previous year. This drop was even higher in the transport and storage sector (-4.9 %) and professional activities (-3 %). In turn, in the May-July quarter of 2020, 34 % of those employed declared that they had experienced a drop in their income while 58 % kept it unchanged and 2 % obtained an increase. It is interesting to observe this behavior separately among the absent employed (19 % of the total employed) and the present employed. Among the former, as expected, the loss of income amounts to 58 %, of which 31 % had no income. Among those present (81.1 % of the total employed) these percentages were 28 % and 2 %, respectively. Self-employed workers and employers are the most affected groups, with 68 % and 67 %, respectively, suffering a contraction in income. They are followed by informal workers (34 %), domestic service (24 %), and formal workers (23 %). Finally, and as additional evidence of the unequal impacts of these reductions, self-employed and domestic service personnel were the ones who reported the highest percentage of zero labor income.

Consequently. given the context of very weak labor demand, it is very likely that adjustments in the region will be further channeled through real, but also nominal, wage reductions, especially in the informal part of the labor market. In turn, given that labor income represents, on average, between 70 % and 90 % of total family income, these reductions result in heavy losses in the monetary resources obtained by households with significant impacts on poverty levels.

National policy responses to sustain employment and provide economic security

As a response to the crisis, numerous direct actions have been implemented in Latin America to support businesses, maintain jobs, and compensate for the loss of income of households, especially those most affected and which are generally in the informal economy. As previously mentioned, multiple aspects make this crisis unprecedented. Its magnitude, scope, speed, and characteristics demand coordinated responses in terms of health, labor, economic and social protection. To this end, countries have resorted to mechanisms created in previous crises, but have also implemented new responses taking into account the specificities of the current situation and the need to cover a broader set of population than in previous experiences.

The main policies and measures concerning three areas, not necessarily exclusive but complementary, could be stylistically classified into three groups: i. measures and monetary benefits within the framework of strategies to sustain labor relations; ii. unemployment benefits and iii. other programs to provide economic security through monetary benefits to the individuals and families most affected by this crisis that are not in the sphere of formal salaried labor relations and/or are not covered by social security contributory programs (Table 2). The severity of the crisis has led the countries in general to implement a combination of these instruments; for example, within the framework of unemployment insurance, subsidies for the payment of benefits for the suspension of activities and/or reduction of the workday have been incorporated.

The policies and instruments described below do not exhaust the set of public interventions that were also expressed through active fiscal responses, flexible monetary policies, direct actions to specific economic sectors, credit and financial support to companies, protections for workers in the workplace, and the use and revitalization of instruments that allowed consensus to be reached through social dialogue.

Table 2

Typology and instruments of the main policies implemented in Latin America to sustain employment and provide economic security to families and individuals

Retention of employment in the informal economy	**Economic security for the unemployed**	**Economic security for families and individuals**
Instruments - Payroll subsidies - Unemployment Insurance Benefits - Other support to firms conditioned to the maintenance of employment	Instruments - Contributory unemployment insurance	Instruments - Conditional benefits - Unconditional (emergency) benefits - Other monetary and non-monetary benefits
Recipients: - Employed persons (full and part-time, absent)	Target group - Unemployed	Target group - Unemployed, inactive and workers in the informal economy - People with no or low income regardless of their work status
Examples: Argentina: ATP Uruguay: unemployment insurance Chile: unemployment insurance Costa Rica: Bono PROTEGER Paraguay: subsidy through IPS Colombia: payroll subsidy Dominican Republic: FASE	Examples: Uruguay, Chile, Brazil, Argentina, Colombia: contributory unemployment benefits paid by social security institutions and unemployment savings	Examples: Chile: Bono COVID-19, IFE Argentina: IFE Brazil: EmergencyAid Colombia: Solidarity Income Costa Rica: Bono PROTEGER
Features to be highlighted: - Transience - Sustainability	Features to be highlighted: - Relatively low coverage (either by its contributory nature or insufficient financing) - Relatively low performance	Features to be highlighted: - Speed of response - Transitions - Coverage, registration systems, duplication of benefits/beneficiaries

Benefits to support formal employment

Support measures and incentives to maintain the labor link are crucial because, on the one hand, they prevent its discontinuity from generating losses of specific and general job skills as well as future search costs for both sides of the labor relationship but also, on the other hand, because maintaining this link could facilitate a faster economic recovery.

In this area there have been several innovations and programs in the region that seek through payment to the company or the worker, generally with funding from general income taxes, social security contributions or a combination of both, the payment of such benefits either through social security institutions, the tax authority or another agency.

In particular, two types of interventions can be differentiated: on the one hand, payroll subsidies and, on the other, the extension of unemployment insurance to cover other events beyond unemployment due to dismissal. In fact,

this second modality has been extended to cover both total suspension and reduction of working hours or partial suspension of activities. Some insurances already had these options, while other countries incorporated this modality, thus allowing to adapt the schemes to the diverse realities that the different economic sectors and their companies have been facing.

Within the first group, Paraguay established a subsidy for formal employees who earn up to 2 minimum wages and whose work contracts are suspended due to the cessation of activities by the pandemic. The amount of the subsidy corresponds to 50 % of the minimum wage and is financed by the National Government through an increase in the resources allocated to the Social Security Institute (11). Colombia allowed companies and individuals who certify a decrease of 20 % or more in their income to apply in May, June, July, and August for a subsidy equal to 40 % of the minimum wage for all workers for whom they contribute in the Integrated Contribution Settlement Plan (PILA), without exceeding the number of employees registered in February 2020 (9).

In Peru, workers included in a complete work stoppage continued to have the benefit of the Social Health Insurance - EsSalud. In addition, the private sector employer receives a subsidy of up to 35 % of the gross monthly salary of its employees whose salaries do not exceed 1,500 soles (US$424). The Dominican Republic launched the Employee Solidarity Assistance Fund (FASE), a monetary transfer to sustain employment in the sectors most affected by the pandemic and where the government contributes 70 % of the salary from a minimum value of RD$ 5,000 pesos to a maximum of RD$ 8,500 pesos per month per worker.

In Argentina, the National Government established the "Emergency Assistance Program for Work and Production" (ATP) that provides a 95 % reduction in employer contributions to the Argentine Integrated Social Security System (SIPA) and a compensatory salary allocation in private companies. At the same time, it establishes the prohibition of dismissals without just cause and for the causes of lack or decrease of work and force majeure and suspensions for such causes, first until the end of May, but then it was extended for six more months (12). In September the sixth payment of the program was approved with some differences from the conditions previously stipulated. In particular, the companies that can apply for this benefit are those with less than 800 workers, which register a nominal recovery of their turnover of up to 40 % but a real negative variation compared to the pre-pandemic situation. ATP 6 offers the possibility of access to the complementary salary for critical sectors and credit that can be converted into a subsidy for companies that incorporate workers.

The "Benefício Emergencial de Preservação do Emprego e da Renda" in Brazil is also a program to sustain the income of formal employees with the temporary suspension of contracts or reduction of working hours and income. The amount of the benefit is calculated based on the employee's salary of the last three months and corresponds to a percentage of the Severance Insurance to which the worker would be entitled in case of dismissal.

Within the second modality, Uruguay has a contributory unemployment insurance, and to respond to the pandemic situation, the conditions of entry were made more flexible or the duration of the benefits was extended. The existing regime was thus complemented with a special regime that covers all sectors of activity that have Wage Councils, including both monthly contracts and day laborers and those who have exhausted the subsidy under the general regime. The benefit was also extended to those workers with partial suspension, with a partial reduction of the hours worked (at least 50 % of the working day) and to those workers who carry out activities with a total suspension of tasks (subject to compliance with certain requirements), maintaining the employment relationship. Within this framework, unemployment insurance reached a maximum number of applications of around 82 000 in March 2020, compared to a maximum value of 16 000 applications per month in previous years. This figure decreased in the following months. During the period March-June about 77 % of the applications corresponded to the cause of suspension and less than 10 % to dismissal (13).

In Trinidad and Tobago, the Wage Assistance Grant provides $1,500 (USD220) for 3 months to dependent workers who have been affected by the pandemic at work.

Finally, in Chile, through the Employment Protection Act, additional resources have been injected into the Unemployment Solidarity Fund and the criteria for eligibility for insurance have been temporarily modified. In particular, specific circumstances are contemplated, including the temporary closure of companies, staff suspensions, or temporary reductions in working hours to access this benefit. Therefore, the worker maintains the employment relationship while receiving income from the unemployment insurance while the employer must continue to pay the worker's provisional and health contributions. The basis for the calculation of the benefit is the average remuneration of the last 3 months (while for the calculation of the insurance in case of unemployment it is the last 12 months). While the replacement rates in the case of contract suspension are the same as in the case of unemployment, in the case of a reduction of working hours the employer pays the worked part and the insurance covers half of the non-worked part (14).

Unemployment insurance

In the proposed typology, the "pure" unemployment benefits are those provided by the unemployment insurance. Among the modifications that contributory insurance has undergone in the context of this crisis, to expand its horizontal and/or vertical coverage, are the relaxation of certain requirements for access to them, the extension of the duration of benefits, the increase in replacement rates, the increase in benefit amounts and the use of individual accounts for reasons other than those originally contemplated

In Argentina, unemployment insurance provides workers registered with social security who has been legally dismissed without just cause with a monthly payment, family allowances, and medical coverage while they are unemployed. In the context of this crisis, in April the minimum and maximum amounts were raised to $6,000 and $10,000, respectively. At the same time, in view of the extension of the quarantine, the Ministry of Employment, Labor and Social Security established a new extension of the expiration of the benefits until December 31, 2020 (after the one established in March and May), for all those cases with expiration between August 30 and November 30, 2020. The number of beneficiaries remained relatively constant at around 120 000 people.

In Chile, in July, the national government announced a project of transitory modifications to the unemployment insurance. On the one hand, access requirements are relaxed by reducing from 6 to 3 contributions made in the last 12 months. At the same time, those workers with available balances in their individual accounts can access their funds regardless of the months they have contributed. At the same time, replacement rates are increased from month 2 onwards. On the other hand, the "Benefit for self-employed workers" was created, which includes a subsidy and an interest-free loan to self-employed workers who have submitted ballots for at least three months in the last year or six months in the last two years and who, additionally, in the month they apply for the benefit have experienced a drop in their income of at least 30 % for the period April 2019 - April 2020. The subsidy, which is not considered income and, therefore, is not subject to taxes nor is it considered for social security purposes, covers a maximum of 70 % of the reduction in income, this percentage decreasing with the amount of income (14). In September of this year, through Law 21 269, domestic workers were incorporated into the unemployment insurance system.

In Ecuador, before the Humanitarian Support Law came into effect on June 22, 2020, workers independent relationships who were laid off had to wait 60 days of being unemployed to apply for unemployment insurance. Now they can apply from the tenth day of being unemployed and payments are made automatically (15).

In Costa Rica, the Law of Delivery of the Labor Capitalization Fund was approved in April, which allows for the withdrawal of the Labor Capitalization Fund in the event of suspension of the work contract or reduction of the workday that implies a salary decrease (3). In Colombia, while the economic emergency lasts, the salaried workers who continue with the labor relationship but who have suffered income cuts may withdraw each month from their severance account an amount that allows them to compensate for such reduction (9). In Peru, on the other hand, free availability for workers of up to S/2 400 of

the compensation funds for the time of service (CTS) and additional retirement measures for workers with a complete suspension of work were established.

Cash transfer programs to informal workers and families

Another important group of strategies and policies aims at compensating, at least partially, the loss of monetary resources for families in a situation of vulnerability, many of them in informality and beyond the condition regarding occupation and type of labor insertion. To this end, non-contributory income transfer programs were expanded and/or created. Some of them are described below, without attempting to make an exhaustive review of all the experiences in the region.

In Argentina, in March, the amount of the Universal Allowance per Child (AUH) and the Universal Allowance per Pregnancy (AUE) was doubled, with an additional outlay of $13.4 billion. In addition, a bonus of up to $3,000 (USD 45) was granted to approximately 4.6 million retirees who received a single pension benefit until reaching $18,892, which implied an outlay of approximately $13.8 billion. However, the largest income transfer measure is the "Emergency Family Income (IFE)," created towards the end of that month, liquidated through the National Social Security Administration (ANSES), and destined for informal workers, domestic workers, and single-income or single-income workers in the first two categories. The beneficiaries of the AUH and the AUE were the first to be included in this new benefit. The amount of the IFE is $10,000 (59.3 % of the minimum wage). The first payment was made between April and May 2020. The second payment was made during June and July and a third during August and September. The number of benefit holders has been around 9 million, a figure that compares to the 4.3 million children and adolescents receiving the AUH.

Colombia already had two conditional transfer programs: Families in Action and Youth in Action. During the first months of the pandemic emergency, the national government authorized the payment of two extraordinary transfers, one in March and the other in May, to strengthen both programs. At the same time, the Solidarity Income program was created for families that are not beneficiaries of those two programs or Colombia Mayor, and VAT refund and are in a situation of vulnerability.

Ecuador, through its Ministry of Economic and Social Inclusion, established the Family Emergency Protection Bond for a few months, aimed at those who do not have access to social security with an income below the unified basic salary, and at those affiliated with the peasant insurance. In Bolivia, the Family Bonus was created, a transfer of 500 Bolivian pesos (USD70) per month to low-income families with children attending the initial, primary, and secondary educational level.

In Uruguay, contributions to the Uruguay Social Program and the Equity Plan were increased, programs focused on protecting poor households. In Costa Rica, the PROTEGER Bond was implemented, which consists of temporarily providing an economic amount according to the condition of labor vulnerability in which the person finds him/herself as a result of the national emergency caused by COVID-19.

In Paraguay, the Social Fund was established to provide a subsidy of 25 % of the minimum wage to independent informal workers or employees of micro, small, and medium-sized enterprises. The so-called "Pytyvõ" program reached approximately 1,100,000 beneficiaries by mid-June 2020. In September 2020, a new phase of this program began, with four additional monthly payments, reaching 770 000 potential beneficiaries. At the same time, the coverage of the "Tekoporá" program and the Elderly program was expanded (11).

In Peru, different alternatives were also implemented to reach the population most affected by the crisis. On the one hand, the "Yo Me Queen en Casa" bonus, a monetary subsidy for households in situations of poverty; on the other hand, the "Independiente" bonus for households with low-income independent workers affected by the pandemic; the "Bono Rural" for rural families in situations of poverty or extreme poverty; the "Bono Familiar Universal" bonus for those vulnerable households that were not covered by the previous bonuses and the "Contigo" program for severely disabled people in situations of

poverty, in which the payment of a bimester was advanced in March-April.

In Chile, the COVID-19 Emergency Bond and the Emergency Family Income were created. The former provided a one-time subsidy to households receiving the single-family subsidy, households receiving other transfers from the Seguridades y Oportunidades system, and households belonging to the 60 % most vulnerable households according to the Social Registry of Households. In those households in which some member receives a retirement pension or is a formal worker, the exclusion was indicated. The Emergency Family Income is a monthly transfer to households belonging to the 80 % most vulnerable (14).

In Brazil, the "Auxilio Emergencial" was implemented, a money transfer for informal workers, individual micro-entrepreneurs, the self-employed and the unemployed, belonging to families whose monthly income per person does not exceed half the minimum wage (R$522.50), or whose total family income is up to 3 minimum wages (R$3135). Households benefiting from the Bolsa Familia program receive the benefit automatically. The program consists of 5 payments of R$600 and is doubled in the case of single-parent mothers. In September, the continuity of the program was announced until December 2020, but for an amount of R$300.

Final considerations

The COVID-19 pandemic has clearly demonstrated the constraints faced by labor and social policies in countries with a high presence of informality and relatively weak labor institutions. This is compounded by challenges in terms of fiscal space and institutionality, including aspects such as government and public-private coordination and technological and logistical capacities to provide the goods, services, and economic benefits required by the affected populations, especially the most vulnerable, including the restrictions imposed by geographical location, for example, being far from urban centers where there is the greater installed capacity for health services. Some national and sub-national governments quickly decided to deliver food directly in order to guarantee food security before the impossibility of rapidly expanding or implementing cash transfer programs. Such is the case of Chile, which at the end of May began delivering 2.5 million boxes of food. Subsequently, this program was expanded, reaching 5.6 million in August. Private initiatives by employers' organizations and private companies and the community work carried out by many unions and other workers' organizations also joined in.

The crisis clearly shows the need to move towards greater income coverage because of job losses, especially in the informal economy. Until the beginning of the pandemic, the region had a rich experience in social protection programs of conditional and unconditional cash transfers, although in most cases with strict targeting criteria, thus reaching mainly the first deciles of income in the distribution of the population's income.

Given the magnitude of the crisis, it also strongly reached the middle sectors of the population, who were also severely affected in their income. Thus, in terms of managing transfer policies, they have faced the challenge of expanding and improving the registration of these individuals and households that have also become vulnerable. The rapid and timely intervention has not only made it possible to limit the immediate loss of income and the lack of access to basic goods and services but also to limit the amplification of these negative shocks in the medium term.

Additionally, another challenge refers to the best intervention strategies to support economic recovery, and the insertion of people who have lost or seen their sources of labor income severely reduced. The countries of the region have different schemes of active labor market policies with different designs, requirements, and target population, implemented from different state levels, which could, a priori, fulfill the double objective of providing income to people with greater difficulties in entering an occupation, while at the same time helping them to achieve quality labor market insertion. However, their scope is still very insufficient, and the effects in terms of the possibilities of obtaining formal employment after going through the transfer program are usually low. The challenge at this juncture is even greater given the strong

uncertainty regarding the characteristics and intensity of the post-pandemic growth paths.

The crisis opens the opportunity to restructure labor and social protection institutions to advance in strategies that allow for a more permanent labor guarantee and social protection basis, as well as to structure a comprehensive employment policy that accompanies or is part of the economic recovery strategy. The adaptation of some labor institutions such as unemployment insurance can already be considered an important institutional advance. In this sense, the design of a system of protection against unemployment, which includes the suspension and reduction of working hours as a reason for receiving benefits, is making it possible to improve coverage while maintaining the employment relationship. These mechanisms will surely be very appropriate for future systemic or sectoral crises that the economies of the region may face.

A key dimension, which should play a greater role in the strategy for recovery with employment, relates to occupational safety and health, particularly in the area of biological risks caused by the COVID-19 pandemic. Countries have been incorporating and gradually increasing provisions for policies, institutions, businesses, and workers to take the necessary preventive measures, but given that the overlap between pandemic and possible recovery scenario is the most likely, there is no doubt that a strengthening of occupational safety is what will allow a safe and healthy return to activities. Other dimensions, such as psychosocial risks, have also taken on significant importance, for example, in segments that have seen teleworking intensify. Thus, the quality of work, the sustainability of companies, and their productivity have begun to be more closely linked to these factors and areas of labor policy.

Funding: None

Conflicts of interest: None

REFERENCES

1. OIT. Panorama Laboral en tiempos de la COVID-19. Impactos en el mercado de trabajo y los ingresos en América Latina y el Caribe, Nota Técnica. 2ª edición. OIT, Lima. Setiembre. 2020.
2. OIT. Panorama Laboral en tiempos de la COVID-19. Impactos en el mercado de trabajo y los ingresos en América Latina y el Caribe, Nota Técnica, Primera edición, OIT, Lima. Julio. 2020.
3, OIT. Panorama Laboral en tiempos de la COVID-19. Costa Rica. Impacto de la COVID-19 sobre el mercado de trabajo y la generación de ingresos, Nota Técnica País, OIT, Lima. 2020.
4. OIT. Panorama Laboral en tiempos de la COVID-19. Chile. Impacto de la COVID-19 sobre el mercado de trabajo y la generación de ingresos, Nota Técnica País, OIT, Lima. 2020.
5. OIT. Nota informativa de la OIT "La COVID-19 y el sector de la salud, OIT, Ginebra. 2020.
6. CEPAL-OIT. Informe CEPAL/OIT. Nro. 23, octubre 2020 (en prensa).
7. OIT. ILO Monitor: COVID-19 and the world of work. Sixth edition. Updated estimates and analysis, OIT, Ginebra. 2020f.
8. OIT. Panorama Laboral en tiempos de la COVID-19. México. Impacto de la COVID-19 sobre el mercado de trabajo y la generación de ingresos, Nota Técnica País, OIT, Lima. 2020g.
9. OIT. Panorama Laboral en tiempos de la COVID-19. Colombia. Impacto de la COVID-19 sobre el mercado de trabajo y la generación de ingresos, Nota Técnica País, OIT, Lima. 2020h.
10. OIT. Panorama Laboral en tiempos de la COVID-19. Perú. Impacto de la COVID-19 sobre el mercado de trabajo y la generación de ingresos, Nota Técnica País, OIT, Lima. 2020i.
11. OIT. Panorama Laboral en tiempos de la COVID-19. Paraguay. Impacto de la COVID-19 sobre el mercado de trabajo y la generación de ingresos, Nota Técnica País, OIT, Lima. 2020j.
12. OIT. Panorama de la protección social en América Latina y el Caribe en tiempos de pandemia, OIT, Lima. 2020k.
13. OIT. Panorama Laboral en tiempos de la COVID-19. Argentina. Impacto de la COVID-19 sobre el mercado de trabajo y la generación de ingresos, Nota Técnica País, OIT, Lima. 2020l.
14. Montt, G, Ordoñez F, Silva I. Protección ante la desocupación en Chile. Desafíos y oportunidades luego de una crisis sistémica, Informe Técnico OIT Cono Sur No.15, Santiago. 2020.
15. Casalí P, Vallejo F, Lucio R, Velásquez M. Ecuador. Panorama de la Protección Social: gobernanza, cobertura y sostenibilidad. Oficina de la OIT para los Países Andinos, Lima. 2020.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S172-S187
DOI: 10.47307/GMC.2020.128.s2.5

Policy responses to COVID-19 in Latin American countries: A universal basic income?

Dr. María Antonia Moreno[1]

SUMMARY

The wide socioeconomic impact of the COVID-19 pandemic in the world has led to several political initiatives to minimize it, both in developed and developing countries. One that has gained some notoriety is the idea of transferring cash to citizens with a broader scope in terms of universality and inclusiveness - or a Universal Basic Income (UBI) - than what these types of programs have typically had in the past. This article describes the implications that adopting a UBI policy could have in Latin American countries (LAC), based both on the UBI's analytical considerations and the weak starting socioeconomic conditions that these countries would face in adopting a UBI policy. We conjecture that, given these initial restrictions, the full implementation of a UBI program in the region does not seem feasible at this time; and that, given the profound impact and slow recovery they face in front of the pandemic's impact, a compromise between a UBI and a less universal and unconditional cash transfer could meet both the need to face the economic emergency in the short term, as well as the financial capacity to address it.

Key words: *Universal basic income, basic emergency income, temporary basic income, Latin America, COVID-19, pandemic.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.5

ORCID: 0000-0002-7785-8692
[1]Profesor Asociado de la Universidad Central de Venezuela, Investigador del Instituto de Investigaciones Económicas y Sociales (IIES) de la Universidad Católica Andrés Bello (UCAB), Venezuela. Email: mariantonia13ster@gmail.com

Recibido: 09 de octubre de 2020
Aceptado: 13 de noviembre de 2020

RESUMEN

El amplio impacto socioeconómico de la pandemia COVID-19 en el mundo ha dado lugar a varias iniciativas políticas para reducirla al mínimo, tanto en los países desarrollados como en los países en desarrollo. Una que ha adquirido cierta notoriedad es la idea de transferir dinero en efectivo a los ciudadanos con un alcance más amplio en términos de universalidad e inclusividad (ingreso básico universal (IBU), que lo que este tipo de programas han tenido típicamente en el pasado. En este artículo se describen las implicaciones que la adopción de una política de IBU podría tener en los países de América Latina (ALC), basándose tanto en las consideraciones analíticas del IBU como en las débiles condiciones socioeconómicas de partida a las que se enfrentarían estos países al adoptar una política de IBU. Conjeturamos que, dadas estas restricciones iniciales, la plena implementación de un programa de IBU en la región no parece factible en este momento; y que, dado el profundo impacto y la lenta recuperación a la que se enfrentan ante el impacto de la pandemia, un compromiso entre el IBU y una transferencia monetaria menos universal e incondicional, podría satisfacer tanto la necesidad de hacer frente a la emergencia económica a corto plazo, como la capacidad financiera para abordarla.

Palabras clave: *Renta básica universal, renta básica de emergencia, renta básica temporal, América Latina, COVID-19, pandemia.*

INTRODUCTION

The wide socio-economic impact of the COVID-19 pandemic in the world has led to various policy initiatives to minimize it, both

in developed and developing countries as well. One that has acquired some notoriety is the idea of transferring cash to citizens, although with different scope in terms of universality and inclusiveness.

From the start of the pandemic until now, among the proposals, only two have turned operational. UK, Colombia, and Argentina are among the countries with initiatives proposed by specific political groups. In the UK, over 170 opposition politicians, in a letter dated March 19, 2020, to the Chancellor of the Exchequer HM Treasury, called for the government to approve a universal basic income (UBI) during the COVID-19 pandemic (1). In Colombia, some senators asked the parliament to approve an Emergency Basic Income to deliver to vulnerable people during the COVID-19 emergency pandemic in the country (2). In Argentina, a government project to implement a Universal Basic Rent is pending (3).

On the operational front, only Spain implemented a program that could be aligned with the UBI approach. Law on a Minimum Living Income Law was approved last May and the transfers started in June (4). A pilot in Germany should be mentioned, though. The Institute for Economic Research, based in Berlin, started the "My Basic Income" project of delivering 1 200 euros a month to 1 500 people randomly selected and for three years, starting last August up to December 2024 (5). Two proposals, with a greater regional scope, were also presented; one sponsored by the United Nations (UN) that recommends the adoption of a Temporary Basic Income in developing countries (6), while the other one proposes a Basic Emergency Income in the Latin American and Caribbean region (7).

This article describes the implications that the adoption of a UBI policy could have in Latin American countries (LACs), taking into account: first, that they come from experiencing a weak socioeconomic position before the COVID-19 pandemic; and, second, that such initial condition would make it more difficult to adopt a UBI policy, given its demands on fiscal resources and possible unwanted impacts in the long term.

The discussion is organized as follows: In the first section, we present the UBI concept, main features, and criticisms. It is perceived that implementing a pure UBI looks difficult, which explains why, despite being a concept developed since long ago, it has not spread in practice.

In the second section, we examine two proposals of a sort of combination of universal conditioned cash transfers aimed at mitigating the effects of policies directed to control the spread of the COVID-19 pandemic in LACs. We arrive at two important considerations: first, given the initial conditions of LACs, we conjecture that moving towards a pure UBI in LACs does not look feasible at the moment; and, second, given the deep shock and slow recovery they face, an intermediate solution between a UBI and a less universal and unconditional cash transfer could meet both the need to face the economic emergency in the short term, as well as the financial capacity to address it.

A Universal Basic Income. A policy response to the COVID-19 Pandemic? or A long-term welfare policy?

…at least for the moment, a UBI should be taken seriously, but not necessarily literally… (8)

The following comments on UBI's conceptual aspects and implications are based on the recent World Bank publication on the subject (8).

The IBU is conceived as a government payment in cash to each individual, regardless of whether they work or not and without distinction of their socioeconomic situation. Being universal means the absence of eligibility restrictions, except perhaps those related to national identity and age. So far, considering these basic features – name-ly, cash transfer modality, universality, and lack of conditionality –, only two UBI initiatives have put into place (Mongolia and the Islamic Republic of Iran) and for a limited time. Indeed, their implications make the authors saying that *…the move toward an unconditional cash-based transfer is plausible, though…it may not be without controversy…* They are discussed next.

An individual IBUis considered superior to other social assistance programs in that it would: give more freedom to its beneficiaries to spend it as they see fit; lack stigma issues related to poverty status; offer economic security by becoming a stable source of income, and foster the financial development and human capital accumulation. Nonetheless, concerning its unconditional nature,

establishing a uniform UBI for everyone is incompatible with equity objectives and may confront a low willingness of the society to accept an income delivery in exchange for nothing. On the other hand, with the use of unconditional transfers, expected externalities that conditional transfers permit through changes in the behavior of economic agents would be lost with a UBI; for example, the correction of market failures in cases of insufficient provision of certain public goods and services, such as health, nutrition, among others.

At an operational level, a UBI's institutional management is simpler than that of conditional transfers; problems of moral hazard related to the household definition and the administrative follow-up that targeted transfers require are minimal; the beneficiaries' transactional costs are low; it promotes banking in low-income strata, and allows taking advantages of electronic banking. Despite these advantages, a UBI is not without complications. Although it would bear low administration costs, it's total fiscal costs would be high. Its tax financing would make it no longer universal; particularly, a uniform UBI would favor the lower-income strata with lower marginal tax rates, but it would harm those of the highest affected strata with higher marginal tax rates. Due to this, a UBI could raise strong political opposition. Likewise, the existence of fragile institutions might give rise to exclusion errors and, as such, impede access to the benefits of the IMU.

Some macroeconomic effects of a UBI include facing risks of price increases in certain goods and services induced by higher demand in weakly integrated markets; loss of purchasing power that might originate in unstable macroeconomic environments; the UBI's frequency, spending patterns should be taken into account too. The net impact of migration should also be considered, although its costs would not always have to be greater than its benefits.

Given those shortcomings, the political viability of a UBI may have to hinge on embedding some form of co-responsibility in its design. A decision to combine the UBI with targeted social programs, to enhance the universality of the transfers and maintain at the same time some kind of co-responsibility would involve some challenges: it would face the conventional problems attached to targeting; would oblige citizens to choose between them; and eliminating some existing schemes might not be politically feasible while adding the IBU to them would raise the fiscal costs.

…As a radical solution, a UBI is bound to be thought-provoking…(8)

The present narrative of the UBI has diverse antecedents. The first attempts to propose a basic income date back to the 16th century. They argued for the establishment of a minimum income for the poor, either to avoid the effects of negative social behaviors forced by poverty (9), or as a matter of the moral exercise of charity (10). Poor laws in England and public welfare in Europe, which began to be implemented at the end of that century, were fed by these proposals.

The idea of a sufficient income for survival took hold over time, but new conceptual bases emerged. A natural inheritance of wealth created in the past that cannot be attributed to someone in particular (11) and of a form of liberation of labor from the domination of capital (12). Likewise, the incipient ideas of a subsistence income for each member of the community stand out, regardless of whether they work or not (13), that no one should be forced to work (14). At the same level of social justice in Vives (10), the moral right of each person to access the means of subsistence was invoked (15,16). However, some incipient considerations on conditionality for the enjoyment of a basic income started to appear next, such as its insertion into a national program of social security and protection of children (17). The initial foundations of social security, as a means to reduce inequality, poverty, and the risks that such situations entail, had been anticipated already (18); but, instead of addressing an unconditional basic income, the idea moved towards that of a social benefit related to workers' contributions.

While the Social Security consolidated in practice, especially in Europe, liberal economists in America started defending the idea of a less conditional minimum income (19,20). A proposal of a negative tax income prompted the simplification of all social care programs and the eradication of inefficiencies that derived from conditioning for access to their benefits (21);

while the idea that work should not be used as an income reference emerged as well (22).

The proposals and arguments defending an unconditional basic income also gained strength in Europe. In the Netherlands, the rationale of paid work's dehumanizing nature was used to propose the reduction of working hours (23). In Great Britain the Basic Income Research Group was formed in 1984 and, after various changes, has remained as the Citizens' Basic Income Trust since 2017 (24); its main arguments focus on the failure of full employment policies and the need to separate people's income from work commitment. In Germany, the discussion also strengthened among academics, politicians, trade unions, and public officials, on the basis that the UBI is a new category that not only allows individuals to stop being subjected to the conditions of the labor market but also that the time they release is part of their well-being (25). In France, various arguments supported the idea of an income decoupled from work due to: the value of working time is different from that of labor income (26); the displacement of workers caused by the progressive automation of production (27); and the intangibility of the value of work that prevents it from equating it to wages (28).

Currently, the simpler approach that the availability of a UBI guarantees more freedom to their recipients, has displaced the previous narratives (29)[1]. Therefore, neither social justice nor poverty reduction is the main objective of a UBI under this approach; although, in practice, it would contribute to achieving them. In essence, with a UBI, people would not have to choose between the obligation to work for a salary and working or engaging in voluntary and/or more socially useful creative work.

Some details allow us to weigh the conceptual scope of this approach. First, the UBI is seen as a complement to the income that people would receive from other ordinary sources, including those coming from the social welfare system. Particularly, its implementation would require the absence of poverty, to guarantee the condition of freedom mentioned previously; a UBI that coexisted with situations of poverty should not be considered as efficient. Second, it is recognized that UBI tax financing would have different effects for the low- and high-income strata; in the first case, the substitution effect of lower marginal tax rates would lead to an increase in the supply of work, while the opposite would occur in the second one. Third, although it could happen that the net effect would be of a reduction in the labor supply, rather a redistribution of jobs would be expected; still, if the former occurred and the financial sustainability of the UBI were to be threatened, the increase of some taxes (on capital and wealth, especially inheritances) should be considered. Finally, it should be expected that the establishment of a UBI would not replace public programs directed to education, health, and other services, nor would it lead to a broadening of the public sector.

From a political economy point of view, the UBI could lead to rejection from employers, based on their expectations of wage increases that would lead to a reduction in the labor supply. Likewise, it is possible to expect the unions to oppose the loss of power spaces; yet, more than to the UBI itself, this loss could be attributed to the new structural features of the role of work in production processes. Potential moral hazard and labor ethic problems would probably cause rejection to a UBI, but this argument ignores the right of low-income workers to enjoy the same freedom of high-income sectors. A political problem might arise if massive migrations are attracted to countries that implement the UBI; this would require solving discrimination by the exclusion of non-residents and the effects on labor markets of migrants forced to work with low wages. In a different vein, potential problems might arise if mass migrations were attracted to countries that implemented the UBI; this would require solving the exclusion caused by discrimination against non-residents and for the negative effects on labor markets coming from the migrants' lower wages.

In general, it is considered that no experiment could convince about the application of a UBI, since its limited scope and temporary nature, would not allow it to appreciate the development of the expected behavior. The recommendation of

[1]Philippe van Parijs is among the most prominent representatives of the UBI as a mechanism of economic freedom. See the listing of his work at https://uclouvain.academia.edu/PhilippeVanParijs/CurriculumVitae. He is also co-founder of the Basic Income European Network (BIEN) https://basicincome.org.

van Parijs (29) points to a gradual implementation in both advanced and developing countries. Some skepticism still prevails for the macroeconomic impact of the UBI, mainly because its limited practice leaves unanswered big questions on its general equilibrium, distributional and welfare effects. This is especially true when a distinction is made between the neutral financing of the UBI, or when it would replace other social programs (30).

A brief summary

Provoking as it is, the IBU concept presented here, with a long history behind, shows that its successful implementation faces non-trivial implications. Are the latter beneath the limited practice of the UBI? Answering this question is difficult, because being the UBI's practice limited, there only remain the insights from the experience of conditional cash transfer programs, whose results prevent the formation of definitive and unique conclusions and make them extensive to those of the unconditional cash transfers.

Yet, the relevance of such a question remains, and gives rise to other ones. First, on what basis anyone should have the right to receive it, and for how long? Appealing to the original intention of the UBI – namely, more economic freedom – might not be enough, if the expected behavior of its beneficiaries would not materialize and cause distortions in the supply of labor.

Second, what level should the UBI reach, should it complement the people's income? It looks like the initial socioeconomic conditions of the countries might obstacle its implementation, particularly, in developing countries affected by situations of high inequality and poverty.

Third, what conflicts might it cause between different economic sectors? The fact that the UBI's tax financing might involve important redistributive impacts, might cause political rejection. Also, the lasting impact of specific taxes to finance the UBI on employment and the public finance might be considerable.

Because of those implications, it can be conjectured that, for now, the UBI might be both a temporary and of restricted universality instrument of welfare programs. A recent recommendation of a UBI for LACs is in that perspective.

A UBI for LACs?

The policy dilemma between containing the spread of the COVID-19 pandemic through self-isolation, quarantine and social distancing, and fostering economic activity poses significant challenges for any country. Although the net impact of the pandemic will depend on the quality of the measures and the citizens' response to them, it is highly probable that the course of contagion will last longer than estimated at the beginning of the pandemic, that part of the income's active population is lost, and that some lasting effects will hit harder to the countries least prepared to face them. LACs are among the latter.

As part of a set of measures aimed at mitigating the impact of COVID-19 control policies on the economies of the region, the Economic Commission for Latin American and the Caribbean Countries (ECLAC) has proposed a temporary Basic Income in the form of cash transfers for the region, as a means to move gradually towards a UBI (7). How prepared are LACs to undertake a UBI, why should they follow this pattern and how much would a program like this cost? As their initial conditions show, the implementation of a UBI require enormous efforts to overcome the significant losses of income caused by the COVID-19 pandemic and the structural deficiencies of the prevailing economic models and social protection systems in the region.

Initial conditions

After important advances in the 90s and 2000s, the LACs have been showing economic and social stagnation in recent years, especially in the last quinquennium (Box 1). These results place them among the countries with the worst macroeconomic and socioeconomic performance in the world (Box 2). Furthermore, in the absence of proactive and effective policies, it is projected that poverty and inequality will increase even more, as a result of the COVID-19 pandemic's controls (Box 3). Although such a performance might be associated with a possible loss of

Box 1 Macroeconomic and social performance before the COVID-19

The COVID-19 pandemic came at a time of weakness and socioeconomic vulnerability in LACs. Indeed, this pandemic arises at a time when the region's macroeconomic and social indicators were already showing stagnation and/or reversion signs.

The deterioration in GDP growth rates in LACs began to be observed since 2010 when the average for the region reached almost 6 %; between 2014 and 2019, the average per year was 0.8 %, approximately 8 times the 2014 value (31). It should be noted that these levels are the lowest since the 1950s (32).

The same trend shows the average annual variation rate of the region's exports of goods and services; from the peak reached in 2010 (9.2 %), it falls to an average of 2.5 % between 2012 and 2019 (31).

In the fiscal sphere, with ordinary public revenues, affected by the impact of lower GDP and export growth, the countries of the region tended to make more intensive use of public debt to finance part of their fiscal deficits. Public debt as a proportion of GDP increased by almost 3 percentage points on average per year, from less than 30 % to 50 % of GDP and, correspondingly, the account of interest on this debt also did so by around 1 % of GDP during the same period (32).

The deterioration in macroeconomic performance affected efforts to reduce poverty and inequality, which had improved significantly between 2000 and 2014. In the case of poverty, the rates had dropped from 48 % in 1990 to 28 % in 2014, and from 22.6 % to 12 % in the case of extreme poverty between the same years. However, since 2014, they began to show some signs of reversal; with an increase of 2 percentage points between 2014 and 2018 (32).

The improvement in equity is evidenced by the simple average of the Gini coefficient which, for a group of 15 countries in the region, had fallen from 0.477 in 2002 to 0.465 in 2018, with a reduced rate per year of 0.9 %. However, the reduction in the indicator weakened between 2014 and 2018 (0.6 % per year), behavior consistent with the less favorable economic performance of the region since 2014 (33).

Informality in the region, at levels of more than 50 % of the active population, constitutes a relevant aspect in the determination of poverty in the region, because it entails instability in family income, low-income levels in cases of low-skilled independent jobs, and a high proportion of child and youth employment (more than 70 % of the population aged between 5 and 17 years (7) and limited access to contributory social security services (health and employment insurance, pensions).

Other inequities in the region include limited access to social protection, particularly to universal public health and education services; as well as the enjoyment of subsidized public services of electricity, water, social housing programs, telephone communications, and internet services. Bancarization is also precarious and/or only generalized in basic products that do not allow taking advantage of the advantages of digitization and internet banking. Gender inequality in the region is evidenced in women's labor income that is 25 % lower than that of men and high rates of domestic violence and femicide (7).

Central government spending on health averaged 2.2 % of GDP in 2018, way below the one recommended by the Pan American Health Organization. Facilities and coverage are also insufficient. The number of hospital beds per thousand people remains in general below the world average in almost 1/3 (3 beds). The participation in health insurance plans of employed aged 15 years and older was only 57.3 % in 2016, while the out-of-pocket health expenditure was 37.6 % of total health expenditure (7).

In education, the lags in the use of communication technologies stand out. The use of the internet has extended in the region, but not equally among countries and income groups. The percentage of inhabitants in most South American countries reaches 80 % in mobile internet connection, while it drops to 30 % in Central American countries. The connectivity rate among income groups shows a significant gap between the poorest and the richest, 60 percentage points in the widest cases, and 17 points in the narrowest (7).

Box 2 International comparison

LACs' macroeconomic and welfare indicators for the last five years not only contrast with the most favorable achieved in the immediately preceding decade but also because they are among the worst in the world. Not only did the average rate of change in GDP fell considerably; its level was lower than that of other regions.

Compared to the 2014-2019 growth rates of LACs, those of South Asian (SA) were more than eight times higher, five times in East Asia and Pacific (EAP), 3 times Middle East and North Africa (MENA), and in Sub-Saharan Africa (SSA), and twice in Europe and Central Asia (ECA) (31).

The contribution of the Latin American region to world export growth is also one of the lowest. The annual average for the 2014-2019 period is just 0.2 %, compared to 1.5 % for the EAP and ECA countries (each) and 0.5 % and 0.3 % for the MENA and South Asian countries, respectively (31).

In the fiscal area, the average annual government revenue as a percentage of GDP for the 2014-2019 period was 23.9 %, similar to the world average (24 %), but almost 10 percentage points of the average of the countries of Europe and Central Asia (31). For some countries, the public debt / GDP ratio was below the maximum prudential limit of 40 % (Peru and Paraguay), but for others, the ratio widely exceeded that limit (Argentina 89 %, Brazil 76 %, Costa Rica 61 %) (32). Obviously, these countries will face severe restrictions to obtain credit in external markets in the near future and probably much more in the context of the COVID-19 pandemic.

In the comparison of well-being indicators, the group of Latin American and Caribbean countries also occupy the worst position. The variation rate of the average real GDP per capita for the 2014-2019 period is not only the lowest, but it is the only one that turns negative (-0.2 %). Meanwhile, those of the high, middle- and low-income countries averaged 1.5 %, 3.2 %, and 1.2 %, respectively, during the same period (31).

Despite the decline in inequality levels in Latin American and Caribbean countries, they are still among the highest in the world. In some countries of the region inequality stopped decreasing or even started to increase (since 2010 in Mexico, since 2013 in Brazil, and since 2014 in Argentina), (34); a fact that reveals that the different dimensions of the problem continue to constitute barriers for the inclusion and development of the population.

effectiveness of their targeted social programs, other restrictions might be underneath those results as well: punctual shocks, like the global financial crisis of 2008-9 that may have caused lasting negative economic effects, on one side; and structural factors on the other hand, especially, the high vulnerability of economies that strongly depend on exports of commodities whose prices are subject to big swings. The latter explains to a great deal, the region's recent poor growth rates and the lack of enough financial resources to boost social assistance programs.

Indeed, LACs have not exceeded their historical development patterns; and their industrial policies, fiscal space, social program networks, and institutional settings have consistently lagged.

Box 3 Some projections

Since March of this year, when the World Health Organization (WHO) declared the COVID-19 pandemic, initiatives began to emerge from various institutions to measure the socioeconomic impact of COVID-19 and the preparation of projections on the economic and social performance of the countries in the context of the development of said pandemic. Obviously, the estimation of projections on the results of the macroeconomic performance and the social management of the countries may have margins of error due to the uncertainty about the development of an epidemic that still does not show signs of stabilization and control and about the time it will take to do so.

Initial projections (March-April) for world GDP growth for 2020 were more optimistic than those published more recently (June-August). In April, the IMF (35) placed it at -3 %, but reduced it in June to place it at -4.9 %; the World Bank (36), for its part, projected -5.2 % for June, a somewhat larger drop. For Latin America and the Caribbean, the projected reduction levels are higher, and likewise, the most recent ones are less favorable than that estimated for the region in March-April. By then, it was estimated at -5.3 % (32), but in June the projected reduction reached -7.0 % (36); in August the estimated reduction is even greater, equal to -9.3 %. In some countries, the situation is more unfavorable than in others, with Venezuela leading the list with -22.9 %, followed by Peru with -13.1 %, Argentina with -11 %, Mexico with -10.5 %, and Brazil and Ecuador with -8.4 % and -8 %, respectively; In the group for which a smaller drop is projected in 2020 are Paraguay and Uruguay with rates of -3.7 % and 3 %, respectively (37).

Regarding exports, estimates last April projected substantial reductions in their growth rates, with oil companies being the most affected (-15.9 %) and followed in order of importance by mining products (-12 %) and agro-industrial products (-5 %). The reduction in oil prices was estimated at -47.9 % last June, while that of non-energy raw materials was estimated at -5.9 % (7).

These projections are based on the contraction of global demand - especially from China -, the deep fall in oil prices last March and the interruption of trade in the case of global value chains. In the latter case, both Brazil and Mexico are among the most affected countries also because their manufacturing sectors are the largest in the region. In the same way, there is a great contraction for the Caribbean countries due to the fall in tourism, severely restricted by restrictive policies for travel related to containing the contagion of COVID-19. Closely related to these projections, less availability of access to international financing and intensification of exchange rate depreciation is expected, as a result of the lower inflow of external resources to the region.

The impact of real contraction is estimated to be very severe on tax revenues, especially in the countries of South America. The primary fiscal result is projected in very important negative values, ranging between -3.3 % (Uruguay) and 12.6 % (Brazil), with intermediate values that average around 6 % for the other countries (36). This entails significant budgetary restrictions that will limit the fight against poverty and inequality in the region. In fact, for last July it was estimated that unemployment will increase in 2020 by 13.5 % (34), 10 percentage points more than what ECLAC (32) had projected in March (3.4 %); and an increase in the Gini coefficient for the region in 7.8 % (34).

other regions of the world. Particularly, trade patterns based on static comparative advantages – raw materials and low value-added manufactures – translate into little export dynamism and make the region very vulnerable to the volatility of its exports' prices. These weak fundamentals add to a structurally limited fiscal capacity. Tax revenues are determined by low average effective tax rates and unnecessarily high tax expenditures (high informality, indiscriminate and inconsistent exemptions and exemptions, and loopholes that facilitate tax evasion and avoidance) that reduce the tax bases. On the other hand, the tax structure tends to be regressive, which in many cases implies high marginal tax rates for sectors with less taxable capacity. The social security systems, due to the high level of labor informality, tend to be deficient from the budgetary point of view.

The persistence of high informality, large gaps in access to social security and protection programs, unequal access to education that limits productivity growth, deficient and insufficient health services, and high health out-of-pocket costs, the exclusion of socially focused programs are among the main structural deficiencies that characterize social protection systems in the region.

Increasing incomes for the richest and expanding middle-income strata involve additional problems; in the first case, because it reinforces inequality, and in the second, because the improvement has not been high enough to meet their expectations in terms of better living conditions.

To these aspects add others that pose new risks of reinforcing different forms of inequality; among them stand out: the impact of climate change and natural disasters on the poorest; migratory movements and automation of tasks that tend to benefit the richest countries with highly skilled workers and a deep inequality between them and the poorest countries.

In a broader long-term and global vision, LACs face additional challenges. A possible greater permanence of teleworking and the increase in production processes based on robotics – which in fact, have been developing since before the pandemic – imply technological demands that exceed a scarcely diversified export vocation and a specialization in products with little value-

added. The relocation of foreign investment[2] might also occur by the trade barriers that have arisen between the US and China. This might give rise to changes in the structure of international trade, for which adaptation requires preparation that in LACs would take longer than in others. Finally, the transition towards a global energy consumption pattern based on non-polluting sources raises the reorientation of the production schemes of the oil-producing countries, whose presence in Latin America is relatively important. Therefore, the expectations of the "new normal" for LACs are those of a longer period of economic contraction and, of greater fiscal difficulties for their performance in the medium and long term. They have to choose between continuing the validity of the development style followed up till now or reinventing themselves, embarking on a new route that guarantees sustainability in growth and higher levels of well-being, based on respect for the environment and social solidarity.

Why going "universal"?

Until now, LACs have focused on using conditional cash transfers (CCTs) as part of their social assistance policies and, specifically, as a more secure and direct means of achieving objectives of poverty and inequality reduction. CCTs became popular in the late 1990s and nowadays there are more than thirty such programs in about twenty countries of the region (see Appendix). Due to their targeting nature, the beneficiaries of CCTs are expected to behave in some expected way; the conditions typically include compliance of children and young's enrollment in the educational system and family's enrollment in health programs.

In the face of the COVID-19 pandemic, CCTs are not enough, as the loss of income affects a wider range of the population. For this reason, ECLAC took the initiative to recommend a set of policy measures with broad coverage as a step in the direction towards universal protection.

In general, these policies area have been directed to an immediate implementation of fiscal stimulus measures to avoid the stoppage of companies and the loss of jobs; guarantee the supply of essential products (food, energy), medicines and medical equipment and universal access to COVID-19 tests and medical care and treatments for those infected; guarantee liquidity and credits at low-interest rates; alleviate the economic conditions of people through deferral of credits' payments, rents, and public services; and the payment of temporary cash transfers to meet basic needs and support household consumption (7). These cash transfers are seeing as a means to reach those living in poverty and the ones that face risks of falling into poverty as well (low-income non-poor and lower-middle-income strata) and to move even further: to turn the transfers into a UBI.

Going from targeting to universal in LACs is seen as making real the exercise of people's rights to free access to social protection and, therefore, as established in the objectives of both the 2030 Agenda for Sustainable and the International Labor Organization (ILO) Social Protection Floors Recommendation No. 202 (38) and the 2019 Regional Agenda for Inclusive Social Development (39), (Box 4). Among ILO´s guidance points (38), there highlights the recognition and primary responsibility of States to give universality of protection, "*based on social solidarity*" and including by "*setting targets and time frames*"; and ECAC's Regional Agenda includes among its principles "*universalism that is sensitive to differences*" (39).

In practice, going universal in social protection in developing countries would not be new at all, since some health coverage has been progressively taking this direction. The lessons of this experience show mixed results, whose fundamentals should have to be considered. Some studies show positive evidence on financial

[2]Offshoring, a business practice consisting in the localization of manufacturing investment in foreign countries, facilitated by the existence of cheap labor and the availability of safer and more efficient transportation, started to show some sign reversions since the last decade. Reshoring - creation of added value in the countries of origin – and nearshoring – outsourcing in a nearby country, preferably a neighboring country – have been taking place as an answer to eroding advantage of lower salary costs, pressure of companies to innovate and increase their competitive capacity, risks of locating assets abroad and protection of intellectual property. Emerging technologies – as digitalization production processes (additive manufacturing, information and communication technology, nanotechnology) – and experience gained on the risks of global chain values have facilitated the move toward these practices, that project a manufacturing production progressively concentrated in local and regional hubs closer to both developed and developing countries (32).

protection, but others find weaker or even negative impacts (40). Yet, the examination of this particular field of social assistance presents many methodological challenges[3] that have to be overcome to get enough confidence that "going universal in health" is worth the effort and, more importantly, that this experience should be extended to the rest of social programs.

How much a UBI would cost in LACs?

ECLAC proposes a Basic Emergency Income (BEI) in LACs, which could transform later into a UBI (7). The specific features of this BEI are a cash transfer, a duration of six months (minimum three months), five different targeting criteria from the most to the least expensive ones: 1. everyone (universal), 2. all persons living in poverty, 3. all informal workers aged 18–64 years, 4. all children and adolescents aged 0–17 years and 5. all persons aged over 65. In each case, the costs are estimated for people under poverty (Pov Line) and extreme poverty lines (ExtPovLin), respectively (Table 1). The costs are also compared to those of current CCTs for the different groups.

The average cost/GDP estimated for 18 countries[4] and a 6-months-duration cash-transfer

Table 1. Costs in % of GDP of ECLAC's Basic Income (Cash Transfers)

	Coverage % of Population	Pov Line $	Ext Pov Lin $ 67/mes	Current CCTs
		Duration 6 months - % of GDP		
Universal	100.0	9.2	4.0	0.6
Persons living in poverty	34.6	2.8	1.0	0.6
Children and adolescents aged 0-17	28.8	2.7	1.3	0.2
Informal workers aged 18-64	20.0	2.0	0.7	
Persons aged 65 or over	8.8	0.6	0.1	0.3

Source: (7)

ranges between a minimum of 0.1 % of GDP (persons aged 65 or over - ExtPovLin) and a maximum of 9.8 % of GDP (universal - PovLine). These figures show that a considerable amount of fiscal space would be required to finance the proposed BEI, especially, in the first three groups: universal, persons living in poverty, and children and adolescents aged 0-17. Therefore, ECLAC recommends choosing the transfer for "Persons living in poverty", which would cover 35 % of the population and would require a monthly transfer of $143.

How much this choice will affect each country, will depend on their characteristics (population size, number of persons living in poverty and mean poverty line income). The amount of reference for Poverty Line ($143 per month) is below the vulnerability measure for LACs, which is in the range of $5.5 to $13 per day (equivalent to $165 to $390 per month) used in other studies.

In Ortiz-Juarez and Gray (6), the proposal of a Temporary Basic Income (TBI) deploys the methodology of estimation, which gives some insights to evaluate the choice of a basic income

[3]Among them, choosing the units of measurement of health indicators properly, their timing, heterogeneity of population groups (even across regions in a country), design of health programs, income distribution, institutional health setting, etc.

[4]Argentina, Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Plurinational State of Bolivia and Uruguay.

Table 2. Potential beneficiaries of the TBI

Developing countries by region*	Poor	Vulnerable	Median of national poverty lines	Vulnerability measure	Cash transfer per regions's vulnerability threshold
	# of people		$ per day (2011 PPP)		
South Asia	193	594	2.0	1.9 – 3.2	1.9
Sub-Saharan Africa (SSA)	440	267			
East Asia and Pacific (EAP)	155	366	3.4 - 3.9	Below 5.5	3.2
Middle East and North Africa (MENA)	75	94			
Europe and Central Asia (ECA)	59	159	5.2 – 6.3	5.5- 13.0	5.5
Latin America and the Caribbean (LAC)	151	227			
Total	1,073	1,707			

Source: (6)
*The study covers 132 developing countries.

in LACs. The proposed TBI takes the form of unconditional, non-entitlement, and individual cash transfers and is thought to rule for a specific period, up to 9-12 months. Its design distinguishes between "poor" and "vulnerable" people; being the first those who live under international poverty lines, and the second those that are no longer poor according to the previous standards, but that face risks of falling into the first group.

To estimate the level of the TBI, the authors group 123 developing countries under regions that are classified according to the current UN international poverty lines' thresholds (Table 2). The exercise assumes the 2018 welfare levels, as a reference to determine the TBI potential fiscal costs; in addition, they also consider three scenarios of TBI levels, according to certain criteria (Table 3).

The first scenario corresponds to the estimation of a cash transfer equivalent to each country's average shortfall in income, concerning its corresponding vulnerability threshold; for example, the median shortfall for South Asian and SSA countries will be the difference between $3.20 a day and $1.90 a day. The TBI in the second scenario is equivalent to the difference between half the median per capita income or consumption in each country and the amount of the typical international poverty line. The last scenario corresponds to a uniform cash transfer of $ 5.5 a day.

Table 3. Estimation Scenarios

Cash transfer Pj equivalent to		
Scenario 1	Average income shortfall/Threshold vulnerability	$P_j = \frac{1}{n_j}\sum_{j=1}^{q_j}(1-\frac{y_{ij}}{z})$ a/
Scenario 2	Half median household per capita income or consumption	*max* ($1.9, 0.5 *yij*)
Scenario 3	$5.5 uniform cash transfer	$5.5

a/i: individual; j: country; nj: total population in j; yij: income of I living below z in j; qj: total number of people whose incomes yij are below z; z: vulnerability threshold
Source: (6)

According to this approach, the average TBI costs, for the 132 countries and a 6-month period in % of the GDP, go from 1.6 % in the first scenario to 2.1 % in the second one and 3.8 % in the third one (Table 4). The figures for each country group vary, corresponding to the highest costs to those with large populations in the bottom-income and biggest gaps between their median poverty lines and the vulnerability threshold (Sub-Saharan Africa).

Table 4. Total costs of the TBI for 6 months in % of GDP and TBI per month

Developing countries by region a/	**Population Poor + Vulnerable million**	**TBI Per month ***			**% of GDP 6 months ***		
		1	**2**	**3**	**1**	**2**	**3**
South Asia	787	27	59	167	1.3	2.7	7.6
Sub-Saharan Africa (SSA)	707	47	58	167	4.6	5.7	16.3
East Asia and Pacific (EAP)	521	52	114	167	0.5	1.1	1.6
Middle East and North Africa (MENA)	169	65	80	167	1.3	1.6	3.4
Europe and Central Asia (ECA)	218	159	179	167	1.9	2.2	2.0
Latin America and the Caribbean (LAC)	378	193	153	167	4.3	3.4	3.7
Total	**2 780**				**1.6**	**2.1**	**3.8**

*Own calculations.
Source: (6)

The per-beneficiary amounts under scenarios 1 and 2 will vary across countries as they are sensitive, respectively, to the prevailing difference between the incomes of the potential beneficiaries and the vulnerability threshold and to the standard of living in each country. In scenarios 1, the measure reflects the average per capita shortfall, as a percentage of z, between the incomes of those living below z and the value of z. In scenario 2, the amount of the TBI depends on the distance between their half median income and the reference value of $1.9 a day.

In scenario 3 ($5.5 a day), the TBI's scope increases the most for the country groups with an income vulnerability threshold of $1.9 and $3.2 per day. Under this scenario, the monthly amount per person equals $167, which remains unchanged regardless of the size of the targeted population and the country where they live.

Taking into account the income vulnerability thresholds is more expensive than using ECLAC's approach. However, Ortiz-Juarez and Gray (6) consider that in a context of deep shock and slow recovery, the costs in the case of TBI could be considered moderate. On the other hand, they point that taking into account the short-term nature of the TBI, additional taxation should have to be ruled out and other potential resources should have to be used: deferral of debt service payments, elimination of non-essential expenses, and/or self-financing in the form of taxes that the multiplier of the expense in which it would be invested allows the TBI.

CONCLUSIONS

Of central interest in this article is to discuss more specifically whether unconditional cash transfers are part of a structural change or just a temporary relief measure. The main concerns point to their financial viability and to the institutional and macroeconomic requirements to maintain them as long as needed; namely, real GDP growth, employment, fiscal space of resources, social security, industrial and commercial policies, among others.

The current proposals of unconditional cash transfers have revived the questions. On what basis anyone should have some right to receive it and for how long? What level should they reach? Should they complement people's income? How

could they be financed? What would their long-term impact be, particularly on employment and on public finance? What conflicts they might cause between different economic sectors?

The last question, relevant to the purpose of this article, refers to the capacity of LACs to implement a UBI. According to what we have seen in previous sections, going towards universal in unconditional cash transfer programs in LACs involves considering:

Weighing the objectives of poverty and inequality, against those of freedom – invoked by the proponents of a universal basic income – which, respond more to the characteristics and economic potential of developed countries. The latter, certainly, present better initial conditions in terms of poverty and inequality than developing countries do, have more space for resources to face the fiscal costs of unconditional and universal monetary transfers, and have better political and economic institutional settings.

Bearing in mind that there are political economy restrictions that, even in developed countries, oppose a generalized practice of a UBI; and that without it, it is not possible to have evidence that allows an unambiguous defense of its potential positive effects.

That, even, the most radical defenders of the UBI, because of that lack of evidence, recognize that its implementation must be gradual.

That, they also recognize that there might be losers with a UBI – since its tax financing causes income redistribution – and that, therefore, universality might be less than expected.

That, the possible impact of a UBI on the labor supply might not be negligible, if the behavior of its beneficiaries is not as expected.

Taking into account the initial socioeconomic conditions at the time of implementing the UBI. This constitutes a severe restriction in LACs: lack of savings that they could have accumulated had they had consolidated economies in the productive, fiscal and social sectors, and that they could have used immediately in the emergence posed by the COVID-19 pandemic; the need to overcome in the medium and long-term their high dependence on exports of raw materials and to move their productive apparatus in the same direction the world's most dynamic economies are undergoing (i.e., taking advantage of reshoring and nearshoring to add to the advantages of processes based on regional value chains).

That raising a permanent flow of increased resources will inevitably take time; and that, addressing the current emergency with a policy of cash transfers will, therefore, respond to the restoration of income in the short term with a dual purpose: alleviating the precarious situation of the biggest population living in poverty – enhanced by those who have lost their ordinary sources of income, and stimulating aggregate demand to avoid risks of loss of productive assets that further hamper the possibilities of economic and social sustainability of the population and to promote the transition towards a new normal after the control of COVID-19.

Such a policy, due to its high demand for resources, probably cannot be extended to the entire population affected by the loss of income; so it will have to combine a less than optimal universality under current conditions with some degree of conditionality.

Thus, it is considered that a UBI as defined in this article cannot yet be implemented; and that proposals such as those for a BEI or a TBI could have a better chance of being implemented in LACs.

Funding: None

Conflicts of interest: None

REFERENCES

1. The Independent. Coronavirus: Over 170 MPs and Lords call for universal basic income during pandemic. 2020. https://www.independent.co.uk/news/uk/politics/coronavirus-universal-basic-income-uk-mps-lords-boris-johnson-a9413046.html.
2. Congress of Colombia Republic. Proyecto de Ley No. ___ de 2020 "Por medio de la cual se reconoce una renta básica de emergencia para las personas vulnerables con el fin satisfacer las necesidades básicas durante la Emergencia Sanitaria declarada en el país". 2020.
3. La Nación. Renta Básica Universal: las cinco claves del beneficio que reemplaza al IFE, 2020. https://www.lanacion.com.ar/economia/renta-basica-universal-

cinco-claves-del-beneficio-nid2410024.

4. Spain – Head of State, Real Decreto-ley 20/2020, de 29 de mayo, por el que se establece el ingreso mínimo vital, BOE. 2020; I(154): 36022 (BOE-A-2020-5493).
5. DIW- Berlin. Basic Income Pilot Project, German Institute for Economic Research. 2020. https://www.diw.de/en/diw_01.c.796681.en/projects/basic_income_pilot_ project.html
6. Ortiz-Juárez E, Gray G. Protecting Poor and Vulnerable People in Developing Countries, United Nations Development Programme – Temporary Basic Income, Transitions Series, Working Papers UNDP, Global Policy Network. 2020.
7. ECLAC. Special Report COVID-19. 2020;1.
8. Gentilini U, Grosh M, Rigolini J, Yemtsov R. Exploring Universal Basic Income, A Guide to Navigating Concepts, Evidence, and Practices, World Bank Group. 2020.
9. More T. Utopia, The Project Gutenberg eBook. 2005;2130. Edited by Henry Morley. https://www.gutenberg.org/files/2130/2130-h/2130-h.htm.
10. Vives J. De subventione pauperum. 1526. https://bv2.gva.es/i18n/ corpus/unidad.do?idCorpus=1&idUnidad=11631&posicion=1.
11. Paine T. Agrarian Justice, Philadelphia, Printed by R. Folwell for Benjamin Franklin Bache. 1797. https://en.wikisource.org/wiki/Agrarian_Justice
12. Charlier J. Solution du Problème Social ou Constitution Humanitaire, Basée sur laLoi Naturelle, et Précédée de l'Exposé de Motifs, Bruxelles, Chez Tous Les Libraires du Royaume. 1848. https://gallica.bnf.fr/ark:/12148/bpt6k5718047v.texteImage.
13. Mill JS. Principles of Political Economy, The Project Gutenberg eBook. 2009; 30107. https://www.gutenberg.org/files/30107/30107-pdf.pdf.
14. Russell B. Roads to Freedom. Socialism, Anarchism and Syndicalism, London, Unwin Books. 1918.
15. Clifford HD. Social Credit Institute of Economic Democracy, Canada. 1924. (1979 edition).
16. Milner EM , Milber D. Scheme for a State Bonus, Simpkin, Marshall & Co. 1918.
17. Beveridge W. Social insurance and allied services: report / London, HMSO. 1942. https://www.who.int/bulletin/archives/78(6)847.pdf.
18. Condorcet N. Esquisse d\'un tableau historique des progres de l'esprithumain (1st edition, 1795), Paris: GF-Flammarion, 1988. Also Édition numérique réalisée le 17 janvier 2005 à Chicoutimi, Ville de Saguenay, province de Québec, Canada. 1795. http://www.anthropomada.com/bibliotheque/CONDORCET-Marquis-de-Jean-Antoine-Nicolas-de-Caritat.pdf.
19. Galbraith K. The Affluent Society. 1958. http://pinguet.free.fr/affluent58.pdf
20. Tobin J. On Improving the Economic Status of the Negro, Daedalus. 1965;94:4.
21. Friedman M. The Case for a Negative Income Tax, National Review 7. 1962.
22. Theobald R. The Guaranteed Income: Next Step in Economic Evolution? Garden City, N.Y. Doubleday. 1967.
23. Vanderborght Y. Universal Basic Income in Belgium and the Netherlands: Implementation through the Back Door? European University Institute (EUI) Working Paper SPS No. 2004/4, Department of Political and Social Sciences, Florence. 2004.
24. CBIT. Citizen's Basic Income Trust, https://citizensincome.org/about/.
25. Offe C. Basic Income and the Labor Contract, Analyse & Kritik 01/2009 (© Lucius & Lucius, Stuttgart). https://www.ssc.wisc.edu/~wright/Soc924-2011/Offe%20-%20analyse&kritikBI.pdf
26. Bresson Y. L'après-salariat. Une nouvelle approche de l'économie. Paris. Economica. 1984.
27. Ferry J–M. L'allocationuniverselle. Pour un revenue de citoyenneté.Paris: Le Cerf. 1995.
28. Gorz A. Misères du présent, richesse du possible. Paris: Galilée. 1997.
29. van Parijs P, Vanderborght Y. Basic Income, Cambridge (Massachussetts), Harvard University Press. (with Y. Vanderborght). 2017.
30. Doherty A. The macroeconomic effects of universal basic income programs, University of Pennsylvania, Job Market Paper. 2019.
31. WBOD, World Bank Open Data, https://data.worldbank.org/.
32. ECLAC. Report on the economic impact of coronavirus disease (COVID-19) on Latin America and the Caribbean. COVID-19 Response. 2020.
33. ECLAC. Social Panorama of Latin America, 2019.
34. UN. UN Policy Brief: The Impact of COVID-19 on LACs, United Nations. 2020.
35. IMF. World Economic Outlook (WEO). 2020.
36. WB. Global Economic Prospects, World Bank. 2020.
37. Corporación Andina de Fomento (CAF). ¿Una nueva década para América Latina y el Caribe? Desafíos regionales, SELA. 2020.
38. ILO. Recommendation concerning National Floors of Social Protection, R202. 2012.
39. ECLAC. Regional Agenda for Inclusive Social Development, Third session of the Regional Conference on Social Development in Latin America and the Caribbean, Mexico City, 2019.
40. Cotlear D, Nagpa S, Smith O, Tandon A, Cortez R. Going universal. How 24 developing countries are implementing universal health coverage. Reforms from the bottom up, World Bank Group. 2015.

Appendix

Non-contributory Social Protection Programs Latin America and the Caribbean

Country	Program	Year*
Argentina	Asignación Universal por Hijo para Protección Social	2009
	Programa Ciudadanía Porteña "Con todo derecho"	2005
Belice	Creando oportunidades para nuestra transformación social	2011
Bolivia (Edo Plurinacional de)	Bono Juancito Pinto	2006
	Bono Madre Niño-Niña "Juana Azurduy de Padilla"	2009
Brasil	Programa de Erradicacao do trabalho infantil	1996
	Bolsa Familia	2003
Chile	Subsidio Único Familiar	1981
	Chile Seguridades y Oportunidades	2012
	Más Familias en Acción	2001
Colombia	Red Unidos	2007
	Subsidios condicionados a la asistencia escolar	2005
Costa Rica	Avancemos	2006
	Crecemos	2019
Ecuador	Bono de Desarrollo Humano	2003
	Desnutrición Cero	2011
El Salvador	Comunidades Solidarias Rurales	2005
Guatemala	Bono Social	2012
Haití	Ti Manma Cheri	2012
Honduras	Bono 10.000 Educación, Salud y Nutrición	2010
Jamaica	Programa de avance mediante la salud y la educación	2001
México	Becas para el Bienestar Benito Juárez	2019
Panamá	Bonos Familiares para la Compra de Alimentos	2005
	Red de oportunidades	2006
Paraguay	Tekoporá	2005
	Abrazo	2005
Perú	Juntos	2005
República Dominicana	Solidaridad	2012
Trinidad y Tobago	Programa de transferencias monetarias condicionadas focalizadas	2005
Uruguay	Tarjeta Uruguay Social	2006
	Asignaciones Familiares	2008

*Starting date
Source: https://dds.cepal.org/bpsnc/cct

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S188-S195
DOI: 10.47307/GMC.2020.128.s2.6

Food security and COVID-19 in Latin America: A challenge to overcome

Dra. Marianella Herrera Cuenca MSc, DSc[1,2,3]

SUMMARY

Latin America is a region full of challenges due to its characteristics. The COVID-19 pandemic arrived in an unprepared region that must take action for controlling an emergency of a large magnitude, which is not surprising because of the economic decline, the increase in hunger, and informal employment experienced in recent decades. Previous efforts to eradicate hunger and move closer to meeting the number two goal of sustainable development are facing now a setback given the slowdown in activities because of the pandemic. The projection of the increase in intraregional poverty reported by CEPAL is a call for attention to the reformulation of policies associated with the dimensions of poverty and in particular the food and nutritional security of the population. Policies should focus on two levels: an immediate level of attention to the vulnerable population and another dedicated to planning structural actions with a view to the middle and long term.

Key words: *Food security, Latin America, COVID-19, pandemic*

RESUMEN

La región de Latinoamérica por sus características, es una región llena de retos y desafíos. La pandemia de COVID-19 toma a la región sin prepararse para una emergencia de tal magnitud, lo cual se puede constatar por el decrecimiento económico, el aumento del hambre y del empleo informal experimentado en las últimas décadas. Los esfuerzos realizados con anterioridad para erradicar el hambre y acercarse al cumplimiento del objetivo número dos de desarrollo sostenible se han encontrado con un franco retroceso dada la ralentización de las actividades por causa de la pandemia. La proyección del aumento de la pobreza intrarregional reportado por CEPAL, es un llamado de atención a la reformulación de las políticas asociadas con las dimensiones de la pobreza y en particular a la seguridad alimentaria y nutricional de la población. Las políticas deben enfocarse en dos niveles: uno inmediato de atención a la población vulnerable y otro dedicado a la planificación de las acciones estructurales con mirada al mediano y largo plazo.

Palabras clave: *Seguridad alimentaria, América Latina, COVID-19, pandemia.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.6

ORCID: 0000-0003-0162-3480
[1]Centro de Estudios del Desarrollo (CENDES), Universidad Central de Venezuela.
[2]Fundación Para la Alimentación y Nutrición José María Bengoa, Venezuela.
[3]Observatorio Venezolano de la Salud (OVS), Venezuela.
E-mail:manyma@gmail.com

Recibido: 16 de noviembre
Aceptado: 20 de noviembre de 2020

INTRODUCTION

The global pandemic of COVID-19 disease (produced by the SARS-COV-2 virus) has generated a space for discussion about key points for humanity, as never seen before in recent history. On one hand, the severe criticisms of the management of the pandemic by the World Health Organization (WHO) at the beginning of the epidemic and the breaks and fractures in

the different approaches on the other, show the complexity of this issue. The world after this pandemic will be changed. The way of work, bring education, and investing time will be transformed and the planet will have to rethink in global terms how to face this transition of society (1). It is very important to be aware of the situation in Latin America since it is the region with the highest inequalities in the world (2).

One of the most important points for low- and middle-income countries, and particularly for the Latin American region (LA), is the awareness of pre-existing problems which include: high poverty, food insecurity, poor sanitation, hunger, and malnutrition, and which become in this situation the center of proper decision making to overcome the milestones that contribute to achieving the living conditions of the majority of the population.

Given the high contagiousness of SARS-CoV-2, the risks to the general population are high. If symptoms are not addressed, health complications may occur. These symptoms have been categorized from what may appear to be a simple cold to severe pneumonia and truly life-threatening oxygenation disorders (3). In an ideal world, staying at home would be logical thinking, but is it feasible?

Over the past three years, international multilateral organizations have begun to transform reports to include relative measurements of the achievement of sustainable development goals. An example of this is the global and regional food security reports produced by the Food and Agriculture Organization (FAO), United Nations Children's Fund (UNICEF), The World Food Programme (WFP), International Fund for Agricultural Development (IFAD), and WHO in 2019 (4). In particular, in the State of Food Security, the measurement and categorization of food security (FS) in marginal and moderate and severe food insecurity (FI) have made the difference by highlighting the significant vulnerability of the population that must face a life without the possibility of adequately feeding themselves (4).

It was not enough to indicate the level of undernourishment, based on the apparent consumption of calories. The food panorama remained narrow, given the impact that not only the available calories have on food consumption, but also the capacity to access food, use it, and the ways to achieve those permanently.

Therefore, during the global and regional food security scenario that existed before the pandemic, and according to reports such as the FAO and the Global Nutrition Report (2,5) that expressed that Latin America is the most unequal region in the world in terms of food security at the time, this article proposes to review some of the effects that the COVID-19 pandemic has had on food security within the region.

Poverty and its impact on Latin American food security

From the multidimensional concept of food security, its close association with poverty can be understood; both, poverty and FS are multidimensional notions. Food security exists "when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their daily energy needs and food preferences for an active and healthy life" (6,7). This concept comprises four dimensions: Physical availability, economic and physical access, utilization, and stability over time of the three previous dimensions (6). From these scopes, which are interrelated, we can conclude that they have some relationship with well-being, living conditions, and family or individual income without necessarily being a perfectly defined causal association. The impact of food security on the development model has been proposed for several decades since nourishment is part of the biological wellbeing of the population, that allows being healthy, productive and express the maximum potential in the best conditions possible, thus, food insecurity interferes with the holistic development of individuals, therefore is an obstacle to achieve societal development (8).

Multidimensional poverty includes three aspects: health, through the measurement of nutrition and infant mortality indicators; education, through the years of schooling and years within the educational system; and quality of life, through the evaluation of access to energy for cooking, sanitation, drinking water, electricity, housing, and household goods. The measurement of poverty and its dimensions can determine

the existence of simultaneous deprivations and allows both to identify people in poverty and to disaggregate them by dimension and indicator (9), in such a way that it can give a more precise idea of the situation of people and the area in which they are most vulnerable. It also gives an idea of the human rights situation and the potential and windows of development opportunities.

During the COVID-19 pandemic, Latin America has faced enormous challenges in addition to those already faced in pre-pandemic times. Scenarios of poverty and continuing social challenges such as economic decline and the presence of a high proportion of informal employment have increased during the pandemic (10), given the quarantine and physical distancing measures required to stop the spread of the SARS-CoV-2 virus that has proven to be highly contagious to people (11). These measures, which have prevented regular performance in jobs, have resulted in the loss of jobs and of course, have meant a decrease in income for large sectors of the population (10).

In this context, where life continues and families must follow the course of their activities, couples join or divorce, women may be pregnant, children born pre-pandemic must face their first two years of life - which is a critical period of growth and development - older adults continue to age and chronic diseases follow their evolution and worsening, if these are not taken into account because of social isolation and distant measures, existing problems will increase and new ones will appear. It can be seen that health, in general, has suffered an alteration, and prevention programs have also been altered.

Living in poverty implies facing challenges daily, which impact the health and well-being of the population. Lack of services, fewer years of schooling, access to health, all of which continue and are worsening in the current conditions within the COVID-19 pandemic. A logical reflection is about the future in people's quality of life, and the consequences of having lived, for example, the first thousand days, or at least a portion of them, in conditions of deprivation that already exist and that have been worsening during the pandemic. Studies refer to understanding the environmental influence in the first thousand days of life, for example, and the dramatic consequences on future health if negative disturbances and temporary exposures are not corrected (12). A child who does not receive the nutrients needed for brain development and psychomotor skills is at increased risk of developing cognitive and psychomotor disabilities (13).

Poverty, then, is a multidimensional determinant that will influence development, but it will also increase the gaps between populations groups, augmenting the backwardness already accumulated in previous decades.

The following Table is a projection of the population in a situation of poverty and extreme poverty made by the Economic Commission for Latin America and the Caribbean (ECLAC-CEPAL in Spanish) without considering the effect of the COVID-19 measures.

In the same Table, even though Venezuela is not disaggregated, it is included in the total. In the particular case of Venezuela, the figures provided by the ENCOVI 2019-20 surveys reflect a dramatic increase in deprivation with 96 % income poverty and a marked increase in multidimensional poverty indicators (14).

With the increase in the expected regional poverty reflected in the table, the predictable behavior of family food security is undoubtedly to be toward worsening. With the loss of formal jobs, during the already high informal sector in the region, households would resort to survival strategies that would help them overcome this situation, and face the probable deterioration in the nutritional status as a result of the inadequate feeding of their members (15).

From Northern Mexico to Patagonia, Argentina

Latin-American countries, before the pandemic, were registering signs of alarm that should have been taken into account to implement the necessary corrective measures for their improvement and reorientation regarding FS (5). People with undernourishment in LAC showed an increase in the last four years of 4.5 million people for a figure of 42.5 million people compared to the numbers reported in 2014. Also, a significant inequality was identified in terms of food and nutritional security by gender. Of the 187 million people affected by the total or partial

Table 1

Latin America (17 countries): projection of population living in poverty (extreme and total) in 2020, without including the effect of the measures for mitigation of the impact of COVID-19 (in percentages)

Country	Extreme				Total			
	2019[a]	2020[b]			2019[a]	2020[b]		
	Level	Context Low	Context Middle	Context High	Level	Context Low	Context Middle	Context High
Argentina[c]	3.8	5.1	5.5	6.3	26.7	32.5	33.6	35.3
Bolivia (Estadoplurinacional de)	14.3	15.4	16.0	16.7	32.3	33.6	24.4	35.5
Brazil	5.4	6.9	7.4	7.9	19.4	23.0	24.3	25.4
Chile	1.4	2.1	2.3	2.6	9.8	11.9	12.7	13.7
Colombia	10.3	11.3	12.0	12.7	29.0	30.4	31.5	32.5
Costa Rica	4.0	4.7	4.9	5.3	16.0	17.7	18.4	19.1
Ecuador	7.6	9.9	10.7	11.6	25.7	30.0	30.8	31.9
El Salvador	7.4	8.5	9.0	9.6	33.7	35.4	36.4	37.3
Guatemala	19.8	21.2	21.4	21.8	48.6	50.3	50.5	50.9
Honduras	18.7	19.5	19.8	20.5	54.8	56.3	57.1	57.8
Mexico	11.1	14.9	15.9	17.1	41.9	46.7	47.8	48.9
Nicaragua	18.0	20.7	21.3	22.2	47.1	50.6	51.6	52.7
Panama	6.2	6.4	6.6	6.8	14.2	14.5	14.9	15.6
Paraguay	6.2	6.3	6.5	6.9	19.4	19.8	20.3	21.1
Peru	3.7	4.6	4.8	5.1	16.5	18.5	19.1	20.1
Dominican Repúblic	4.5	4.6	4.9	5.3	20.3	20.7	21.1	21.7
Uruguay	0.1	0.2	0.3	0.4	2.9	4.2	4.8	5.7
Latin America[d]	11.0	13.0	13.5	14.2	30.3	33.7	34.7	35.8

Source: Comisión Económica para América Latina y el Caribe (CEPAL), based on Banco de Datos de Encuestas de Hogares (BADEHOG).
a Projections.
b Preliminary projections based on assumptions of impacts on employment and wages for different productive sectors. The three contexts vary according to if the average wage's variability of households is less than the GDP (low context), same (middle context), or higher (high context).
c Urban areas settings.
d Includes the 17 countries on the table plus the Bolivarian Republic of Venezuela.

interruption in their access to food, 69 million were women compared to 55 million men (5).

Since food environments are the interaction between people and the physical, economic, political, and socio-cultural conditions that determine how food is acquired, stored, and prepared, understanding these surroundings becomes critical to addressing what happens there (5).

In Latin America, the last few years were marked by economic decline, which together with the inequities in the region contributed to the taking over the continent by the Sars-CoV-2 virus without being prepared for an emergency of such magnitude (1). In fact, so far it is reported that at the regional level there is a drop in GDP of 6.4 % due basically to the restrictions applied to the tourism and service sectors, and the decrease in exports from the manufacturing, mining, and fuel industries (16).

We will now evaluate the following aspects that contribute to improving or worsening food security: food production, trade restrictions, the vulnerability in food prices, difficulties in transportation, and the increase in informal employment.

Food production

Latin America (LA) has traditionally been a food exporting continent, with some exceptions, including Venezuela. The region is responsible for 14 % of the world's production of agricultural and fishery products, and before the pandemic was projected to double its production, thus becoming the continent with the largest food exports in the world (17). In Brazil and Argentina, the continued practice of double cropping of corn and soybeans was expected to increase, and poultry production in Latin America and China was expected to account for nearly 40 % of the increase in global poultry production (17).

Food production in the region was then, and still is, an important source of income and employment in the area. In fact, despite the pandemic, there has been a 6 % growth in agricultural production and the fishing sector in the region, a figure that is very important when one considers that the rest of the goods exported by the region have reported a 21 % drop, due to the loss of productive capacity for different reasons (15). The contraction in income from food production, and consequently the decrease in it, is considered an alteration in availability. The reduction in the production of perishable foods and those with greater artisan labor have been the most vulnerable during this crisis, to the detriment of healthy eating (15,16).

Trade restrictions

Even though some countries promoted trade restrictions for food, in Latin America trade liberalization measures surpassed restrictions, except in a few cases. Particularly noteworthy is the case of the Bolivarian Republic of Venezuela, where food imports have continued to include luxury foods that are completely inaccessible to the majority of the population (18). However, trade flexibility measures in no way guarantee access by the most vulnerable population to basic foods that should constitute a varied, balanced, and sufficient diet. It is important to highlight that food exports outside the region have remained practically unchanged, while intraregional food marketing has experienced a decline (15,16).

The vulnerability of food prices

Traditionally, food prices have behaved in a volatile manner. Depending on crops, and supply and demand, food is a commodity that has taken on particular relevance over the decades in world markets. Thus, in the mid-2000s it was possible to observe how quickly the world food market changed according to circumstances. In the early 2000s, the positive consequences of previous decades of growth in the food market were evident: good harvests increased purchasing power and diversification of diets. However, from 2004 onwards, the increase in production failed to keep pace with demand, and prices began to rise. With the successive global economic crises, particularly in 2008 and 2009, the impact on food security in many countries was felt (19).

In this context, which was unexpected and abnormal for the entire world —including Latin America— some foods had already been experiencing a drop in prices before the pandemic and with some variations, this same trend continued during the first months of the crisis. However, since April, prices have risen in many countries of the region, which is an obstacle to economic access to food, thus altering one of the dimensions of food security (20).

In fact, unlike the other indicators, the consumer price index (CPI) has had a greater impact on food than on the rest of the products in the basic goods basket. Feeding during the pandemic has had a higher cost than in the same period with respect to the previous year and thus, at the regional level, the food CPI has registered a variation of 5.6 % compared to the total CPI which has only varied by 3.8 % (16).

This relative increase in food prices, marked by an alteration in the supply and demand for food, is to be expected given the circumstances and is a factor influencing price variability. At the beginning of the pandemic, as we have mentioned, there was stability and even a small decrease in the price index. However, as the pandemic has progressed and supply has decreased, prices have increased (16,20).

Difficulties for transport

Transportation difficulties, in general, have

been an obstacle to living a normal life during the pandemic, from initial prohibitions on walking the streets in some countries, to preventing travel by air, boat, or motor vehicles. Similarly, early trade restrictions affected transportation and fuel production failures influenced regional food transportation (15). It is worth noting the case of Venezuela, which during the pandemic has experienced a crisis in the availability of fuel, being a net exporter of oil in the past, but with the deterioration in the facilities of the refineries and the inadequate public policies with respect to the economy, oil production has deteriorated, and consequently, access to gasoline and even diesel has decreased for the transportation of food and the general population (15,16,20,21).

Implications for the nutrition, health, and well-being of the population

As a result of undernourishment, food insecurity, and hunger in the region, which have not been eradicated despite having experienced a decline at the beginning of the past decade, millions of people must face the impossibility of eating adequately. According to FAO, by 2018 the countries with the highest prevalence of people suffering from hunger were Haiti (49.3 %), Guatemala (15.2 %), Nicaragua (17 %), Bolivia (17.1 %), and the Bolivarian Republic of Venezuela (21.2 %) (5).

On the other hand, chronic growth retardation in children under 5 years of age, which responds to the impossibility of maintaining a constant balanced, varied, and sufficient diet in the most vulnerable populations over long periods, is an indicator that reflects the cumulative effects of prolonged environmental deprivation among which are: poor nutrition, recurrent infections, and poor hygiene (22). However, equally important has been the increase in obesity in the region, associated with hidden hunger, particularly among more disadvantaged women, having a higher prevalence of food insecurity than men in the region, and being more obese than them (5,23).

Main risks and challenges

The food systems and food security of Latin American countries are undoubtedly at risk. Recovering access to and distribution of food and ensuring its adequate use must be a regional priority to guarantee the right to food. The biggest challenge is to ensure multi and intersectoral work given the complex situation in Latin America that, since the pre-pandemic period, stood out as a scenario where social inequalities were immersed in social components such as health, food, and education. Thus, a comprehensive view of the multiple and complex problems that afflict the region must prevail even more at this time.

To think that the solution to food insecurity could be food distribution only is to take assistance policies and programs to a paternalistic extreme since this crisis represents a window of opportunity to start working together and by levels, within the severe problem of food insecurity and its negative consequences for the population.

The region requires a holistic development plan assuming the human rights framework as the guiding axis of the proposals to generate a decrease in the social inequality gaps. An important point is that the social determinants of health ultimately have a permanent interrelationship among them so, a deviation in the path of the well-being of some of these determinants has direct consequences on the other. This is the case with food and nutritional deficiencies, which have a direct impact on health and education.

People cannot be healthy with nutritional deficiencies or excesses, nor can they be prepared for education when they do not eat an adequate breakfast. In the case of Latin America, the pandemic has represented a step away from the achievement of sustainable development goal 2 (SDG2): zero hunger. The already slowed down Latin American economy is facing this new challenge where generating formal employment, access to food, health and education is difficult due to the deteriorated conditions in the various countries. The growing poverty with all its dimensions and its implicit deprivation shows that it is impossible to move forward without taking into account the integrality of human beings. Beyond the figures, the qualitative aspects studied in the region express the coexistence of countless restrictions on the daily life of millions of people. Thus, the deterioration of food access

and availability expressed by visible deficiencies in nutritional status or excesses with hidden hunger, build a scenario that does not favor the development of individuals, the achievement of hunger eradication, and ultimately constitutes an obstacle to regional development.

Public policies should focus on two aspects: food and nutritional attention in the short term to those who require it, and programs aimed at structural strengthening, developing formal jobs and aligning them with prevention programs in health, education, environment, and comprehensive well-being. This window of opportunity for rethinking regional development should not be wasted; on the contrary, it should take into account the intra-regional support of capacities, trade, and economic structures of the region. In this way, Latin America could emerge strengthened with great learning, and be able to overcome the vulnerability of its population for the best.

Funding: None

Conflicts of interest: None

REFERENCES

1. Gates B. Responding to COVID-19. A Once in a century Pandemic? N Engl J Med. 2020;382:1677-1679.
2. Independent Expert Group of the Global Nutrition Report. Global Nutrition Report: Shining a light to spur action on nutrition. 2020. Disponible: https://globalnutrition report.org/reports/2020-global-nutrition-report/
3. Wu Z, McGoogan JM. Characteristics of and Important Lessons from the 556 Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases 557 from the Chinese Center for Disease Control and Prevention. JAMA. 2020;323(13):1239-1242.
4. FAO, UNICEF. El estado de la seguridad alimentaria en el mundo. Protegerse frente a la desaceleración y el debilitamiento de la economía, 2019. http://www.fao.org/3/ca5162es/ca5162es.pdf.
5. FAO, OPS, WFP y UNICEF. Panorama de la seguridad alimentaria y nutrición en América Latina y el Caribe Santiago. 136. Licencia: CC BY-NC-SA 3.0 IGO. 2019.
6. FAO. Una introducción a los conceptos básicos de la seguridad alimentaria. 1996. http://www.fao.org/3/al936s/al936s00.pdf.
7. Ruel M. Food Security and Nutrition: Linkages and Complementarities. Chap 2 in The Road to Good Nutrition. A Global Perspective. Karger. 2013:24-38.
8. Sen, A. Poverty and Famines. An Essay on Entitlement and Deprivation. Chapter 1. Poverty and Entitlements. Oxford University Press. 1981;1:1-8.
9. Santos ME. Desafíos en el diseño de medidas de pobreza multidimensional e innovaciones recientes. CEPAL. 2019. Disponible: https://www.cepal.org/sites/default/files/ presentations/diseno-medidas-pobreza-multidimensional-maria-emma-santos_0.pdf
10. CEPAL El desafío social en tiempos del COVID-19. 2020. Disponible: https://repositorio.cepal.org/bitstream/handle/ 11362/45527/5/S2000325_es.pdf
11. Mohapatra RK, Pintilie L, Kandi V, Sarangi AK, Das D, Sahu R, et al. The recent challenges of highly contagious COVID-19, causing respiratory infections: Symptoms, diagnosis, transmission, possible vaccines, animal models, and immunotherapy. Chem Biol Drug Des. 2020;00:1-22.
12. Koletzko B, Brands B, Grote V, Kirchberg FF, Prell C, Rzehak, et al. For the Early Nutrition Project. Long-term Health impact of Early Nutrition: The Power of Programming. Ann Nutr Metab. 2017;70:161-169.
13. Walker S, Wachs TD, Grantham-McGregor S, Black MM, Nelson CA, Huffman SL, et al. Inequality in early childhood: risk and protective factors for early child development. Lancet. 2011;378(9799):1325-1338.
14. ENCOVI 2019-2020. Encuesta Nacional de Condiciones de Vida. LA pobreza en sus múltiples dimensiones. Disponible: https://assets.website-files.com/5d14c6a5c4ad42a4e794d0f7/5f03875cac6fc11b6d67a8a5_Presentaci%C3%B3n%20 %20ENCOVI%202019-Pobreza_compressed.pdf
15. CEPAL. Sistemas Alimentarios y COVID -19 en América Latina y el Caribe: Comportamiento del comercio durante la crisis. Boletín N 12. 2020. Disponible: https://repositorio.cepal.org/bitstream/handle/11362/45924/1/cb0583_es.pdf
16. CEPAL. Sistemas Alimentarios y COVID-19 en América Latina y el Caribe: Comportamiento del comercio durante la crisis. Boletín N 16. 2020. Disponible: http://www.fao.org/3/cb1433es/CB1433ES.pdf
17. OCDE/FAO. OCDE-FAO Perspectivas Agrícolas 2019-2028, OECD Publishing, París/Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO). Roma. 2019. https://doi.

org/10.1787/7b2e8ba3-es.

18. Efecto Cocuyo. Inicia 2020 con escalada de precios en la mayoría de los alimentos. Disponible: https://efectococuyo.com/economia/inicia-2020-con-escalada-de-precios-en-la-mayoria-de-los-alimentos-mercadoguaicaipuro/
19. Naciones Unidas. Paz, dignidad e igualdad en un planeta sano. Alimentación. Disponible: https://www.un.org/es/sections/issues-depth/food/index.html)
20. FAO – CELAC. Seguridad Alimentaria bajo la pandemia de COVID-19. Informe preparado por FAO a solicitud de la Coordinación Nacional de la Presidencia Pro Témpore de México ante la CELAC. 2020. Disponible: http://www.fao.org/fileadmin/user_upload/rlc/docs/COVID19/Boletin-FAO-CELAC.pdf
21. BBC mundo. Coronavirus: porque Venezuela se quedó sin gasolina y que consecuencias tiene en medio de la crisis por el COVID-19. 2020. Disponible: https://www.bbc.com/mundo/noticias-america-latina-52145210
22. Eveleth P, Tanner JM. Environmental influence on Growth. In: Eveleth P, Tanner JM, editors. Worldwide Variation in Human Growth. 2th edition. NY, USA: Cambridge University Press. 1990.
23. Fisberg M, Kovalskys I, Gómez-Salas G, Nogueira Previdelli A, Rigotti A, et al. Latin American Population: Mainly Active or Sedentary? Is there an association between lifestyle and diet nutritional composition? Ann Nutr Metab 2017;71(Suppl 2):1-1433 pp 41.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S196-S207
DOI: 10.47307/GMC.2020.128.s2.7

Effects and sequencing of COVID-19 pandemic control policies in Latin America

Dr. Marino J. González R[1]

SUMMARY

Introduction: *The extraordinary impact caused by the COVID-19 pandemic in Latin America gives special importance to the analysis of the control policies implemented.* **Objectives**: *1) To update the evolution of the characteristics of COVID-19 control policies in Latin America, and 2) to analyze the sequence in which these policies are implemented.* **Methods**: *Data from the Government Response Stringency Index (GRSI), developed by the Blavatnik School of Government at Oxford University, was analyzed for the 20 Latin American countries in the period January 21 to November 9, 2020. The evolution of the GRSI, as well as of some of its components, was taken into account. The sequence of implementation in three countries (Uruguay, Argentina, and Panama) was also analyzed.* **Results:** *The vast majority of the region's countries recorded an average GRSI of over 57 (out of 100) for the period. In 15 countries of the region, the mandatory closure of educational institutions was in effect on 75 % of the days. Eighteen countries implemented mandatory closures of businesses at some point. Ten countries applied requirements to remain in the home on more than 80 % of the days. The sequence of policies implemented by Uruguay reveals greater flexibility in application than those implemented by Argentina and Panama.* **Discussion**: *Uruguay's experience shows that control of the pandemic was possible, and that differences with other countries may be related to structural (pre-pandemic) factors, and management performance.* **Conclusions**: *Health systems in the region must identify in detail the institutional constraints evident in controlling the pandemic, both to meet the challenges of health services in the coming months, and to improve preparedness for future pandemics.*

Key words: *Latin America, COVID-19, pandemic, control policies, Government Response Stringency Index (GRSI), health policy.*

RESUMEN

Introducción: *La extraordinaria afectación causada por la pandemia de COVID-19 en América Latina otorga especial importancia al análisis de las políticas de control implementadas.* **Objetivos:** *1) Actualizar la evolución de las características de las políticas de control de COVID-19 en América Latina, y 2) Analizar la secuencia en la implementación de estas políticas.* **Métodos:** *Los datos del "Government Response Stringency Index (GRSI)", elaborado por la Escuela de Gobierno Blavatnik de la Universidad de Oxford, fueron analizados para los 20 países de América Latina en el período 21 de enero a 9 de noviembre de 2020. Se tomó en cuenta la evolución del GRSI, así como de algunos de sus componentes. También se analizó la secuencia de implementación en tres países (Uruguay, Argentina y Panamá).* **Resultados:** *La gran mayoría de los países de la región registró un GRSI promedio mayor de 57 (sobre 100) en el período. En quince países de la región el cierre obligatorio de instituciones educativas estuvo vigente en el 75 %*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.7

ORCID: 0000-0002-6204-272X
[1]Professor, Simón Bolívar University (USB), Venezuela. National Corresponding Member Nº 39 of the National Academy of Medicine. Member of the Latin American Academy of Sciences (ACAL). Associate Researcher, University of La Rioja, Spain. E-mail: marinojgonzalez@gmail.com

Recibido: 02 de diciembre de 2020
Aceptado: 04 de diciembre de 2020

de los días. Dieciocho países implementaron cierres obligatorios de empresas en algún momento. Diez países aplicaron los requerimientos para permanecer en los hogares en más de 80 % de los días. La secuencia de políticas implementadas por Uruguay revela una mayor flexibilidad en la aplicación que las ejecutadas por Argentina y Panamá. **Discusión:** *La experiencia de Uruguay evidencia que el control de la pandemia fue posible, y que las diferencias con otros países pueden estar relacionadas con factores estructurales (previos a la pandemia), y con el desempeño en la gestión.* **Conclusiones:** *Los sistemas de salud de la región deben identificar en detalle las restricciones institucionales evidenciadas en el control de la pandemia, tanto para enfrentar los retos de los servicios de salud en los próximos meses, como para mejorar la preparación ante próximas pandemias.*

Palabras clave: *América Latina, COVID-19, pandemia, políticas de control, Government Response Stringency Index (GRSI), políticas de salud.*

INTRODUCTION

The COVID-19 pandemic has had an extraordinary impact on Latin American countries. By early November 2020, the region had recorded 22 % of global COVID-19 cases (Figure 1), approximately 11 million cases.

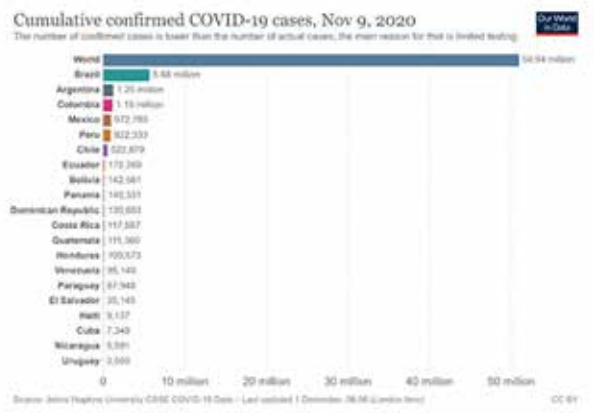

Figure 1. Latin America: cumulative confirmed cases of COVID-19 until November 9, 2020.
Source: (1).

The number of deaths per COVID-19 recorded in Latin America by the same date reached 32 % of total deaths (Figure 2). Since Latin America represents 8 % of the world's population, it is clear that the pandemic has had a greater effect on the region. Different dimensions of this impact have been analyzed in recent publications (2-11).

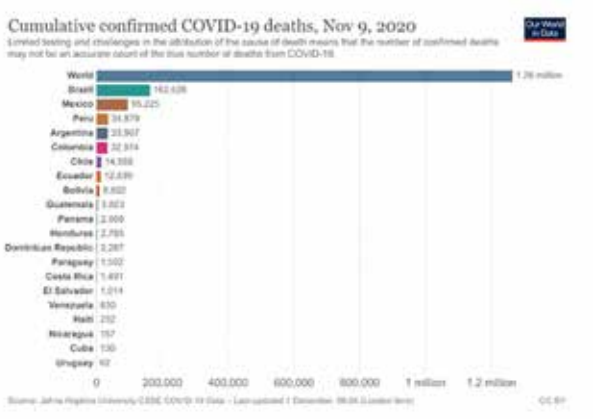

Figure 2. Latin America: cumulative confirmed COVID-19 deaths until November 9, 2020.
Source: (1).

This great impact makes it necessary to analyze the characteristics of the control policies that have been implemented in Latin American countries. An analysis conducted in mid-May 2020 reported the relevance of structural factors within health systems to explain these performance differences, such as financial protection, service coverage, and service organization (12). It also pointed out that the monitoring of the implemented policies, as well as their specific characteristics, becomes especially relevant to identify the tasks that must be carried out to correct these restrictions (12).

Contrary to the experience in Europe and Asia, most Latin American countries had not controlled the pandemic in the first half of this year (12). This situation has continued into the second half of 2020, resulting in very high demand for health services. Restrictions on health care services have resulted in the fact that in early November, seven countries in the Americas (Peru, Brazil, Chile,

Bolivia, Argentina, Mexico, and Ecuador) were in the group of the ten with the highest mortality rates per COVID-19 in the world (Figure 3).

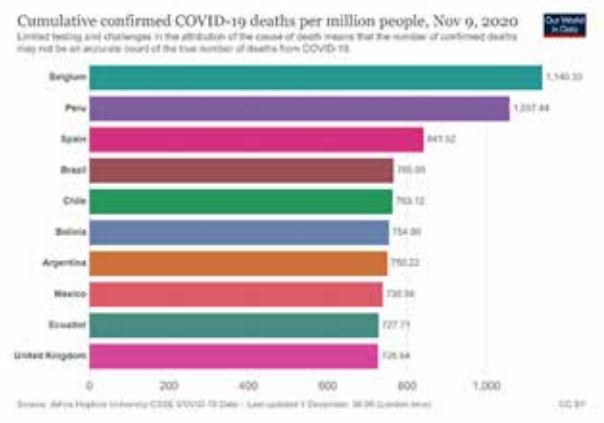

Figure 3. Countries with the highest mortality per COVID-19 as of November 9, 2020 (population over 1 million).
Source: (1).

Two objectives are proposed for this analysis. The first is to update the evolution of the characteristics of COVID-19 control policies in the region. To do so, special consideration is given to the stringency of the policies, as available in the Government Response Stringency Index (GRSI) developed by the Blavatnik School of Government at the University of Oxford (13). This index is now being used more frequently for monitoring pandemic control policies by COVID-19 (14-28). In Latin America, recent work has explored the relationship of GRSI to various demographic and health issues (29), and as part of the process of estimating the incidence of the pandemic (30). This paper focuses on the analysis of some of the components of GRSI to characterize the degree of policy implementation. The second objective is to analyze the sequence of policies implemented in selected countries. The orientation of this analysis is to describe the sequencing features that may evidence lessons learned for improving performance in the pandemic or in other areas that require control policies.

METHODS

The analysis was divided into two parts. The first part considered the GRSI for the 20 countries of Latin America. The information for these countries was extracted from the complete GRSI database (31). Table 1 shows the components of the GRSI. For each of the countries, there are daily measures of the GRSI. The measurement begins on January 21, 2020, as this was the first day on which control measures were recorded in the countries of the region. The registry ends on November 9, 2020, as it was the last day with information from all the countries in the region. The GRSI varies between 0 and 100. The maximum stringency value is 100.

This analysis took into account the general evolution of the GRSI in the period indicated, as well as the variations in the following components: 1) school closing, 2) workplace closing, and 3) stay at home requirements.

The second part of the analysis consisted of selecting three countries to compare the sequence of control policies implemented in the period. To examine the sequence, a database was constructed for each country, including daily data for each of the nine components of the GRSI (Table 1). A first country was selected as a reference, taking into account the lowest GRSI value in the period analyzed, and which also had diagnostic records of COVID-19 available for international comparisons. This showed the difference between the other two selected countries. These two countries had the largest number of new cases of COVID-19 by November 9, 2020 (1).

RESULTS

For each of the parts of the analysis, the results are presented below. They are divided into each of the aspects of the stringency policies for COVID-19 control: 1) effects, and 2) sequence.

Effects of stringency policies

Five countries in the region reached the maximum value of the GRSI (100) in the

Table 1

Government Response Stringency Index (GRSI), composition

Code	Name	Measures
C1	School closing	(0) no measures, (1) recommend closing, (2) require closing (only some levels or categories), (3) require closing all levels
C2	Workplace closing	(0) no measures, (1) recommend closing (or work from home), (2) require closing (or work from home) for some sectors or categories of workers, (3) require closing (or work from home) all but essential workplaces
C3	Cancel public events	(0) no measures, (1) recommend cancelling, (2) require cancelling
C4	Restrictions on gathering	(0) no restrictions, (1) restrictions on very large gatherings (above 1000 people), (2) restrictions on gatherings between 101-1000 people, (3) restrictions on gatherings between 11-100 people, (4) restrictions on gatherings of 10 people or less
C5	Close public transport	(0) no measures, (1) recommend closing, (2) require closing
C6	Stay at home requirements	(0) no measures, (1) recommend not leaving house, (2) require not leaving house with exceptions for daily exercise, grocery shopping and "essential" trips, (3) require not leaving house with minimal exceptions
C7	Restriction on internal movement	(0) no measures, (1) recommend not to travel between regions/cities, (2) internal movement restrictions in place
C8	International travel controls	(0) no measures, (1) screening, (2) quarantine arrivals from high-risks regions, (3) ban on arrivals from some regions, (4) ban on all regions or total border closure
H1	Public info campaigns	(0) no COVID-19 public information campaigns, (1) public officials urging caution about COVID-19, (2) coordinated public information campaign

Source: (13).

period analyzed (Table 2). These countries are Argentina, Cuba, Dominican Republic, El Salvador, and Chile. Eight other countries reached maximum values above 90. This means that on the days when these values were obtained all the components of the GRSI also reached the maximum value or were very close to it. On the other hand, Uruguay was the country with the lowest maximum value (72) among the countries with internationally comparable records. Although Nicaragua had the lowest GRSI value, the fact that no data are available from this country for international comparisons of COVID-19 diagnosis does not allow for an adequate relationship between the value and the actual evolution of the pandemic. The other countries without data for international comparisons of COVID-19 diagnostic tests are Argentina, Haiti, Honduras, and Venezuela (2).

When calculating the average GRSI for the period under consideration (Table 3), the country with the highest value is Honduras, followed by Argentina, Bolivia, and Peru, all with more than 70 GRSI on average. Except for Haiti, Uruguay, and Nicaragua, all the countries in the region had an average GRSI above 57 (out of a maximum of 100). As mentioned above, in the group of countries with the lowest average, only Uruguay (average GRSI of 38.45) meets the condition of international comparability for the diagnosis of COVID-19 cases.

Table 2

Latin America: Government Response Stringency Index (GRSI) value until November 9, 2020 (Countries in descending order)

Country	GRSI
Argentina	100
Cuba	100
Dominican Republic	100
El Salvador	100
Honduras	100
Bolivia	96
Guatemala	96
Peru	96
Paraguay	94
Ecuador	94
Haiti	94
Panama	94
Colombia	91
Chile	89
Venezuela	88
Mexico	82
Costa Rica	81
Brazil	81
Uruguay	72
Nicaragua	17

Source: (31), own calculations.

Table 3

Latin America: Government Response Stringency Index (GRSI) average November 9, 2020 (Countries in descending order)

Country	Average GRSI
Honduras	76.61
Argentina	74.80
Bolivia	72.62
Peru	71.36
Guatemala	70.88
El Salvador	70.55
Venezuela	69.40
Panama	68.23
Paraguay	68.18
Colombia	67.72
Dominican Republic	67.18
Cuba	65.03
Chile	64.34
Ecuador	63.08
Brazil	60.74
Mexico	58.76
Costa Rica	57.85
Haiti	49.10
Uruguay	38.45
Nicaragua	10.43

Source: (31), own calculations.

Mandatory closure is the highest level of stringency in the school closure component of the GRSI (C1, Table 1). This level was reached at some point during the period by 19 of the 20 countries in the region (Table 4). Only in Nicaragua was no measure of school closure established. In 15 countries, mandatory closure was in effect for more than 75 percent of the days of the period (294). In eight countries the mandatory closure was in effect for more than 80 % of the days, with El Salvador having the longest duration (244 days). Uruguay was the country with the fewest days of mandatory closure (79), equivalent to 26.87 % of total days.

Mandatory workplace closure (except for essential sites) is the highest level of stringency in the C2 component of the GRSI (Table 1). Eighteen of the region's 20 countries reached this level at some point during the period under review. Only Uruguay and Nicaragua did not implement this measure. In Uruguay, the most stringent measure was the recommendation of workplace closure or work from home (measure 1, Table 1). Nicaragua did not implement any type of site closure (measure 0, Table 1).

Table 4

Latin America: Effective days for the mandatory closure of educational institutions until November 9, 2020 (Countries in descending order)

Country	More stringent measure	Days of effect	% over total days
El Salvador	3	244	82.99
Bolivia	3	243	82.65
Brazil	3	243	82.65
Panama	3	243	82.65
Peru	3	243	82.65
Ecuador	3	242	82.31
Honduras	3	242	82.31
Argentina	3	239	81.29
Colombia	3	239	81.29
Guatemala	3	239	81.29
Venezuela	3	239	81.29
Costa Rica	3	238	80.95
Dominican Republic	3	236	80.27
Mexico	3	232	78.91
Cuba	3	224	76.19
Chile	3	210	71.43
Paraguay	3	194	65.99
Haiti	3	144	48.98
Uruguay	3	79	26.87
Nicaragua	0	Not applicable	Not applicable

Source: (31), own calculations.

Table 5

Latin America: Effective days for the mandatory closure of workplaces until November 9, 2020 (Countries in descending order)

Country	More stringent measure	Days of effect	% over total days
Chile	3	184	62.59
Brazil	3	173	58.84
Venezuela	3	161	54.76
Mexico	3	138	46.94
Argentina	3	137	46.60
Guatemala	3	132	44.90
Bolivia	3	96	32.65
Ecuador	3	94	31.97
Honduras	3	80	27.21
Colombia	3	78	26.53
Cuba	3	77	26.19
El Salvador	3	73	24.83
Paraguay	3	73	24.83
Dominican Republic	3	62	21.09
Panama	3	54	18.37
Peru	3	46	15.65
Costa Rica	3	39	13.27
Haiti	3	32	10.88
Nicaragua	0	Not applicable	Not applicable
Uruguay	1	Not applicable	Not applicable

Source: (31), own calculations.

In those countries that implemented mandatory closure (except in essential workplaces), Argentina, Brazil, and Venezuela maintained this level on more than 54 % of the total days in the period (294). Panama, Peru, Costa Rica, and Haiti are the countries with less than 20 % mandatory closure of these work sites in the period.

The requirements for people to stay in their homes (component C6 of the GRSI) range from recommendation (Measure 1, Table 1) to the obligation not to leave except exceptionally (Measure 3, Table 1). The first step was to quantify the days of the requirement to remain in the case by including measures 1, 2, and 3.

In Table 6, the countries have been ordered according to the number of days in which some type of restriction on leaving the home was in effect (Column 1). Paraguay was the country with the highest number of total days of requirements to stay at home (245), representing 83.3 % of the total days of the period. Eleven countries in the region recorded more than 80 % of the days with some type of restriction on the mobility of persons outside the home (column 2). Uruguay was the only country that had approved measures to require people to stay at home and recorded less than 50 % of the days in this condition (40.8 %). Nicaragua was the only country that did not apply measures in this component of the GRSI.

Table 6 also shows that the most stringent measure of this component, not leaving the household but with minimal exceptions (column 3), was applied in 11 countries. In Venezuela, Haiti, Colombia, Mexico, Guatemala, Ecuador, and Uruguay the maximum level of stringency was 2 (leaving for grocery shopping and other essential activities). In Costa Rica, the most stringent measure of this component of the GRSI was the recommendation not to leave the home.

Considering only the countries with the most stringent measure, the number of days of effect (column 4) varied from 179 in Chile to 4

Table 6

Latin America: Effective days with requirements to stay at home until November 9, 2020
(countries in descending order)

	1	2	3	4	5
Country	Days with requirements to stay at home (sum of days with options 1, 2, and 3 of the GRSI component C6)	Days with requirements to stay at home over total days (%)	More stringent measure	Days of effect of measure 3	Days of effect of measure 3 over total days (%)
Paraguay	245	83.33	3	61	20.75
Brazil	242	82.31	3	7	2.38
Venezuela	242	82.31	2	Not applicable	Not applicable
Peru	240	81.63	3	54	18.37
Honduras	239	81.29	3	159	54.08
Bolivia	238	80.95	3	4	1.36
Dominican Republic	238	80.95	3	20	6.80
Panama	238	80.95	3	76	25.85
Argentina	236	80.27	3	39	13.27
Haiti	236	80.27	2	Not applicable	Not applicable
El Salvador	234	79.59	3	87	29.59
Chile	230	78.23	3	179	60.88
Colombia	230	78.23	2	Not applicable	Not applicable
Mexico	225	76.53	2	Not applicable	Not applicable
Costa Rica	223	75.85	1	Not applicable	Not applicable
Guatemala	193	65.65	2	Not applicable	Not applicable
Ecuador	181	61.56	2	Not applicable	Not applicable
Cuba	152	51.70	3	38	12.93
Uruguay	120	40.82	2	Not applicable	Not applicable
Nicaragua	0	Not applicable	0	Not applicable	Not applicable

Source: (31), own calculations.

in Bolivia. This meant that in Chile the most stringent measure was effective on 60.8 percent of the days in the period, while in Bolivia it was 1.36 percent (column 5).

Sequencing of stringency policies

Three countries were selected to analyze the sequence of stringency policies. The first of these was Uruguay, as it met the criteria of having the lowest average GRSI for the period (Table 3), and also having information on COVID-19 diagnoses for international comparisons. The other two countries were Argentina and Panama because they had the highest incidence rates per COVID-19 on the final day of the period analyzed (November 9, 2020), as shown in Figure 4.

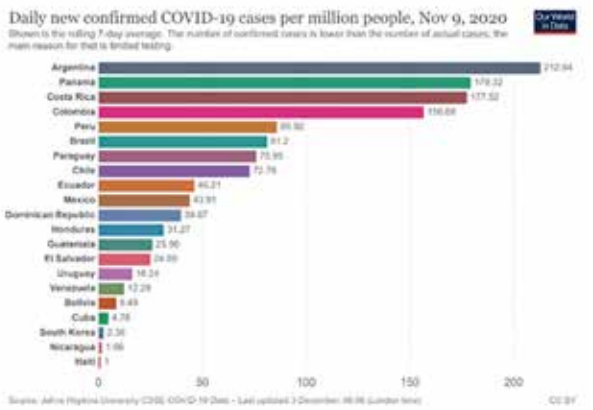

Figure 4. Latin America: New COVID-19 cases recorded on November 9, 2020.
Source: (1).

Uruguay kept the number of new cases of COVID-19 below 6.9 per million inhabitants until October 13, 2020, comparable to South Korea's record (Figure 5), between 40-50 times less than that recorded by Panama and Argentina.

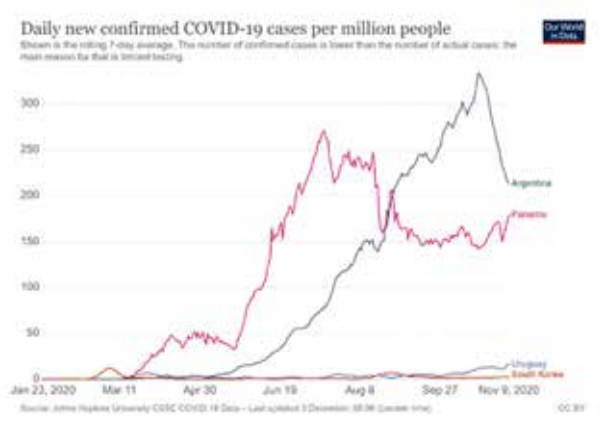

Figure 5. New COVID-19 cases in Uruguay, Argentina, Panama, and South Korea, January - November 9, 2020.
Source: (1).

No pandemic control measures were taken in Uruguay until March 13 (Figure 6). Initial measures included the following: prohibition of public events, recommendation to stay home (Measure 1 of GRSI component C6), recommendation to avoid cross-regional travel, and initiation of quarantine for persons from high-risk regions. The following day, all educational institutions were ordered to be closed and public information campaigns began. By March 15 (that is, two days after the report of the first case of COVID-19 in Uruguay), the GRSI was already at 52.

On March 24th the borders are ordered to be closed, bringing the GRSI to 57. Three days later, it is recommended that public transportation be closed, which increases the GRSI to 63. The maximum number of cases is registered on March 31st. On April 2 the level of stay at home requirements is increased (only outings for essential activities are allowed). The maximum GRSI is thus reached (72).

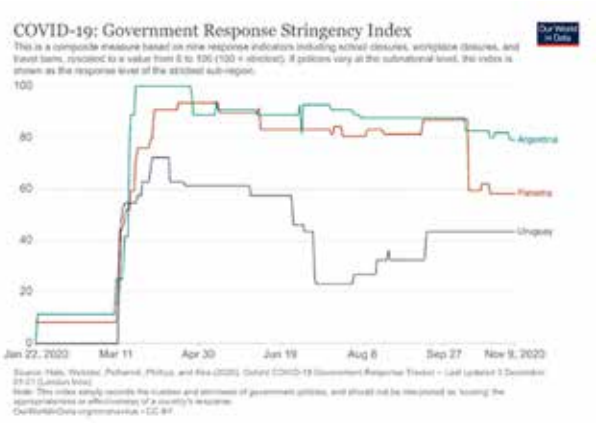

Figure 6. Government Response Stringency Index (GRSI) in Uruguay, Argentina, Panama
January - November 9, 2020.
Source: (1).

This GRSI maximum level was maintained for only 11 days (April 2-12). The daily case peak in Uruguay was half (in terms of population) that of South Korea. As the daily cases began to decrease on April 6, the de-escalation began on April 13 (the GRSI was reduced to 63, due to the reduction in the level of confinement, that is, again with the recommendation not to leave home). The GRSI remains close to 60 until May 31. The GRSI remains close to 60 until May 31. On this day, the total closure of educational institutions is modified by closing only some levels, thus reducing the GRSI slightly to 57.

As of June 27, the ban on public events was lifted, and the GRSI was placed at 46. On July 10, there is a return to normal working conditions. This results in the reduction of GRSI to 25. The next day, the recommendation to close schools (as opposed to the requirement to close at some levels) is made, reducing the GRSI to 23. It remains at this level until August 2. As of August 3, the recommendation to close workplaces and teleworking resumes, bringing the GRSI to 27. On August 17 the recommendation for the cancellation of public events is reintroduced, increasing the GRSI to 32 (until September 15).

On September 16 the cancellation of public events becomes mandatory and public meetings are restricted to a maximum of 1 000 people.

With these two measures, the GRSI increases to 44. The GRSI remains at this value until November 9, even though the maximum number of new cases in the pandemic had been tied since October 8. On November 9, this number of cases reached a new all-time high, almost three times the October level.

In Argentina, the first control measure (January 23) was the start of the public information campaign, which led to the GRSI starting in 11 (Figure 6). No further action was taken until March 11 (almost a month and a half later). These new measures were the cancellation of public events and the beginning of quarantines for passengers coming from countries at high risk of COVID-19. On March 16, the mandatory closure of educational institutions began, and the entry of passengers from abroad was prohibited. With these two measures, the GRSI increases to 42.

As of March 19, it was established the closure of worksites (only maintaining open the essential ones), the restriction of meetings to less than 10 people, and the requirement to remain at home (Measure 3 of component C6 of the GRSI). The following day (March 20) these measures were complemented by restrictions on internal mobility, bringing the GRSI to 89. On March 23, with the closure of public transportation, the GRSI reaches its maximum value (100), which is maintained for one month, until April 25. During this maximum GRSI period, the number of daily cases did not exceed 1 per million inhabitants.

On April 27, the requirements for remaining at home were reduced (from Measure 3 to Measure 2, Table 1), so that the GRSI stood at 89, and remained at that level (with slight variations) until October 9. From this last date, the restrictions on workplaces are reduced, so that the GRSI decreases slightly to values close to 80 until the end of the period. Between April 27 and the end of October 2020, the number of daily cases per million inhabitants in Argentina increased 100 times.

Panama begins control measures on January 21, through the indications of government officials to take precautions on COVID-19 (Figure 6). The next day, mechanisms for detecting cases at the country's entry points were introduced. In this way, the GRSI reaches the value of 8 and remains so for a month and a half (until March 11). On March 12 the closure of all levels of educational institutions goes into effect. The following day, public events are prohibited and meetings are limited to 100 people. Entry into the country from some at-risk areas is also prohibited, bringing the GRSI to 44.

On March 16, it is recommended that workplaces be closed, as well as working from home. The next day, the recommendation for people to remain in the homes begins, increasing the GRSI to 52. On March 20, workplaces are closed (only essential services are kept open). Three days later (March 23) the restrictions on travel in the country take effect. Thus, GRSI is increased to 70. On April 4 the GRSI increases to 90 with the suspension of public transportation and the beginning of the requirement to stay home (allowing only trips for essential activities). By this date, the number of new cases per day of COVID-19 had increased by 30 per million. The GRSI remains close to 90 until June 7. From this day on, it decreases to 83 and remains at values close to 80 until September 13. By this date, the number of daily cases had increased five times compared to April's figures.

On September 14 the closure of public transportation resumes, increasing the GRSI to 87. It remains at this value until October 11. On this day the number of daily cases of COVID-19 was 166 per million. On October 12, restrictions on the entry of persons from abroad were reduced and public transportation resumed, reducing the GRSI to 59, and remaining close to 60 until the end of the period analyzed (November 9). By this last day, the number of new daily cases of COVID-19 had increased to 180 per million.

DISCUSSION

Until the end of November 2020, the use of the GRSI to compare Latin American countries had been reported (12,29). In the first case (12) the maximum and average value of the GRSI from the date of registration of the first case in each country until May 17, 2020, was used. In the second case (29), the average GRSI over the first 90 days of the pandemic's evolution in each country was reported. In (12), the effects of control policies up to May 17, 2020, were also

reported, in terms of stringency, with respect to closures of educational institutions, workplace closures, and requirements to stay at home.

The results already described corresponding to the period from January 21, 2020 (date of the first measures implemented in the region), to November 9 (last date with the registration of the GRSI in all countries).

By the end of the period under review, only three Latin American countries had managed to reduce the number of cases to levels comparable to those of South Korea (Figure 5), and they also had COVID-19 diagnostic test figures for international comparisons (Uruguay, Bolivia, and Cuba). It should be noted that, by November 9, the number of new cases in Uruguay had almost tripled the maximum number of cases recorded up to October 8.

The findings indicate that it was possible to control the pandemic in Uruguay with an average GRSI of 38, which is about half the average GRSI value of many countries in the region. Specifically, Uruguay required fewer days with educational institution closures (26 %) and did not apply measures 2 and 3 related to workplace closures on any day during the period. Uruguay was also the country with the fewest days with stay home requirements (40.8 %) and did not apply the most stringent measure in this component of the GRSI. Uruguay's experience shows that control of the pandemic was possible, and that differences with other countries may be related to structural (pre-pandemic) factors and management performance. Detailed examination in each country may provide evidence in this regard. This successful performance of Uruguay is even more relevant considering that its Global Health Safety Index value was below the Latin American average in 2019 (32).

This analysis also reports, for the first time, details on the evolution of the GRSI components, in the specific cases of Uruguay, Argentina, and Panama. Figure 6 shows the difference between the GRSI levels of Argentina and Panama with respect to Uruguay. This gap in the GRSI is evidence of the different institutional capacities in the control of the pandemic. It can also be seen when looking at the similarity of GRSI in Uruguay and South Korea (Figure 7). In the period with the highest number of cases in both countries, Uruguay's GRSI was lower than South Korea's. Another characteristic in the evolution of the GRSI in Uruguay is the flexibility which allowed, for example, that the requirements to be at home were only valid for 11 days in measure 2, and that on the vast majority of days there were no requirements to stay at home.

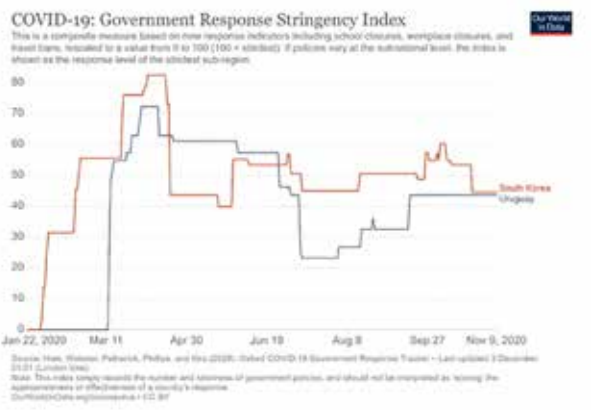

Figure 7. Government Response Stringency Index (GRSI) in Uruguay and South Korea. January - November 9, 2020. Source: (1).

Analysis of the sequence of GRSI components in each of the region's countries may enable the identification and characterization of policy patterns in the different phases of the pandemic.

The analysis has two limitations that should be noted. The first is that the recording of daily data for each component may vary as the information from the countries is updated and that detailed analysis in each country may in turn show differences from what is recorded in the GRSI database (31). The second is that the database does not include measurements of compliance. Therefore, the actual levels of stringency may be very different from those derived from the analysis of the recorded data (5).

CONCLUSIONS

In the vast majority of Latin American countries, control policies have been very stringent, but this has had no impact on reducing cases and deaths. As of early December 2020, very few countries have achieved control of the pandemic. This may mean that the effectiveness of control policies was significantly influenced by the capacities of the region's health systems. A pending task in identifying the constraints on these capabilities is to examine in detail both structural and management factors in the pandemic. The generation of databases for monitoring pandemic control policies will facilitate this identification, as well as their use in other areas of health care.

Comparative analysis of these control policies is even more necessary now that alternatives to COVID-19 immunization are already available, whose effectiveness may also be conditioned by these factors. On the other hand, since the risks of new pandemics are still present, it is even more relevant to draw lessons in the management of the COVID-19 pandemic. These lessons may also be applicable in other areas of health systems, especially in the care of chronic diseases.

Funding: None

Conflicts of interest: None

REFERENCES

1. University of Oxford, Oxford Martin School, Global Change Data Lab. Our World in Data. Coronavirus Pandemic (COVID-19). https://ourworldindata.org/coronavirus
2. Bautista-Molano W, Ferreyra Garrot L, Toro C. PANLAR Joven. Exploring the Impact of COVID-19 in Latin America. J Clin Rheumatol. 2020;26(6):218-219.
3. The Lancet. COVID-19 in Latin America: A humanitarian crisis. Lancet. 2020;396(10261):1463.
4. Blukacz A, Cabieses B. COVID-19: leaving no one behind in Latin America. Lancet. 2020;396(10257):1070.
5. Idrovo AJ. Long but Unreal Lockdowns in Latin America. Comment on Chen YT, Yen YF, Yu SH, Su EC. An Examination on the Transmission of COVID-19 and the Effect of Response Strategies: A Comparative Analysis. Int J Environ Res Public Health 2020;17:E5687. Int J Environ Res Public Health. 2020;17(21):8064.
6. Muñoz N. COVID-19 in Latin America: A first glance to the mortality. Colomb Med (Cali). 2020;51(2):e4366.
7. Taylor L. How Latin America is fighting COVID-19, for better and worse. BMJ. 2020;370:m3319.
8. Ramírez de la Cruz EE, Grin EJ, Sanabria-Pulido P, Cravacuore D, Orellana A. The Transaction Costs of the Governments' Response to the COVID-19 Emergency in Latin America. Public Adm Rev. 2020:10.1111/puar.13259.
9. Pablos-Méndez A, Vega J, Aranguren FP, Tabish H, Raviglione MC. COVID-19 in Latin America. BMJ. 2020 Jul 27;370:m2939. doi: 10.1136/bmj.m2939.
10. Loaiza JR, Rao K, Eskildsen GA, Ortega-Barria E, Miller MJ, Gittens RA. COVID-19 pandemic in Panama: Lessons of the unique risks and research opportunities for Latin America. Rev Panam Salud Publica. 2020;44:e86.
11. Andrus JK, Evans-Gilbert T, Santos JI, Guzman MG, Rosenthal PJ, Toscano C, et al. Perspectives on Battling COVID-19 in Countries of Latin America and the Caribbean. Am J Trop Med Hyg. 2020;103(2):593-596.
12. González R Marino J. Características iniciales de las políticas de control de la pandemia de COVID-19 en América Latina. Gac Méd Caracas. 2020;128(2): 207-216.
13. Hale T, Boby T, Angrist N, Cameron-Blake E, Hallas L, Kira B, et al. Variation in government response to COVID-19. Version 9.0. Blavatnik School of Government Working Paper. University of Oxford. 2020/032. 2020. www.bsg.ox.ac.uk/covidtracker
14. Cross M, Ng SK, Scuffham P. Trading Health for Wealth: The Effect of COVID-19 Response Stringency. Int J Environ Res Public Health. 2020;17(23):E8725.
15. Geng DC, Innes J, Wu W, Wang G. Impacts of COVID-19 pandemic on urban park visitation: A global analysis. J For Res (Harbin). 2020(12):1-15.
16. Cao Y, Hiyoshi A, Montgomery S. COVID-19 case-fatality rate and demographic and socioeconomic influencers: worldwide spatial regression analysis based on country-level data. BMJ Open. 2020;10(11):e043560.
17. Kim HH, Jung JH. Social isolation and psychological distress during the COVID-19 Pandemic: A Cross-National Analysis. Gerontologist. 2020;gnaa168.
18. Tran TPT, Le TH, Nguyen TNP, Hoang VM. Rapid

response to the COVID-19 pandemic: Vietnam government's experience and preliminary success. J Glob Health. 2020;10(2):020502.

19. Ferraresi M, Kotsogiannis C, Rizzo L, Secomandi R. The 'Great Lockdown' and its determinants. Econ Lett. 2020;197:109628.
20. Kayral İE, Buzrul S. Forecasting of COVID-19 infections in E7 countries and proposing some policies based on the Stringency Index. J PopulTher Clin Pharmacol. 2020;15;27(S Pt 1):e76-e84.
21. Deshpande A. Early effects of lockdown in India: Gender gaps in job losses and domestic work. Indian J Labour Econ. 2020;6:1-4.
22. Mori H, Schol J, Geeraerts A, Huang IH, Jandee S, Gonlachanvit S, et al. The Impact of COVID-19 on gastrointestinal motility testing in Asia and Europe. J Clin Med. 2020;9(10):3189.
23. Braithwaite J, Tran Y, Ellis LA, Westbrook J. The 40 health systems, COVID-19 (40HS, C-19) study. Int J Qual Health Care. 2020; 30:mzaa113.
24. Teixeira da Silva JA, Tsigaris P. Policy determinants of COVID-19 pandemic-induced fatality rates across nations. Public Health. 2020;187:140-142.
25. Vannoni M, McKee M, Semenza JC, Bonell C, Stuckler D. Using volunteered geographic information to assess mobility in the early phases of the COVID-19 pandemic: A cross-city time series analysis of 41 cities in 22 countries from March 2nd to 26th 2020. Global Health. 2020;16(1):85.
26. Arsalan M, Mubin O, Alnajjar F, Alsinglawi B, Zaki N. Global and Temporal COVID-19 Risk Evaluation. Front Public Health. 2020;8:440.
27. König M, Winkler A. COVID-19 and economic growth: Does good government performance pay off? Inter Econ. 2020;55(4):224-231.
28. Kaxiras E, Neofotistos G. Multiple epidemic wave model of the COVID-19 Pandemic: Modeling Study. J Med Internet Res. 2020;22(7):e20912.
29. Acosta LD. Capacidad de respuesta frente a la pandemia de COVID-19 en América Latina y el Caribe [Response capacity to the COVID-19 pandemic in Latin America and the Caribbean]. Rev Panam Salud Publica. 2020;44:e109.
30. Zhu D, Mishra SR, Han X, Santo K. Social distancing in Latin America during the COVID-19 pandemic: an analysis using the Stringency Index and Google Community Mobility Reports. J Travel Med. 2020; 30:taaa125.
31. Hale T, Boby T, Angrist N, Cameron-Blake E, Hallas L, Kira B, et al. Oxford COVID-19 GOVERNMENT Response Tracker, Blavatnik School of Government. 2020. www.bsg.ox.ac.uk/covidtracker
32. Nuclear Threat Initiative (NTI), Johns Hopkins University, Bloomberg School of Public Health, Center for Health Security. GHS Index. Global Health Security Index: Building Collective Action and Accountability. 2019. October. https://www.ghsindex.org/wp-content/uploads/2020/04/2019-Global-Health-Security-Index.pdf

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S208-S217
DOI: 10.47307/GMC.2020.128.s2.8

The SARS-CoV-2 in Colombia – A view from the Academy of Medicine

Dr. Gabriel Carrasquilla[1]

SUMMARY

The first case of SARS-Cov-2 in Colombia was reported on March 6th, 2020, in a woman arriving from Milan (Italy), and on March 12th sanitary emergency was declared by the President. Colombia started preparation for the pandemic in early January by monitoring all ports of international entrances. The initial strict and complete lockdown was mandated for 19 days starting on March 24, which was later extended in various opportunities until August 31. However, beginning late April few economic sectors were allowed to start activities. The number of cases grew constantly up to the end of July and since the beginning of August, the daily number of new cases is decreasing. Colombia began processing 3 000 samples for RT-PCR diagnose of COVID-19 and increased to 119 laboratories and 45 000 tests per day and increased from 3 000 to 10 000 beds in Intensive Care Units across the country. The National Academy of Medicine has followed the pandemic by meeting weekly to analyze different aspects of the pandemic, among others, primary health care, and the situation of health services, mental health, economic impact, and social indiscipline. Results of the early control measures and proper preparedness in testing and ICU are presented as well as the opportunities for improvement in social communication oriented to more pedagogic and educational messages instead of prohibition or fear of the current situation. There are challenges for the post-pandemic such reforms to the health system, strengthening primary health care, better coordination between national and local governments, and recovery of employment that will require strong participative leadership.

Key words: *Colombia, Pandemic, COVID-19, epidemiology, prevention, control, National Academy of Medicine.*

RESUMEN

El primer caso de SARS-Cov-2 en Colombia fue reportado el 6 de marzo de 2020, en una mujer procedente de Milán (Italia) y el 12 de marzo la emergencia sanitaria fue declarada por el presidente de la República. Colombia comenzó a prepararse para la pandemia desde principios de enero mediante la vigilancia de todos los puertos de entradas internacionales. El confinamiento inicial, estricto y completo, se ordenó por 19 días a partir del 24 de marzo, luego se prorrogó en varias oportunidades hasta el 31 de agosto. Sin embargo, a partir de finales de abril se permitió que pocos sectores económicos iniciaran actividades. El número de casos aumentó constantemente hasta finales de julio y, desde principios de agosto, el número diario de nuevos casos está disminuyendo. Colombia comenzó a procesar 3 000 muestras para el diagnóstico por RT-PCR de COVID-19 y aumentó a 119 laboratorios y 45 000 pruebas diarias y se incrementó de 3 000 a 10 000 camas en las Unidades de Cuidados Intensivos de todo el país. La Academia Nacional de Medicina ha seguido la pandemia reuniéndose semanalmente para analizar diferentes aspectos de la misma, entre otros, la atención primaria de salud, la situación de los servicios de salud, la salud mental, el impacto económico y la indisciplina social. Se presentan los resultados de las medidas de control tempranas y la preparación adecuada en las pruebas y en la UCI, así como las

DOI: https://doi.org/10.47307/GMC.2020.128.s2.8

ORCID: 0000-0002-9449-4931
[1]Permanent Member, Coordinator Health Committee, National Academy of Medicine, Colombia. Email: gcarrasquillag@gmail.com

Recibido: 14 de septiembre de 2020
Aceptado: 12 de noviembre de 2020

oportunidades de mejora en la comunicación social orientada a mensajes más pedagógicos y educativos en lugar de la prohibición o el miedo a la situación actual. Existen desafíos para la post pandemia tales como las reformas del sistema de salud, el fortalecimiento de la atención primaria, una mejor coordinación entre los gobiernos nacionales y locales y la recuperación del empleo que requerirá un fuerte liderazgo participativo.

Palabras clave*: Colombia, pandemia, COVID-19, epidemiología, prevención y control, Academia Nacional de Medicina.*

INTRODUCTION

The SARS-Cov-2 pandemic arrived in Colombia throughout the International Airport in Bogotá. The first case was reported on March 6th, 2020, in a woman arriving from Milan (Italy) and three days later, on March 9, two cases from Spain were also detected, one in the airport of Cali and the other one also in the airport, in Medellin, the three main cities of the country. The following day, six new cases were identified in three different cities (Bogotá, Cartagena, and Medellin). On March 12th, the first pandemic control measure was announced by the government. A Sanitary emergency was declared and public events with more than 500 people were prohibited (1).

Colombia began preparation for the possible entrance of the SARS-CoV-2 in early January. The first decision was to start monitoring all potential entrances such as international airports, seaports, and borders with neighboring countries. Besides, contact was initiated and maintained with international organizations, namely the World Health Organization (WHO), Pan-American Health Organization (PAHO), and the US Center for Disease Control (CDC). The severity of the menace was clearly defined, and the President called for daily updated information for him to proceed in decision making, as necessary.

At the Ministry of Health (MoH), the minister led the preparation for the pandemic by, initially, establishing case definition, how intervention for a detected case was going to be, how the follow-up should be, what to do every health institution like the National Institute of Health, Secretariats of Health at the department (state) and municipal level, what diagnostic tests should be implemented. In addition, diagnose the number of ICUs available in the country and their geographical distribution. Promptly, as of January 28, the government allocated the first 7.5 million dollars to face the coming pandemic. Furthermore, communication and information strategy was designed, and messages announcing the risk and the characteristics of the disease were widely disseminated by mass media including social networks. Initially, the low-risk level for the country was defined and was upgraded to medium risk when Italy declared a high-risk situation. On March 2nd, a high risk for Colombia was declared because the first case was reported in Ecuador. At this moment there was open information about the high risk for the country by press release.

It should be underscored that a new Minister of Health was appointed by the President to face the pandemic because the former Minister had resigned few months ago. On March 20th with 145 cases reported, a national and total lockdown was mandated by the government, beginning on March 24th, for 19 days. The lockdown continued successively up to August 30th. On March 21st occurred the first death of a taxi driver in Cartagena. Additional measures were announced by the government: On March 15th, the government closed schools and universities. On March 27th lockdown for people older than 70 years old was determined and should go until May 30th. On April 20th lockdown was extended until May 11, however economic activities start with strict restriction, manufacture and construction could start working with strict protocols.

In general, Colombia's preparedness took into account the main aspects of what getting ready for a pandemic should be implemented: Good, clear, and transparent communication of the risk to the general population, preparation and updating institutional capacity for testing with the appropriate technology, opportune lockdown especially related to the population at higher risk, health system preparedness for the increased number of people requiring hospitalization and intensive care units (ICU) and centralized response with local implementation left to governors and mayors according to particular situations.

After describing the current epidemiological situation in the country, this document will analyze each of the above issues regarding the positive aspects implemented and the issues that may have been performed in a better way or are still pendent to develop.

Epidemiological Information (as of Aug 29, 2020)

Figure 1 shows the distribution of cases by age, sex, and status, indicating a similar distribution between males (51.5 %) and females (48.5 %), increasing the risk of death as age is older and a relatively low occupation of ICU.

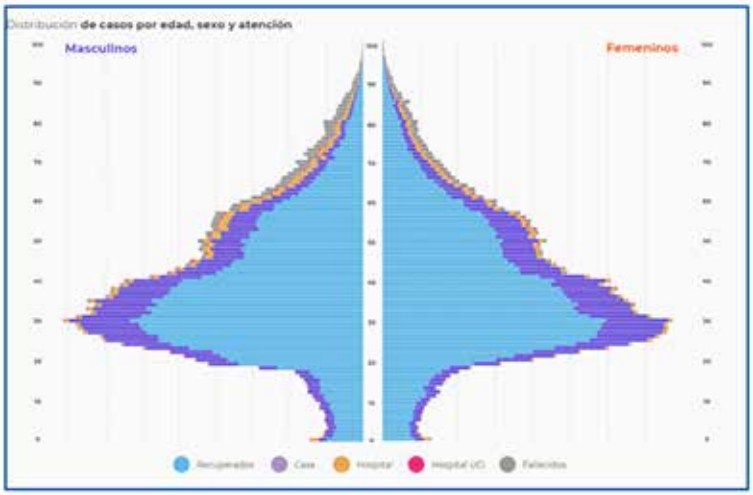

Figure 1. Distribution by age, sex, and status in COVID-19 patients. Colombia as of August 29, 2020.
Source: INS 2020 (2)

In more detail, Figure 2 shows the distribution of COVID-19 deaths by age (left) and cases (right) (3), showing that most mortality occurs in older ages despite having a lower number of cases. A higher number of cases and case fatality rates occur at 60-80 years old that is also the population whit frequent risk factors such as diabetes, hypertension, renal failure, chronic obstructive pulmonary disease.

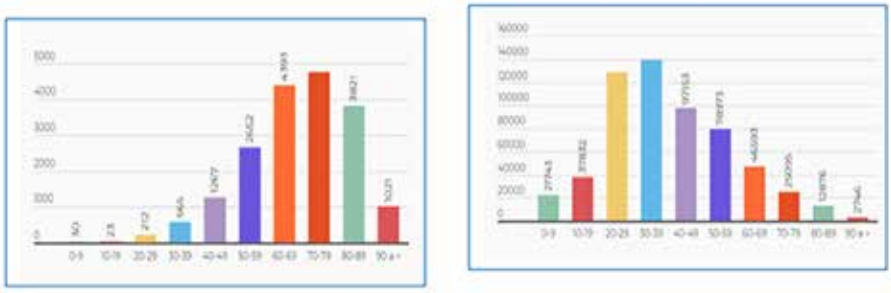

Figure 2. Distribution by age of COVID-19 number of deaths and cases in Colombia on August 29, 2020.
Source: INS 2020 (2)

Figure 3 displays the daily number of cases in Colombia up to August 29, 2020. In the last ten days (from August 19) the increasing trend has changed, and the number of cases is diminishing. However, this may be due to a fewer number of tests that have been taken in the last few days. Nonetheless, models and predictors have shown that the peak of transmission, unless in the main cities (Bogotá, Medellin, Cali, and Barranquilla), should be happening at the end of August beginning of September. Based on these assumptions, the Colombian Government has opened the obligatory quarantine and recommended self-isolation as well as continues using of basic preventive measures such as masks, hand washing, and physical distance.

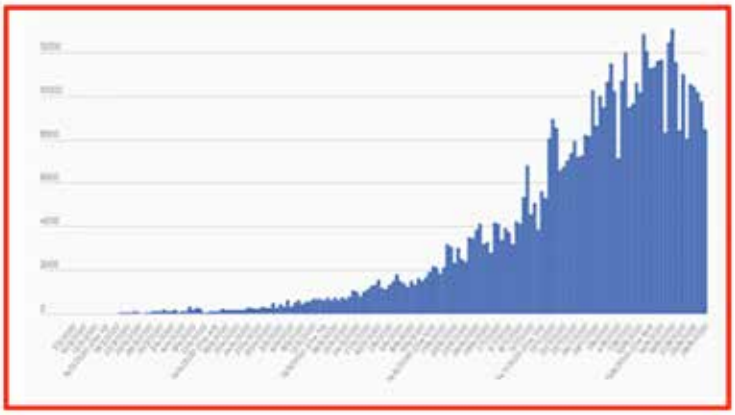

Figure 3. Daily number of cases in Colombia as of August 29, 2020.
Source: INS 2020 (2)

Comparing the epidemiologic situation (at the end of August) with other countries in the Americas, Colombia has reported 11 030 cases per one million inhabitants (6th in The Americas) and 351 deaths per million inhabitants (9th in The Americas) (2).

Finally, in the epidemiological profile of Colombia, Figure 4 shows the daily increase in the number of cases since the beginning of the pandemic (left) and in the last two months (right). In the last ten days of August, the number of cases has not increased more than 2 % daily; indicating that the country is arriving at the peak of the pandemic, and the number of daily cases will be diminishing from now on.

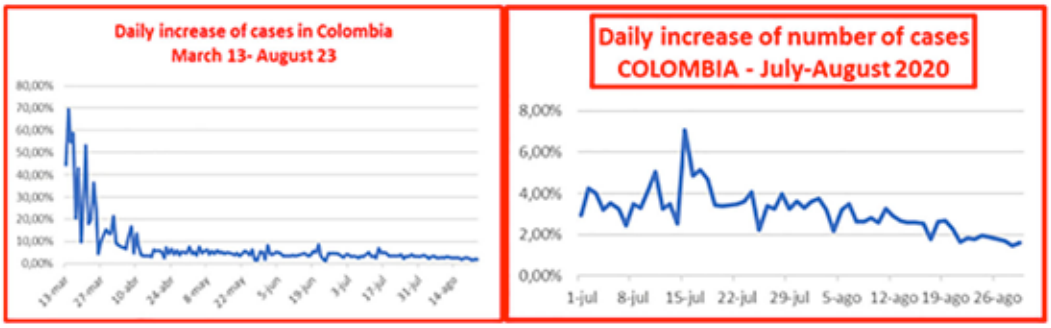

Figure 4. The daily increase in the number of cases in two periods in Colombia.
Source: (3)

Lockdown of the general population, high-risk groups, schools, and universities

The main purpose of the Colombian government to declare an early lockdown for the total population was to start preparing the hospital capacity for the care of patients that would require hospitalization and ICU. At the beginning of the pandemic, Colombia had less than 4 000 ICU beds and the MoH estimation was that 50 % of them could be occupied by patients with severe COVID-19 disease. The government created the Pandemic Unit with a former minister as the manager of the unit reporting directly to the President. This unit started looking for ventilators across the world to increase ICU capacity three-to-four-fold the current availability. As of the end of August, the total number of beds in ICU is 9 993 (4), six thousand one hundred out of them allocated for COVID-19 patients in addition, 20 % of beds in intermediate care units is occupied by COVID-19 patients.

As was pointed out, Colombia reports 351 deaths per million inhabitants, ranking 9th in The Americas, and the early lockdown to prepare the hospital system yielded its effectt, since there is no case of a severe COVID-19 patient that has been rejected to be hospitalized in ICU, if required. By the same token, in 2-3 cities only (Barranquilla, Cartagena, and Leticia), ICUs have been with more than 90 % of occupation, but as average in the country, there has been less than 75 % of ICU capacity in the peak of use of the hospital system. No doubt that the magnitude of the pandemic has revealed how weak and obsolete most health systems are; with very few exceptions, no country was prepared to handle and control a health emergency of the magnitude of the current pandemic. Despite the weaknesses of the Colombia health system, the country has been able to show that, for hospital capacity was able to prepare an appropriate response for severe patients of COVID-19.

On March 15, the government announced the suspension of classes for all public and private schools and universities. This preventive measure is still present (as of the end of August) at may continue the rest of the current year although there have been discussions about the impact that such measure may have on children and adolescents (see below). The first measure taken by the president, after declaring the state of emergency on March 17, was to order mandatory isolation from 20 March to 31 May for all adults over 70 years of age. However, on July 3rd the judge of Bogotá ruled in favor of the tutelage action lodged by a group of elder citizens, ordering the Government to allow the elderly population to leave their homes for outdoor physical exercise two hours every day instead of an hour thrice a week. President had to comply with the ruling but exhorted the elderly population to stay at home given the known higher mortality in this segment of the population (5).

Lockdown was an effective measure to contain transmission in the first three months of the pandemic. However, in June, after the lockdown was relaxed and a gradual commercial opening started, the number of cases tripled (6). The opening of other economic sectors continued up to August 30th. June 19th was declared the VAT day exemption ("COVID Friday") when the pandemic was increasing across the country. People went out to buy appliances, generating crowding, and close contact. Many people were in the malls and streets without basic preventive measures such as masks and, of course, physical distance.

Testing for diagnosing and contact tracing

Diagnose Tests to detect SARS-Cov2 were implemented from the very beginning of the pandemic. Colombia was the first country in Latin America to implement the Berlin Protocol for diagnosing lead by the National Institute of Health (NIH) that started to perform RT-PCR for the suspected cases with a limited capacity of fewer than 3 000 tests per day. Simultaneously, the Institute called for laboratories with the capability to perform PCR tests. Universities and research centers were the first institutions in supporting the NIH in processing tests in the main cities. Hospitals and private health insurance companies started to make diagnose and contract to trace with RT-PCR, afterward. The Institute keeps working on capacity building for other laboratories. As of the end of August, 119 laboratories across the country are currently approved (7) for SARS CoV-2 PCR tests and the

country can test more than 45 000 samples per day. To date (August 30th) more than 2.5 million tests have been performed and the country ranks third in Latin America in the number of tests (48 814) per million inhabitants (8). Another important fact in testing the population is the positivity of tests that was 12.7 % in May and has been increasing to 21.1 % in June, 28.9 % in July, and 33.2 % in August with an average, during the pandemic, of 25.9 % (Figure 5). The increasing proportion of positive PCR tests for SARS-Cov-2 is related to the decision of addressing diagnosis mainly to symptomatic people and contact tracing for identified cases.

Figure 5. The proportion of positive PCR tests in Colombia (11).
Source: INS 2020 (2).

To strengthen the country's capacity for testing symptomatic and suspected cases as well as giving priority to contact tracing as a strategy to control transmission by case identification and isolation, given the opening of most economic activities, the government established the PRASS ("Pruebas, Rastreo y Aislamiento Selectivo Sostenible") strategy (9). PRASS attempts to identify as many as 30-40 contacts of a COVID-19 case amongst relatives, close persons, and all possible contacts. A call center is being installed for the tracing of contacts across the country.

In the last month, the number of daily tests has decreased because the decision has been to test one member of a family and, if positive, isolation is imposed to the complete family to prevent transmission. In addition, no second test is required anymore when the patient has recovered from COVID-19.

During the pandemic, the health committee of the National Academy of Medicine has been analyzing different issues related to the pandemic with experts and leaders of the health sector as well as with highly respected economists, secretaries of health and mayors of cities, education experts, and members of the Academy. Recommendations have been sent to national and local governments.

Primary Health Care

The primary health care system was not prepared for such a pandemic and it has been more evident the lack of economic incentives, appropriate technology, and continuous training for the institutions and for the health care professionals to work at PHC facilities. Recommendations from the Academy of Medicine were addressed to give financial support to PHC institutions without intermediaries such private insurance companies, to conform and train multidisciplinary teams to deliver health care (information and education about prevention and

control as well as clinical signs and symptoms of COVID-19, case identification, treatment for mild cases at home, refer to health care facilities people with risk factors), not only at health care facilities but also domiciliary care. At the beginning of the pandemic efforts of MoH were addressed to prepare hospitals for patients that might require hospitalization. Later, in some cities such as Bogotá and Medellin, for example, primary care strategies were implemented, domiciliary visits performed, samples for diagnosing tests collected, and follow up of COVID-19 patients at home was conducted.

Impact on Health Services

As stated above, the early lockdown in the country was addressed, besides protection of the population of the risk of coming down with the disease, towards allowing hospital and health services to prepare the infrastructure (increasing number of ICU beds), equipment and supplies (ventilators), testing capacity and training of healthcare workers.

However, the quarantine also implied that hospitals diminished ambulatory care; suspend elective surgery, only emergency patients went to surgery. The income of both public and private hospitals decreased at the beginning of the year since many services diminished or were closed expecting Covid-19 cases that start arriving at high-level hospitals when the pandemic had advanced.

On the other hand, people rejected to attend hospitals for the fear of contracting COVID-19, control visits and treatments to NCD such diabetes, hypertension, chronic pulmonary obstructive disease (CPOD), or renal failure have been delayed or postponed. The consequences will be seen when a higher incidence of complications, the severity of the disease, and mortality will occur.

Public health programs and promotion and prevention activities have been affected by the pandemic, as well. EPI program has been impacted since children are not taken to primary care centers to obtain their immunization schedule and so has prenatal care for the same reason of fear going to health institutions or because of the lockdown. Treatments and control of other public health problems such as vector-borne diseases like dengue and malaria may have been discontinued of unattended.

The pandemic has made more evident weaknesses of the Colombian System of Social Security in Health. Inequity in access to health care between regimens subsidize (poor population) and contributory (employees, private health insurance), lack of governmental financial support to public hospitals, low political will for appropriate support to primary health care with proper incentives and training, payments delayed by insurance companies to health care institutions, low priority to health promotion and disease prevention. The National Academy of Medicine and other health institutions and scientific organizations as well as leaders of the health sector are advocating reform to our health system.

Another issue that might have affected the initial response to the pandemic at local level was that on October 2019 was the election of new governors and mayors who inaugurated their administration on January 1st, 2020. The new officers had to establish their teams, planing for the four-year term, budgetary issues, political agreements, and else while start facing the coming outbreak that had already taken place in China and was at the beginning in Europe.

Mental Health

During the pandemic, mental health has not been taken into account in the way it should have been done, but what the pandemic has made visible about the problems of mental health and psychopathologic conditions are serious, complex, frequent, and not easy to face. There are several factors associated with the appearance of mental health disorders (That may increase by three-fold according to experts) in the current pandemic situation. Lockdown is an effective preventive measure for transmission of COVID-19. Notwithstanding, an important proportion of the population stays in small areas where four, five, or more people live causing intrafamilial violence or sexual abuse that both have increased. Another consequence of lockdown is the increase in unemployment that means a lack of income, especially for the

poorest in urban areas and big cities. Besides the obvious problems of this factor, the impact on mental health has been enormous. Depression, anguish, stress, claustrophobia, ideas and attempts of suicide have increased and psychiatrists and psychologists are in high demand. Furthermore, it must be emphasized that lockdown has different consequences for different groups of the population, namely males and females, urban and rural inhabitants, young and the elderly, among others.

Structure and models of health care delivery were not prepared to give a response during or after the pandemic. Our health system must change regarding mental health care, according to with Caracas Declaration (10) whose recommendation was that the restructuring of psychiatric care linked to Primary Health Care and within the framework of the Local Health Systems model will permit the promotion of alternative service models that are community-based and integrated into the social networks; mental health programs must adopt the principles and guidelines on which these strategies and models of health care delivery are based. After all, this pandemic is an opportunity to change and improve mental health care services worldwide.

There have been, however other positive effects of the pandemic from the mental health standpoint. In general, people have developed or improved capacity to adapt to new circumstances, quarantine has provided better opportunities for family life, closer contact between parents and children, there are, for an important proportion of people, an improvement on informatics and technological capabilities, lifestyle has changed and persons and families have learned that there are unnecessary things that they would have shopped, otherwise.

Opening Schools and Universities

Closing schools and universities started early on March 15 and in just a matter of few weeks both public and private education institutions had to get ready for virtual classes and academic activities. Return to school has been an issue worldwide and the Colombian National Academy of Medicine decided to approach the subject to make recommendations for the government.

Several problems start rising amongst children and youngsters. Some went back to look for jobs, even though they were registered in schools, but families needed income since many parents had lost their jobs or decreased their income, due to the pandemic. Without attending school, children and youngsters are exposed to bullying, mistreatment, sexual abuse, poverty, and prone to delinquency. The school is a system to protect children and youngsters with care, food, peer interaction, and playtime.

The country should be aware that there is only 40 % of the population with access to the Internet, although there are regional differences. Furthermore, fundamental functions and goals of the school cannot be obtained virtually and those who do not have access to the Internet are precisely those who are more vulnerable.

Recommendations from the Academy of Medicine to the ministers of Education and Health to be considered to allow students going back to school were as follows:

To comply with established protocols of self-protection, use of masks, sufficient availability of hand washing facilities, physical distance in classrooms, and isolation in case of a suspected case. Continuous surveillance, protection to teachers since some of them may have risk factors, schools can be re-open in places where there are no cases but, on the other hand, there are places where compliance with protocols may not be possible. It is recommended to prepare protocols with the participation of students, teachers, principals, and parents. In this way, compliance with them is more attainable.

Economic impact

As it has been shown at a worldwide level the economic impact of the pandemic has been devastating. In Colombia, the unemployment rate has reached up to 21 % (July 2020). It has been pointed out that only 3 % of the country's population has not been affected by the economic standpoint.

Besides COVID-19, there have been additional factors affecting the economic situation in the country, a significant decrease in oil international prices and the cost of financing has increased by 1.5 %-2 %. Because lockdown primary objective

was to "buy time" to prepare hospitals and the health sector to deal with the increasing number of cases, the longer the time of quarantine, the greater the economic impact, that is unemployment, lack of income especially for the vulnerable population such informal jobs or self-employed people like taxi drivers, street vendors and else. The line of poverty in Colombia before the pandemic was 27 % of the population and due to the pandemic, this percentage may reach 40 %-45 %. One-to-two decades may be lost in poverty and inequity due to pandemic.

Special consideration should be taken regarding the survival of enterprises and assessment of what sectors should be supported by the state, for instance, tourism and recreation since these sectors have lost an enormous amount of money and have laid off several employees. For the second trimester of 2020, the country's GNP fell by 15.7 % compared to the same period of 2019, which was reported to be the greatest economic decline in recent history in Colombia. The economic activities that were hit the hardest were: wholesale and retail trade, repair of motor vehicles and motorcycles, transportation and storage, accommodation and food services (which decreased by 34.3 % and contributed –6.6 percentage points to the annual variation); manufacturing industries (which decreased by 25.4 % and contributed –3.1 percentage points to the annual variation), and construction, which decreased by 31.7 % and contributed –2.1 percentage points to the annual variation) (11).

Given these considerations, some issues should be underscored as actions taken by the government to support the crisis for different sectors of the economy: Allocation of extra funds for the health sector to respond to the pandemic has been prioritized and results are shown in the increase of ICU beds across the country, subsidies for the most vulnerable groups (30 %) of the population with extra income were decided for three months and later extended for additional three months, Central Bank has provided finance liquidity allowing private banks to refinance debts from customers and enterprises. Nonetheless, some issues should have been considered to minimize the economic impact on certain sectors of the population: The independents or freelancers have significantly lost income without support or subsidy and the informal jobs (50 %) have not received any subsidy either. An important allocation of resources is required during and after the pandemic to recover employment and income of the high proportion of the population that went back to be below the poverty line. Different sectors, as mentioned above, will require support in different ways, by loans at subsidized rates, renegotiations and/or delay payments of debts or stimulating generation of employment, defer payment of taxes as examples of different alternatives to strengthening the economy (12).

CONCLUSIONS

Colombia had an early response to the coming pandemic by starting preparation lead by the Ministry of Health and the National Government with clear and proper communication of the coming risk to the general population, the health care institutions, and the state and local authorities. There was an early allocation of additional resources for the health sector. Preparedness of hospitals for strengthening their capacity of ICU as well as the preparation for testing and capacity building of laboratories to implement PCR testing capacity. Identification and preventive and control measures were established at an earlier stage for risk groups. The result of this preparedness is that never the ICU was insufficient for attending patients of both COVID-19 and other diseases. The daily growth of the number of cases was moderated, after the first month and not more than 2 % in the last 4-6 weeks (August 31), CFR has remained around 3.1 %-3.3 % and in mortality and incidence per million inhabitants ranking 9th and 6th in the Americas.

There may be two additional factors influencing the low incidence and mortality rates in Colombia, namely weather and demographic profile. In Colombia, peaks of respiratory virus transmission occur mostly during rainy seasons However, since October 2019 the country has experienced an unusually long dry season that has extended through June 2020 coinciding with the end of the lockdown. In addition, Colombia has a relatively young population which may have attenuated the SARS-CoV-2 impact on mortality (6).

On the other hand, there have been some drawbacks from which there must be a process of learning for the remaining of the pandemic and future health situations. Communication and information were more based on fear, prohibition, and alarm instead of more pedagogic and educational messages to the population. Preparedness and decisions were more oriented towards capacity building of ICU and not more comprehensive activities including primary health care, ambulatory care for NCD patients, and public health activities such as keeping immunization coverage and prevention and control of vector-borne diseases.

Finally, as for most countries worldwide, there are, for Colombia, several challenges for the current situation of the pandemic as well as the post-pandemic period. Better coordination between the national and the state and municipal governments is required and leadership of the country ought to work in such away. To attend to the consequences of the pandemic on mental health at the individual and community level thru a well-integrated primary health care strategy is necessary given the wide impact of the lockdown and economic situation in the country. To work together among different leaders and institutions of the health sector to assess and to propose the changes and reform required for equitable access to health care. Last, but not least is the enormous challenge for Colombia and most countries of the world in the recovering of economy, employment, income for vulnerable groups. For all these challenges strong and participative leadership is required, and the country must demonstrate that can do so for a better place to live for our future generations.

Funding: None

Conflicts of interest: None

REFERENCES

1. https://wikipedia.org/wiki/Pandemia_de_enfermedad_por_coronavirus_de_2020_en_Colombia#Febrero
2. Instituto Nacional de Salud de Colombia. 2020.http://www.ins.gov.co/Noticias/Paginas/coronavirus-casos.aspx
3. Estimation based on https://coronavirus.jhu.edu/map.html
4. https://minsalud.maps.arcgis.com/apps/opsdashboard/index.html#/1de89936b24449edb77e162d485ed5d9
5. El Tiempo. 3 Julio 2020. https://www.eltiempo.com/justicia/cortes/juez-dio-la-razon-a-mayores-de-70-anos-que-pedian-trato-igualitario-en-medio-de-la-pandemia-513876
6. De la Hoz-Restrepo F, Alvis-Zakzuk NJ, De la Hoz-Gomez JF, De la Hoz A, Gómez Del Corral L, Alvis-Guzmán N. Is Colombia an example of successful containment of the COVID-19 2020 pandemic? A critical analysis of the epidemiological data. Intern J Infect Disea. 2020;99:522-529.
7. https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/laboratorios-pruebas-COVID-19.pdf
8. Instituto Nacional de Salud de Colombia. 2020. http://www.ins.gov.co/Noticias/Paginas/Coronavirus.aspx
9. https://colombia.as.com/colombia/2020/08/02/actualidad/1596395608_299130.html
10. Caracas Declaration, Conference on the Restructuring of Psychiatric Care in Latin America within the Local Health Systems, Pan-American Health Organization [PAHO]/World Health Organization [WHO], Venez., Nov. 14, 1990. https://www.globalhealthrights.org/instrument/caracas-declaration/
11. El Tiempo. 14 agosto 2020.
    https://www.eltiempo.com/economia/sectores/economia-de-colombia-se-desplomo-por-la-pandemia-de-coronavirus-529352
13. Farné S. Observatorio del Mercado de trabajo y la seguridad Social. Universidad Externado de Colombia. Agosto 4, 2020.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S218-S226
DOI: 10.47307/GMC.2020.128.s2.9

Policies to control the COVID-19 pandemic in Costa Rica

Drs. Ronald Evans-Meza[1], Roger Bonilla-Carrión[2], Roberto Salvatierra-Durán[3]

SUMMARY

The objective of this paper is to present a series of policies for the control of the COVID-19 pandemic by the Costa Rican authorities. An exhaustive review of the pandemic control policies was made in the official government media, mainly the Ministry of Health and the Costa Rican Social Security Fund and some collective media. The first wave of the pandemic in Costa Rica was quite mild, allowing the government to address it with a series of quite effective suppression and mitigation measures, which had the unrestricted support of the population. The second wave grew aggressively, causing social discontent due to the economic impact. Due to the ineffectiveness of the "hammer and dance" strategy, the Costa Rican government has rethought that strategy, lifting certain restrictions while recognizing the risk involved in terms of the increase in cases of COVID-19 in cases and deaths.

Key words: *COVID-19, public policies, government, Costa Rica.*

RESUMEN

El objetivo del presente trabajo es presentar una serie de políticas de control de la pandemia del COVID-19 por parte de las autoridades de Costa Rica. Se hizo una revisión sistemática de las políticas de control de la pandemia en los medios oficiales gubernamentales, principalmente el Ministerio de Salud y la Caja Costarricense del Seguro Social y algunos medios de comunicación colectiva. La primera ola de la pandemia en Costa Rica fue bastante leve, permitiendo al gobierno hacerle frente con una serie de medidas de supresión y mitigación bastante efectivas, que contaron con el apoyo irrestricto de la población. La segunda ola creció de forma agresiva, provocando una disconformidad social por el impacto económico. Debido a la inefectividad de la estrategia del martillo y la danza el gobierno costarricense se ha replanteado esa estrategia, levantando ciertas restricciones, aunque reconociendo el riesgo que implica en términos del incremento de casos de COVID-19 en casos y defunciones.

Palabras clave: *COVID-19, políticas públicas, gobierno, Costa Rica.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.9

[1]ORCID: 0000-0002-0875-9770
Physician, epidemiologist, sanitarian, M.Sc. Head of the Coordination of Research of the Hispano-American University, San José, Costa Rica. E-mail: roevansme@gmail.com
[2]ORCID: 0000-0002-8789-4494
Statistician, M.Sc. Research Coordination of the Universidad Hispanoamericana. San José, Costa Rica. E-mail: roger.bonilla@uh.ac.cr
[3]ORCID: 0000-0003-4442-7877
Medical assistant to the Coordination of Research of the Universidad Hispanoamericana. Universidad Hispanoamericana, San José, Costa Rica. E-mail: roberto.salvatierra@uh.ac.cr

Recibido: 09 de septiembre de 2020
Aceptado: 12 de noviembre 2020

INTRODUCTION

Sixty-six days after the announcement by the Chinese authorities of the presence of 27 cases of viral pneumonia of unknown origin and 60 days after the declaration by the same Asian authorities that it was a new coronavirus (1), on March 6 of this year, the first case of the disease was diagnosed in Costa Rica, known by the WHO as "Coronavirus 1919 Disease (COVID-19) (2). In Latin America, the first case of the COVID-19

pandemic occurred in Brazil on February 26th, and in the United States, the new disease had already been diagnosed in New York. The first death in Latin America occurred in Argentina on March 7. The rest is history. The pandemic has spread everywhere. By early July, 27 333 464 cases had been diagnosed, for a rate of 3 507 per million population, with 57 456 new cases. In addition, 893 711 deaths had occurred, for a rate of 114.7 deaths per million population, with 1 039 deaths for that day.

Undoubtedly this is the pandemic of the century, one that occurs every hundred years, although, to date, it is still far behind the famous and misnamed "Spanish Influenza" of 1918 that caused some 50 million deaths and affected approximately a quarter of humanity (3). With the reserves of the case, knowing the differences of time, transferring these figures to the present moment, we would have about 175 million deaths and about 1 750 million cases. The numbers are frightening, but the non-therapeutic control measures that have been taken are undoubtedly slowing down the strength of SARS-CoV-2 and also, in perspective, we have the early arrival of some of the vaccines that are in advanced stages of testing, which are expected to contain the pandemic. But even so, the current and future consequences for global health are extremely serious.

The effects on the economy are also seriously affecting all nations, especially those outside the developed world. This is "a health, human and economic crisis unprecedented in the last century and one that is continually evolving" (4). Only in times of world war does one experience a similar situation. The measures of suppression and mitigation that have been taken to contain the pandemic, have proven to be effective, especially the physical distancing, but they have a negative action in the economic field since they cause the deceleration of production, which implies the loss of jobs and decrease of working hours, with the consequent action on the salary. The result is a reduction in the aggregate demand for goods and services.

National health structure

According to the health system profile prepared by the Panamerican Health Organization (PAHO) (5), the "health, nutrition and education" sector, as indicated in Executive Decree N°41187 of 2018, is made up of: the following centralized and decentralized institutions: Ministry of Health, Ministry of Agriculture and Livestock (MAG), Costa Rican Social Security Fund (CCSS), Costa Rican Institute of Aqueducts and Sewers (AyA), National Insurance Institute (INS), Costa Rican Institute of Sports and Recreation (ICODER), National Directorate of Education and Nutrition Centers and Children's Centers for Integrated Care (CEN-CINAI), Institute of Alcoholism and Drug Addiction (IAFA), National Institute of Research and Teaching in Nutrition and Health (INCIENSA) and National Rehabilitation Board (PANARE).

The National Health System of Costa Rica is made up of the Ministry of Health, which is its governing body, the Costa Rican Social Security Fund (CCSS), the National Insurance Institute (INS), the Costa Rican Institute of Aqueducts and Sewers (A&A), universities and public and private institutes that train health personnel, private health services, cooperatives and self-management companies that provide health promotion, disease prevention, healing, and rehabilitation services to individuals, municipalities, and communities.

This health system underwent a real and effective transformation in the nineties, a period in which the health sector reform was carried out, framed within the discussion on the Costa Rican State Reform. In 1991, a Health Sector Evaluation Commission was created to identify the main problems of the sector at that time. In 1993 the National Plan for Health Sector Reform was formulated (5). From then on, the Ministry of Health was responsible for the steering role of health, as well as some specific programs, such as health promotion and disease prevention such as vector control, basic sanitation, comprehensive care for children from families with nutritional needs through the National Directorate of Education and Nutrition Centers and Children's Centers for Comprehensive Care (CEN-CINAI). Finally, the prevention, treatment, and rehabilitation of people with

addiction problems is the responsibility of the attached body, the Institute on Alcoholism and Drug Dependence (IAFA).

The CCSS was assigned to provide health services at all three levels of care. Of particular importance was the creation by the CCSS of the network of Basic Teams for Integrated Health Care (EBAIS) and Health Areas, "with the main objective of complying with the universal coverage that had previously been established in the 1961 Law for the Universalization of Health Insurance. The CCSS divides the national territory into seven health regions, each region subdivided into health areas that would have one EBAIS for every 3 500-4 000 inhabitants, depending on population density" (5).

The National Health System in Costa Rica is governed by four fundamental principles: 1. Financing is provided by contributions from the state, employers, and workers. Public funds covered 73 % of total health care spending in 2014, equal to the average among OECD countries (6). So far, it has covered the prevailing needs and obligations, but it is feared that very serious actuarial studies will not be enough in the medium term.

According to the 1998 Reform, the Ministry of Health was assigned four primary functions: 1) direction and management; 2) regulation of health development; 3) health surveillance, and 4) research and technological development. These attributions have been very evident during the current COVID-19 pandemic, in which the work of the Minister of Health has been outstanding and leading, a very important fact since in the past, with the exceptions of rigor, the actions of the Ministry had been quite grey, overshadowed by the enormous magnitude of the CCSS and its multi-presence throughout the country. The occasion-although very serious-has served then to highlight the role of the Ministry of Health as the undisputed rector of the sector.

The COVID-19 pandemic in the country

So far, there are two stages or two waves of the pandemic in Costa Rica. The first goes from March 6, when COVID-19 is first diagnosed in a tourist from abroad, starting to rise slowly, until it reaches its peak on April 9 when 37 cases are reported. From then on, the descent begins with some irregular ascents, until May 24th, that is, it lasted eighty days when from then on, it can be established that the second wave or outbreak of the pandemic is beginning. The first outbreak had its highest percentage increase in the weeks, 2, 3, and 4, while the minimum was reached in the ninth. In all, it had a cumulative total of about 1 000 cases, lasting up to eighty days. The first death of the pandemic occurred on March 19, and 48 hours later the second victim died. Then a long period of 17 days passed without death, when by that time 502 cases had been diagnosed. By the end of May, only ten deaths had occurred, resulting in a very low lethality for the country (7).

The second wave began in the last week of May, slowly increasing the number of cases in June, but never going below twenty. However, the mortality rate continues to be very low, so much so that during those four weeks it barely added six deaths to the ten that had come before, at a time when 3 459 cases were counted (lethality 0.5 %). As of June 24, no fewer than one hundred cases are reported daily, until the present time. On July 15, for the first time, more than 500 cases were diagnosed in one day, while on August 7, more than one thousand cases were diagnosed daily. It is already evident that July represents the breaking point of the pandemic in Costa Rica. Both prevalence and mortality are increasing steadily, with the former rising from 3 459 to 17 820 cumulative cases, while deaths are rising from a mere 16 to 150. Figure 1 shows the increase in cases every five days during July and August. In the first 25 days of July, there was a practically continuous increase in cases, followed by 15 days in which cases decreased, only to resume on August (8).

This is the last month in which cases are rising rapidly, reaching high rates in the Latin American context. Table 1 shows the cumulative cases and deaths from June 6 to August 23, as well as their respective rates per million inhabitants. It can be seen how the prevalence went from 237.2 per million on 3 June 20 to 6 935 on 23 August 20 (a 25-fold increase). During the same period, mortality varied from 2.7 per million on 3 June 20 to 72.8 per million (a 26-fold increase). Figure 2 (semi-logarithmic) shows how the rates of deaths and cases rise in parallel. Referring only to the second half of August, Costa Rica, as can be seen

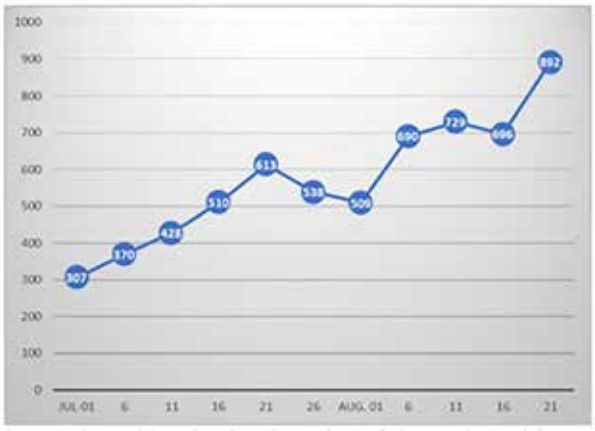

Figure 1. Costa Rica. The average number of new cases of COVID-19, according to five-day periods. July-August, 2020. Source: Own elaboration based on data of Costa Rica'sMinistry of Health.

Table 1

Costa Rica. Cases and deaths per million inhabitants by COVID-19 from June 3 to August 23, 2020

Date cases	Cumulative hab.	Cases/million deathshab.	Cumulative	Deaths/million
3/06/20	1 157	237.0	10	2.7
14/06/20	1 715	351.0	12	2.5
26/06/20	2 836	581.0	12	2.5
5/07/20	4 996	1 024.0	19	3.9
15/07/20	8 986	1 482.0	40	8.2
25/07/20	14 600	29 992.0	98	20.01
14/08/20	26 931	5 520.3	281	57.06
19/08/20	30 409	6 233.2	321	65.8
23/08/20	33 820	6 935.0	355	72.8

Source: Own elaboration based on data of Costa Rica's Ministry of Health.

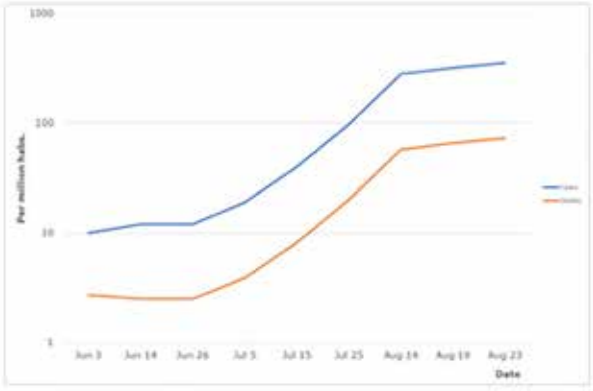

Figure 2. Costa Rica. Cases and deaths of COVID-19 per million (expressed in logarithms), June-August, 2020. Source: Own elaboration based on data of Costa Rica's Ministry of Health.

in Table 2, has higher rates of COVID-19 than Mexico and all Central American and Caribbean nations, except for Panama, and in the case of South America, above all countries except Peru, Colombia, and Argentina. Fortunately, mortality continues to be one of the lowest in the region, as can also be seen in the same Table 2 (9).

As of 7 September, Costa Rica reported 46 920 accumulated cases, for a rate of 9 618 per million, of which 18,211 are recovered and 28 231 remain active; 478 deaths (rate 98 per million), 50 % have occurred in the last 28 days. The base reproduction number for the date is 1.2. According to the risk classification COVID-19 (10), a score of 3.49 % is obtained which implies "high risk".

Table 2

Latin America. The average number of cases, deaths, and active cases per COVID-19 from 14 to 28 August 2020 (14 days), per million inhabitants

Country	Cases	Deaths	Active cases
North America			
Mexico	4 339.1	470.7	324.2
Central America			
Guatemala	3 984.2	151.0	550.9
Belice	1 619.0	16.7	1 488.3
El Salvador	3 827.2	102.8	1 847.8
Honduras	6 066.9	186.9	4 948.2
Nicaragua	688.2	21.2	200.1
Costa Rica	6 526.4	68.8	4 264.0
Panama	21 073.2	459.0	5 937.9
Caribbean			
Cuba	311.7	7.9	49.0
Haiti	737.0	18.1	218.3
Dominican Rep.	8 478.3	144.9	2 835.3
South America			
Argentina	7 649.5	151.8	1 895.0
Bolivia	9 674.9	397.0	5 403.9
Brazil	16 896.9	541.1	2 631.1
Chile	21 548.3	586.4	863.8
Colombia	10 563.7	337.4	3 220.0
Ecuador	6 393.3	377.2	624.5
Paraguay	1 783.2	27.0	728.9
Peru	17 896.1	856.2	4 802.4
Uruguay	436.0	11.9	59.8
Venezuela	1 261.0	10.5	334.8

Source: Own elaboration based on http://malouche.github.io

Measures taken by the government of Costa Rica

In Costa Rica, there was a 32-day gap between the taking of the first measure (3/02/20) and the appearance of the first case (6/03/20) (11). From the outset, the national government took a series of measures to address COVID-19, very similar to those already being applied in other countries (12,13). Among them were the declaration of a national emergency, restrictions on vehicle traffic and public transport, physical distancing, closure of schools, colleges, and universities, as well as shopping centers, restaurants, bars, civic and religious centers, sports facilities, border closures, suspension of international flights, migration measures, promotion of hygienic behavior such as hand washing, treatment of contacts and people suspected of having the disease, strengthening of hospital facilities, mainly in the area of intensive care, and later, the mandatory use of masks.

Among the most recent measures in the transition phase (starting in September) are the following:

- From August 31 to September 8, a transition closing phase is applied towards a model of controlled reopening and co-responsibility with municipalities, the private sector, and communities.
- During these 9 days, restrictive measures are established for the opening of establishments.
- All establishments with a health care operating permit in cantons on orange alert are ordered to be closed, except for the list of exceptions which includes supermarkets, hardware stores, home service, vehicle repair, stores, restaurants, beauty salons, among others.
- The operation of individual sports is authorized, outdoors or indoors, without an audience; contact sports for the training of the Women's and Men's National Teams of high competition; and competitions of the high performance or professional category, behind closed doors and without an audience; and contact sports for individual training without physical contact or approach; all according to the list authorized by the Minister of Sports.
- The hotels will be able to operate throughout the country with 100 % capacity. In the

In chronological order, among the most important are the following (14):

Table 3. Measures taken by the government of Costa Rica

Date	
Mar. 14th	Measures to protect or mitigate the economic and social impact of the pandemic.
Mar.16th	The National State of Emergency.
Mar. 19th	National Assembly approves a reduction in work hours.
Mar. 20th	A tax moratorium and exemption for commercial rents take effect. The Ministry of Labor publishes procedures for the temporary suspension of work contracts. On the same day, the government announces temporary school closings.
Mar. 21th	Approval of teleworking.
Mar. 24th	Labor measures in the public sector.
Mar. 27th	The extraordinary budget proposal to help affected families. The Costa Rican Tourism Institute grants a 4-month moratorium on the payment of taxes. The same day, it announces a restriction on night-time travel.
Mar. 31st	The CCSS approves the streamlining of public procurement awards.
Apr. 1st	Approval of fines for those who violate sanitary isolation measures, as well as vehicle restriction.
Apr. 4th	Daytime vehicle restriction. On the same day, temporary closure of establishments with sanitary permits for public meetings.
Apr. 5th	Restriction to the entrance to beaches and national parks.
Apr. 7th	Permission for public and private education to have alternative measures for teaching.
Apr. 9th	Prohibition of the sale of chloroquine, hydroxyquinoline, and ivermectin without a prescription.
Apr. 12th	Daytime vehicle restriction.
Apr. 17th	Approval of the "Bono Proteger" to help unemployed families.
Apr. 20th	Border closures are extended.
Apr. 22nd	Activation of protocols and health measures in workplaces. The Legislative Assembly approves a temporary subsidy for those whose employment is affected. The Ministry of Health announces protocols and health measures in work centers.
Apr. 30th	Reform of the general health law in cases of suspicion or confirmation of communicable diseases that must be reported.
May 11th	Restriction of the entrance of international flights to the national territory.
June 5th	Restriction to navigation in some of the country's rivers. Expansion of certain orange cantons.
June 25th	Health Care Guidelines for Pandemic COVID-19.
June 27th	Mandatory use of masks or masks.
Aug. 5th	Declaration of interest in research projects that contribute to the development and validation of diagnostic tests for the detection of SARS-CoV-2.

common areas of these hotels (restaurants, swimming pools, gyms, among others) a capacity of 50 % must be maintained.

- All the beaches in the country are open from Monday to Sunday until 14:30.
- The cantons on yellow alert will continue the process of reopening establishments.

The phase of controlled opening begins on September 9 allowing the controlled opening of establishments that serve the public, but with only 50 % of its maximum capacity and in schedule from Monday to Friday from 5 p.m. to 10 p.m. and on Saturdays and Sundays until 8 p.m. Places where there may be mass events such as bars, casinos, among others, are kept closed. Places of worship, event halls, cinemas, and theaters may operate with some restrictions. Other business and academic places may operate with a maximum of 75 people. For other events, the maximum will be 30 people.

The shared management model ("Costa Rica trabaja y se cuida") implies involving all citizens' at all administrative levels in the application of

the "protocols and guidelines for the prevention of COVID-19 infection in each of the territories and within the organizational structure of the National Risk Management System". In each canton, reference will be made to the "Cantonal Risk Ratio" (RRC), which is the product of the analysis of epidemiological indicators carried out by the Situation Analysis Room of the Emergency Operations Center (COE) (15).

DISCUSSION

The first wave of the COVID-19 pandemic in Costa Rica was quite mild and the country's health structure responded adequately. It is recognized that its powerful national health system, with national coverage, well organized in its three operational levels, under a unified command and with a very competent and well-prepared staff (16), was prepared to face the virus that was already devastating many areas of the planet. It also favored that there was enough time to be ready for what was coming and that we already said, the beginning was slow and not abrupt. The proof is in the low number of cases and attenuated linear growth. Similarly, it happened with the lethality and mortality, which were among the lowest in the world, as has already been mentioned.

Another positive condition was the initial participatory and comprehensive response of the population. In the face of the suppression and mitigation measures undertaken, it responded with respectful compliance. The intelligent participation of the highest health authorities, who daily addressed the country, giving details on the evolution of the pandemic, contributed to this. Among them, practically in the first months, the Ministry of Health and the director of the Costa Rican Social Security Fund were always present. The President of the Republic attended several of these presentations, but he always acted discreetly, talking as little as possible and giving all the support to his technicians. At that time, the government gained favorable points among the population's feelings, and the figure of the Minister of Health, Dr. Daniel Salas, and that of MS.C. Román Macaya gained popularity and respectability.

That honeymoon ended when the second wave came with unusual vigor. It is in full swing right now and is expected to peak in mid-October. The government, after taking alternative measures to the "hammer and dance" strategy during August, has decreed as of September 9, the lifting of some measures tending to favor physical distancing. Public opinion has changed, and that popular support that benefited the government at the beginning of the pandemic has been shattered.

For a long time, the thesis that the country had entered phase three of the pandemic was defended, when it was already evident to the population that the country had entered a stage of community contagion. The number of PCR tests dropped substantially, bringing the negative/positive ratio down to two when during the first wave it reached 40. It was evident that the high number of cases that have been presented has frankly exceeded the official response capacity. Either economic resources were not available - for lack of them or not foreseen - to carry out a sufficient number of tests, or perhaps there was not an adequate number of trained personnel to carry them out. A lack of personnel has been cited to meet a demand that has grown too much in recent weeks, but the truth is that there has been no effect on this aspect (Table 4).

Table 4

Costa Rica. Percentage of cases recovered from COVID-19 with respect to the cumulative total of cases, March-August 2020

Date	Cumulative cases	Recovered	Percentage cases
25/03/20	201	2	1.0
15/04/20	626	67	10.7
30/04/20	719	338	47.0
15/05/20	843	542	64.3
31/05/20	1 056	669	63.4
15/06/20	1 744	771	44.2
30/06/20	3 559	1 436	41.5
15/07/20	8 986	2 551	28.4
31/07/20	17 820	4 404	24.7
15/08/20	27 737	9 010	32.5
23/08/20	33 820	10 518	31.1

Source: Own elaboration based on data of Costa Rica'sMinistry of Health.

It would seem that the government has been proactive in diligently increasing the number of hospitalization beds to attend to patients with the disease, especially those in intensive care. However, it is reaching a dangerous point, in which, if the increase in cases continues, there could be a collapse in-hospital care.

CONCLUSIONS

The first wave of the pandemic in Costa Rica was quite mild, both in terms of morbidity and mortality, allowing the government to deal with a series of quite effective suppression and mitigation measures, which had the unrestricted support of the population. The process lasted eighty days and created a false sense of security and even pride, for having traveled without too much damage, a path that had been very painful, for many countries in the world, and even in Latin America.

The second wave began slowly at first, but after four weeks it has been growing in an unusually aggressive manner, both in terms of the number of cases and deaths, increasing the occupation of beds for moderate patients, as well as for severe patients located in intensive care units. The community has begun to protest, especially because of the economic impact that has arisen and the official discourse no longer generates the positive impact of the first months. Rather, it looks tired, repetitive, and not entirely transparent, which is why it has been accused by journalists.

Some sectors are beginning to complain about the ineffectiveness of the hammer and dance strategy and to ask for it to be rethought. The government has been forced by the circumstances to lift certain restrictions, which will allow the economy to improve, even though it recognizes the danger of occurring in the middle of an upward epidemic curve. This is the case with tourism, an activity that represents the country's main source of income, but bringing tourists from Europe and the United States, despite all the precautions taken, will increase risk exposure.

The pandemic has spread during other serious health problems that Costa Rica has in common with other Latin American countries. First of all, chronic non-communicable diseases should be mentioned, which constitute the first cause of mortality and disease burden in the region (and in the world). Their interaction with the pandemic is known from the beginning, making both intertwine to form a "perfect storm". Then we have the diseases of poverty, which include under nutrition that is particularly prevalent in children, as well as the other infectious diseases, which are still a major cause of death and disease in the area. In addition, there are a large number of other health problems aggravated by the pandemic, which a magnificent study by the Latin American Society of Pediatric Infectious Diseases (SLIPE) has recently reported (17), among which it mentions mental health, increased consumption of drugs and alcohol, learning disabilities, increased food insecurity with the closure of school canteens, limited access to immunizations, among others.

Funding: None

Conflicts of interest: None

REFERENCES

1. Saxena SK, editor. Coronavirus disease (COVID-19). Epidemiology, Pathology, Diagnosis and Therapeutics. Springer, 2020.
2. Lu R, Zhao X, Li J, Niu P, Yang B, Wu H, et al. Genomic characterization and epidemiology of 2019 novel coronavirus: implications for virus origin and receptor binding. Lancet. 2020;395:565-574.
3. Evans R. La gripe española. La gran epidemia del siglo XX. [Internet]. Wall Street International Magazine; 2018 [acceso 10 de Agosto del 2020]. Disponible en: https://wsimag.com/es/cultura/37048-la-gripe-espanola
4. CEPAL. Informe especial COVID-19, No 1. América Latina y el Caribe ante la pandemia del COVID-19. Efectos económicos y sociales; 2020 [Internet] [acceso 11 de Agosto del 2020]. Disponible en: https://www.cepal.org/es/videos/lanzamiento-informe-especial-COVID-19-n0-1-la-cepal
5. Organización Panamericana de la Salud. Perfil del sistema y servicios de salud de Costa Rica con base al marco de monitoreo de la Estrategia Regional de Salud Universal; 2019 [Internet] [acceso 11 de Agosto del 2020]. Disponible en: https://iris.paho.org/handle/10665.2/38590
6. OECD. Reviews of Health Systems: Costa Rica; 2017 [Internet] [acceso 12 de Agosto del 2020]. Disponible en: https://www.oecd.org/countries/

costarica/oecd-reviews-of-health-systems-costa-rica-2017-9789264281653-en.htm

7. Evans R, Bonilla R, Salvatierra R. Una pandemia en perspectiva, No 11. [Internet]. Escuela de Medicina, Coordinación de investigación. Universidad Hispanoamericana. San José, Costa Rica; 2020 [acceso 15 de Agosto del 2020]. Disponible en: https://uh.ac.cr/investigaciones/detalle/una-pandemia-en-perspectiva-no-11
8. Evans R, Bonilla R, Salvatierra R. Una pandemia en perspectiva, No 14. [Internet]. Escuela de Medicina, Coordinación de investigación. Universidad Hispanoamericana. San José, Costa Rica; 2020 [acceso 15 de Agosto del 2020]. Disponible en: https://uh.ac.cr/investigaciones/detalle/una-pandemia-en-perspectiva-no-14-
9. Evans R, Bonilla R, Salvatierra R. Una pandemia en perspectiva, No 21. [Internet]. Escuela de Medicina, Coordinación de investigación. Universidad Hispanoamericana. San José, Costa Rica; 2020 [acceso 15 de Agosto del 2020]. Disponible en: https://uh.ac.cr/investigaciones/detalle/una-pandemia-en-perspectiva-no-21-
10. Malouche K. COVID-19 Data. [Internet] 2020. [acceso 15 de Agosto del 2020]. Disponible en: https://malouche.github.io/COVID19data/
11. Evans R. Epidemia del COVID-19 en Costa Rica. Rev Hispanoam Ciencias Salud. 2020; 6(3):85-88.
12. González R, Marino J. Características iniciales de las políticas de control de la pandemia de COVID-19 en América Latina. Gac Méd Caracas. 2020;128(2):207-216.
13. Alvarez P, Harris R. COVID-19 en América Latina: Retos y oportunidades. Rev Chil Pediatr. 2020;91(2):179-182.
14. Imprenta Nacional. Compendio de Medidas tomadas por el Gobierno Nacional debido a la Propagación de la enfermedad COVID-19. [Internet] 2020. [acceso 30 de Agosto del 2020]. Disponible en: https://www.imprentanacional.go.cr
15. Gobierno de la República de Costa Rica. Alertas COVID-19: Costa Rica. [Internet] Regulación de establecimientos; 2020. [acceso 30 de Agosto del 2020]. Disponible en: https://sites.google.com/presidencia. go.cr/alertas/regulaci%C3%B3n-de-establecimientos
16. Sáenz M, Acosta, M, Muiser J, Bermúdez JL. Sistema de salud de Costa Rica. Salud Pública Méx. 2011;53(2):S156-S167.
17. IntraMed. COVID 19: Es necesario replantear la estrategia. [Internet] 2020. [acceso 30 de Agosto del 2020]. Disponible en: https://www.intramed.net/contenidover.asp?contenidoid=96579

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S227-S235
DOI: 10.47307/GMC.2020.128.s2.10

Dominican Republic: The response to the COVID-19 pandemic in 2020

Prof. Magdalena Rathe[1]

SUMMARY

The paper presents the situation in the Dominican Republic in terms of pandemic preparedness, the policies implemented to respond to it, the achievements made, and the challenges for the future. The COVID-19 pandemic found the Dominican Republic unprepared to deal with it, with significant deficiencies in the areas of prevention, early detection and notification, rapid response and mitigation, compliance with international standards, risk environment and health system strength. The country had the most infections in the entire Caribbean region and one of the most important in Latin America, however, the policies implemented were appropriate and the country faced lower rates of both serious illness and mortality, compared to the rest of the region. The health system, so far, has been able to respond, without exceeding the installed capacity in terms of beds and intensive care units. The worst part of the response preparedness is the weakness of the first level of care and its underfinancing, concluding on the necessity of investing adequately in strengthening the first level of care, implementing the population assignment using geographical criteria, developing payment for results mechanisms to increase quality and efficiency and putting in place the unified electronic medical record, in order to make it feasible to establish a prevention strategy.

Key words: *Dominican Republic, COVID-19, epidemic preparedness, health systems, primary care financing.*

RESUMEN

En el documento se presenta la situación de la República Dominicana en lo que respecta a la preparación para la pandemia, las políticas aplicadas para responder a ella, los logros alcanzados y los retos para el futuro. La pandemia del COVID-19 encontró a la República Dominicana sin preparación para enfrentarla, con importantes deficiencias en las áreas de prevención, detección temprana y notificación, respuesta rápida y mitigación, cumplimiento de las normas internacionales, entorno de riesgo, y en la fortaleza del sistema de salud. El país registró el mayor número de infecciones de toda la región del Caribe y una de las más importantes de América Latina; sin embargo, las políticas aplicadas resultaron apropiadas. El país presenta las tasas más bajas tanto de enfermedades graves como de mortalidad, en comparación con el resto de la región. El sistema de salud, hasta ahora, ha podido responder, sin exceder la capacidad instalada en cuanto a camas y unidades de cuidados intensivos. Lo peor de la preparación de la respuesta es la debilidad del primer nivel de atención y su subfinanciamiento. Se ha puesto en evidencia la necesidad de invertir adecuadamente en el fortalecimiento del primer nivel de atención, la aplicación de la asignación de la población con criterios geográficos, el desarrollo de mecanismos de pago por resultados para aumentar la calidad y la eficiencia y la puesta en marcha de la historia clínica electrónica unificada, a fin de hacer factible el establecimiento de una estrategia de prevención.

Palabras clave: *República Dominicana, COVID-19, preparación para las epidemias, sistemas de salud, financiación de la atención primaria.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.10

[1]ORCID: 0000-0002-5095-748X
Fundación Plenitud and Instituto Tecnológico de Santo Domingo (INTEC), Dominican Republic.
E-mail: mrathe@fundacionplenitud.org

Recibido: 19 de septiembre de 2020
Aceptado: 18 de noviembre de 2020

INTRODUCTION

The Dominican Republic, located in the Caribbean region, shares the island of Hispaniola with Haiti, occupying the eastern two-thirds of the island, with a territory of 48 670 km and 10.3 million inhabitants. It is an upper middle-income country (US$ 19,182 per capita in PPP by 2019) (1). The country has experienced rapid economic growth in recent decades, rising to tenth place in 2019 in terms of per capita income in the Latin American and Caribbean (LAC) region (after The Bahamas, Panama, Trinidad & Tobago, Chile, Argentina, Antigua & Barbuda, Uruguay, Costa Rica, and Mexico) from 22nd place in 1990 (1). However, the investment made by successive governments in the social sectors has been very low; resulting in poor health outcomes, lower than those in the LAC region (2). Within the LAC region, investment in the first level of care (3) and in the steering role and leadership of the health system, including community services, in particular epidemiological surveillance and emergency health preparedness, has been particularly low (4).

It is in this context that the COVID-19 pandemic arrives, finding the country ill-prepared to face it. In this paper, we present the situation in the Dominican Republic in terms of pandemic preparedness, the policies implemented to respond to it, the achievements made, and the challenges for the future.

Pandemic preparedness

In order to evaluate the Dominican Republic's preparedness for the COVID-19 pandemic, we used the Global Health Security Index (GHS), developed in late 2019 (5). This instrument is, as its authors say, "the first comprehensive and comparative assessment of health security and response capacity" in 195 countries. The GHS Index is a project of the Nuclear Threat Initiative (NTI), the Johns Hopkins Center for Health Security (JHU) and the Economist Intelligence Unit (EIU). This index was created to produce health security metrics that could be monitored over time, "stimulating changes that improve international capacity to address one of the world's most pervasive risks: the outbreaks of infectious diseases that can be caused by international epidemics and pandemics" (5).

The GHS Index assesses countries' health security and capabilities in six categories

- Preventing the emergence or release of pathogens
- Early detection and notification of epidemics of potential international concern.
- Rapid response and mitigation of the spread of an epidemic
- Sufficient and robust health system to treat the sick and protect health workers.
- Compliance with international standards to improve national capacity, funding plans to address gaps, and adherence to global standards.
- Overall risk environment and country vulnerability to biological hazards.

The above dimensions are measured by 34 indicators and 85 sub-indicators, obtained through open source information, i.e., data that a country has published on its own or reported by an international entity. The GHS Index prioritizes not only countries' capacities, but also the existence of functional, tested and proven capacities to stop outbreaks at their source. It includes indicators of nations' capacities to reduce Global Catastrophic Biological Hazards (GCBR), which are biological hazards of an unprecedented scale that could cause serious damage to human civilization globally, undermining the potential of civilization in the long term. These are events that could wipe out advances in sustainable development and global health because of their potential to cause national and regional instability, global economic consequences, and widespread morbidity and mortality.

The GHS Index Overview Report, released in October 2019, concludes that most countries are unprepared for a global biological catastrophic event, including those that could be caused by the international spread of a new or emerging pathogen or by its deliberate or accidental release. It also concludes that biosafety is a low priority area at the international level and those

connections among health sector actors in the response to epidemics are generally weak.

Interestingly, according to this index, the best prepared countries are the United States (with 84 points out of 100) and the United Kingdom (with 74 points). In the Latin American and Caribbean (LAC) region, the best prepared was Brazil (with 60 points). In October 2019, no one imagined that, just a few months later, the COVID-19 pandemic would spread around the world and that the countries at the top of the ranking would have the worst record in terms of impact and response to the pandemic. The Figure 1 below shows the overall results of the index in the countries of the Americas, drawing attention to the fact that some of the worst prepared countries (according to the GHS index) have so far performed well, such as several islands in the Caribbean, and especially Cuba.

The Dominican Republic is ranked 14th out of 34 countries in the Americas, with an overall score of 38, which places it at 91st out of 195 countries, as shown in the Table 1.

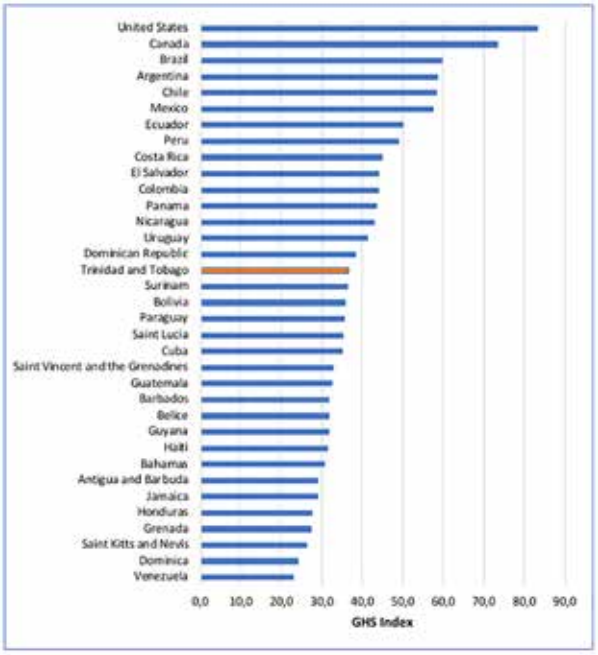

Figure 1. GHS in the Americas, 2019.
Source: (5).

Table 1

Dominican Republic: GHS Index, October, 2019

	DR Score	DR Rank (out of 195)	Average score (of all 195 nations)
Overall	**38,3**	**91**	**40,2**
Prevention	30,5	105	34,8
Detection and Reporting	37,1	105	41,9
Rapid Response	47,3	53	38,4
Health System	16,1	125	26,4
Compliance with International Norms	43,5	126	48,5
Risk Enviroment	59,3	73	55,0

Source: (5).

As a result, the country's preparedness to respond to an epidemic is arguably low in absolute terms (although it is in the middle in relative terms). It is interesting to note that its worst score refers to the strength of the health system, where the weakest areas refer to the absence of a plan to address human resource shortages, lack of evidence of an effective communication system with the population and between the public and private sectors in the event of a health emergency, low priority given to health worker care, and lack of a monitoring and evaluation plan.

Implementation of COVID-19 control policies

The first case of COVID-19 was identified on March 1, 2020, being a case imported from Italy. Policies to address the epidemic were put in place on March 19th, a few days after the World Health Organization (WHO) declared a global state of emergency and the disease a pandemic. That day there were 34 confirmed cases in the country (6).

The government created a high-level commission, coordinated by the Minister of the Presidency of the Republic, composed of high government officials and private sector personalities. A state of emergency was established in the country, borders were closed by sea, land and air, teaching in schools and universities was suspended, and businesses and productive activities were closed. The next day, a curfew was established starting at eight o'clock at night. Table 2 shows the policies implemented in the country from March 19 to October 15th, 2020.

Table 2

Policies implemented to control pandemic by COVID-19

Date	Implemented policies	Cases
19/03/20	**State of emergency** Flight suspension – countries Europe, China, Korea and Iran Quarantine of passengers from countries with community transmission Restriction on coronavirus testing laboratories Suspension of teaching in schools and universities Air, land and sea passengers border closures	**21**
20/03/20	**Curfew** Trafic and circulation ban between 8:00 p.m – 6:00 a.m. (exceptions for health personnel, journalisis, emergencies)	**72**
26/03/20	**Modification of curfew** Exceptions for persons an vehicles in the industrial, food, energy, water and telecommunications sectors.	**581**
14/04/20	**Extension of the state of emergency and curfew until May 1** Madatory use of masks	**3 614**
1/05/20	**Extension of the state of emergency for 25 day** Curfew 7:00 p.m.-5:00 a.m.; Sunday 5:00 p.m.-5:00 a.m.	**7 954**
20/05/20	**First phase of reopening** Companies enter gradually according to the number of employees. Public transport resumes at 60 % capacity. Churches reopen only on Sundays with protocols. Barber shops, beauty salons and medical offices only by appointment	**13 657**
3/06/20	**Second phase of reopening** Curfew 8:00 p.m.-5:00 p.m. Increase the size of the companies authorized to work; opening of shopping centers; private transportation of passengers is alowed	**18 319**
17/06/20	**Third phase does not start because of the increase in infections** The second phase in maintained	**26 645**
1/07/20	**End of the state of emergency** Opening of borders. Authorization to tourist hotels and restaurants with protocols Opening of gyms and companies with protocols is allowed. Curfew is lifted	**34 197**
20/07/20	**New State of Emergency due to increased infections** Curfew 7:00 p.m. - 5:00 a.m. on weeksdays and 5:00 p.m. - 5:00 a.m. on weekends	**54 797**
3/09/20	**Extension of the state of emergency** Continuation of the curfew in the previous period	**97 902**
28/09/20	**Extension of the state of emergency** Curfew is established in the national territory from Monday to Friday from 9:00 p.m. To 5:00 a.m. and on Saturday from 7:00 p.m. to 5:00 a.m.	**111 209**
15/10/20	**Extension of the state of emergency** The state of emergency continues and the curfew is maintained in the last format.	**120 924**

Source: own elaboration.

The University of Oxford has a tool for monitoring the response that governments are giving to the coronavirus pandemic, through which they build a set of indicators, namely: government response, health containment, policy stringency and economic support. The first one, of government response, covers the indicators of all the previous ones.

The Stringency Index seems to be the most used and has begun to be included in some international databases, such as "Our World in Data", also from the same University of Oxford. It does not include economic policies or information on diagnostic tests, which are less available internationally. The indicators included are the following:

- Containment policies: School and university closures; workplace closures; cancellation of public events; restriction of social events; closure of public transportation; obligation to stay home; domestic travel restrictions; international travel restrictions.
- Health system policies: public information campaigns.

Figure 2 shows the Stringency y Index in relation to COVID-19, noting that it was very high during the first two months, but that it subsequently began to relax as of June 2020, coinciding with the process of reopening the economy. Although not presented in the graph, by October 24th the index showed a reduction to 65 %.

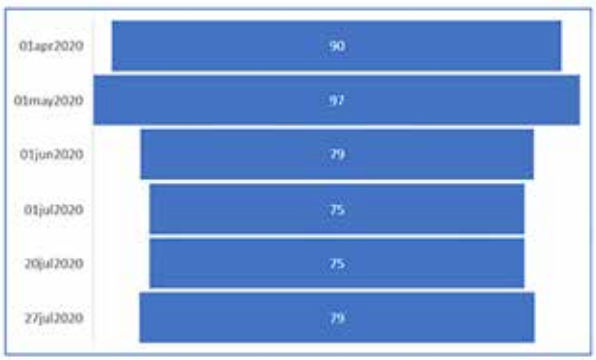

Figure 2. Government Response Stringency Index to control COVID-19 pandemic.
Source: (7).

In fact, during the month of May, the population began to put strong pressure on the government to begin the process of opening, not only because of the difficult economic situation generated by the complete closure of the economy but, very especially, because of the political process that the country was going through. On February 16, before the pandemic was declared, municipal elections were to be held and on May 16, presidential elections. The former, held with electronic voting, had to be cancelled on the morning of February 16th due to the malfunctioning of an important group of voting machines. The elections were postponed to March 16th and were held despite the fact that the pandemic was already known. This was the reason why the government waited until the 19th to declare a state of emergency. What was left of March, April and May, the country maintained an almost total closure and it was even necessary to postpone the presidential elections for July 5th.

In mid-May, the pressures were felt, due to the suspicion of various sectors of society regarding the political panorama. The government proposed a plan to open up the country starting on May 20, when the country had 13 657 confirmed cases and the daily cases were increasing, without public information on the number of diagnostic tests being performed or the rate of positivity.

The first and second phases occurred as scheduled, but it was not possible to enter the third phase, due to the increase in new cases. As of June 17, there were 24 645 confirmed cases, new cases continued to increase, and the positivity rate (which had already begun to be published) exceeded 20 %.

Because the elections had been rescheduled for July 5, on the first of that month the state of emergency was lifted, curfews were lifted, borders were opened, public transportation was normalized, and hotels and restaurants were allowed to operate with protocols, although controls on business operations were maintained.

Since mid-June, political activities were carried out during the electoral campaign, with the polls favoring the main opposition party. Finally, the elections were held, with this party winning and beginning a process of political transition until August 16, when the new authorities took office. At the end of July there was a surge of

Table 3

Dominican Republic: programmed opening phases

Phase 1 – May 20
Microenterprises may incorporate up to 5 employees or 50 % of their staff
Small companies may hire up to 10 employees or up to 50 % of the staff
Medium and large companies up to 25 % of the total
Barber shops, beauty salons and medical offices - users must make an appointment to be seen
Phase 2 – June 3
Microenterprises will be able to work 100 % of their staff
Small companies may incorporate up to 75 % of their staff
Large and medium-sized companies can operative with up to 50 % of their staff
Stores in shopping malls, private passenger transportation and gaming companies, except casinos, may begin operations
Phase 3 – June 17
Small and microenterprises of up to 50 employees will be able to work with 100 % of their staff
Companies with more than 50 employees may have up to 75 % of their staff
Religious service may be held three times a week
Phase 4 – July 1st
All companies resume work with 100 % of their staff
Tourism is reactivated, opening hotels and airports, as well as gyms and restaurant dining rooms

Source: coronavirusrd.gob.do/2020/05/19/comision-alto-nivel-detalla-4-fases-del-plan-de-reapertura/

new cases and a strong increase in positivity. In fact, between July 1 and July 20, the number of confirmed cases increased by 60 %, reaching a positive rate of 35 %.

By common agreement between the government in office and the elected government, on 20 July the state of emergency was reinstated, and a curfew was again imposed from 7 p.m. on weekdays and 5 p.m. on weekends.

Within the Family Health Insurance (which is part of the Dominican social security system), some policies were implemented to ensure adequate care for patients with COVID-19. In the contributory system, as of July 2020 there were 4.2 million people affiliated, representing 42 % of the Dominican population. This population has access to private health services, so adjustments were made in the fees to be paid to infectious disease doctors and pulmonologists. The co-payments were also modified (usually between 10 and 30 %), eliminating them for hospitalization and intensive care by COVID-19, allowing the high cost coverage limits to be exceeded (which currently reach one million pesos per year per person). The system also decided to assume the PCR tests, which are free for the entire population (as long as they are indicated by an authorized professional) (www.sisalril.gov.do).

The subsidized FHS system includes 3.8 million people, or 38 % of the Dominican population, who are affiliated with the National Health Insurance (SENASA), the public risk manager that administers this system and contracts with providers, mostly public or non-profit associations (but also some private ones). SENASA made compensatory payments to hospitals in the public network that were experiencing a drop in demand for other services. It also made advances to first-level providers. For these people, both the PCR tests and the treatment of patients were fully financed by the public system. Additionally, the government implemented the so-called "Employee Solidarity Assistance Fund (FASE)" to benefit employees whose contract was suspended due to the crisis by providing a subsidy through the company for those companies affected by the decrease in economic activity, which consists of a monthly payment of five thousand Dominican pesos (equivalent at that time to about ninety dollars). https://ovi.mt.gob.do.

Successes and limitations

COVID-19 control policies in the Dominican Republic were similar to those adopted in most countries. Particularly at the beginning of the epidemic, they were quite strict and most of the population complied with the restrictions. The epidemic affected the country significantly. As of August 28, 2020, it had 8 570 confirmed cases per million inhabitants, ranking eighth in the Americas region, after Chile (21 139), Panama (20 854), Peru (18 864), United States (17 727), Brazil (17 696), Colombia (11 438) and Bolivia (9 691). In the Caribbean region, the Dominican Republic is the most affected, with cases per million inhabitants doubling the number of cases in the Bahamas (7). In terms of mortality rate, the country is in a better position, since the case fatality rate has not been as great, compared to other countries in the region.

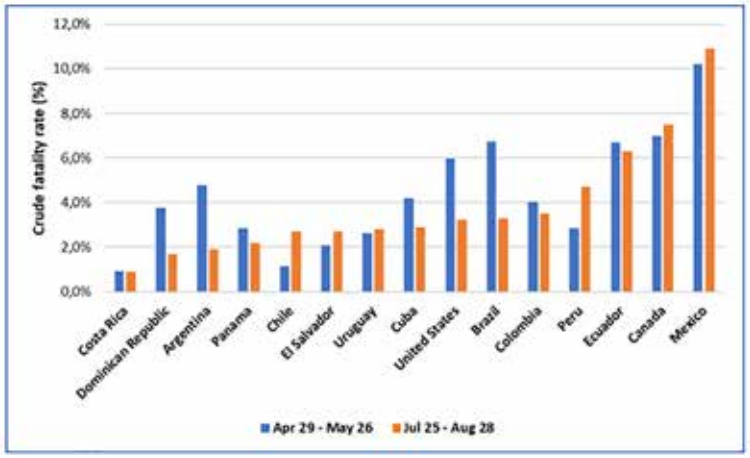

Figure 3. Latin America: evolution of the crude fatality rate by COVID-19 in the most affected countries. Source: (7).

As can be seen in Figure 3, after Costa Rica, the Dominican Republic has the lowest fatality rate in the period from July 25 to August 28, having halved it in the two periods considered. The high rates of countries such as Mexico, Canada and Ecuador stand out, as they are reluctant to go down.

In the case of the Dominican Republic, the demographic factor has been considered as an explanation, given that it has a relatively young population (although this also occurs in Mexico). No studies have yet been conducted to better understand these differences.

Despite having been strongly affected by the epidemic, the severity of cases - leading to hospitalization in intensive care units, use of respirators, and eventually death - has not been as severe in the Dominican Republic. In fact, only about 2 % of confirmed cases of COVID-19 have presented serious illness and, within these, between 15 %-20 % have required intensive care. As we have seen, the case fatality rate is less than 2 % since early July 2020.

Given these circumstances, the health system has been able to respond to the demand for care. It was only at the end of July, because of the increase in cases when the economy opened up, that the limits were reached in terms of occupancy of hospital beds and intensive care units.

Figure 4 shows the evolution of new cases at the beginning of the opening and then the positive effect in terms of the decrease in cases, with the re-imposition of limitations on circulation.

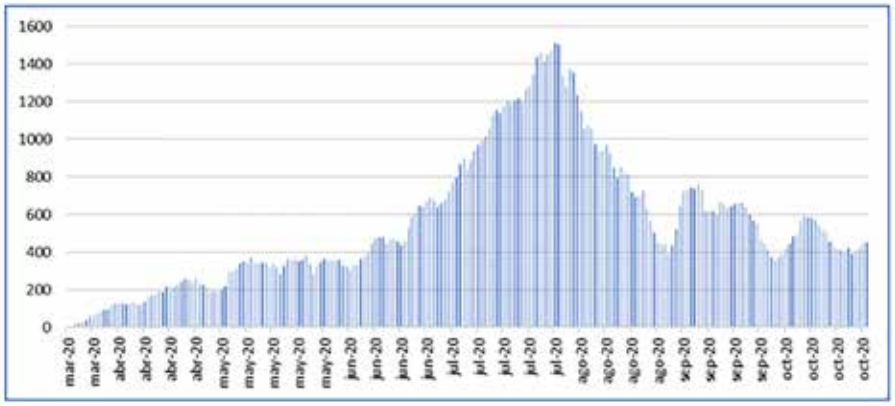

Figure 4. Dominican Republic: evolution of new cases of COVID-19 from March to October 2020 (Seven-day moving average).
Source: (6).

A clear decrease in the impact of the epidemic has been observed in recent months. The new government has taken important measures to contain it, including intersectoral actions in so-called "hot spots". It made the decision to increase the affiliation to the Family Health Insurance to the two million people who still do not have it, by December 2020. Likewise, it substantially increased the number of daily tests that are carried out, being able to observe a decrease in the positivity rate, which in October was around 10 %, with a clear downward trend.

Perspectives and challenges for the future

As we have seen, the COVID-19 pandemic found the Dominican Republic unprepared to deal with it, with significant deficiencies in the areas of prevention, early detection and notification, rapid response and mitigation, compliance with international standards, risk environment and health system strength.

The epidemic has hit hard, being the country that has had the most infections in the entire Caribbean region and one of the most important in Latin America. However, it has faced low rates of both serious illness and mortality, compared to the rest of the region. The health system, so far, has been able to respond, without exceeding the installed capacity in terms of beds and intensive care units.

The response of the authorities was appropriate, although as of the end of May it began to relax, especially compliance by the population. Despite the political processes that had a significant impact on the mobility of people and the fact that there was a change in the authorities, there was consensus between the two parties on how to face the crisis and the measures were continued.

The weakness of the health system is probably responsible for the fact that the epidemic could not be controlled at the beginning and became communitarian. There is an extremely low development of the first level of care in the country, despite the fact that the laws that create the current health system, which date from 2001, establish it as a gateway. According to the model of care included in the legal framework, all people should be assigned to some first level center, but this has not been fulfilled (8,9,11). The country also has an important underfinancing of the health system compared with other countries of the region, with particularly low financing of the leadership and governance function as well as community services - including epidemiological surveillance and preparation for health emergencies (3,10). This makes intersectoral coordination and efforts to contain epidemics locally difficult when they begin. It also makes it difficult, once infections occur, to track contacts and isolate them.

Consequently, looking ahead - whether in the presence of new waves of this epidemic or in

preparation for the next ones - it is necessary to invest adequately in strengthening the first level of care, put effectively in place the population assignment using geographical criteria, develop payment for results mechanisms to increase quality and efficiency and implementing the unified electronic medical record, in order to make it feasible to establish a prevention strategy.

And, of course, the leadership and governance role of the system needs to be strengthened, so that it functions in the direction of the country's intended north and is able to achieve joint and coordinated action with all sectors of society.

Funding: None

Conflicts of interest: None

Acknowledgments: The author thanks the Plenitud Foundation for their support in carrying out this work, Dr. Alejandro Cambiaso for his valuable comments, and Magdalena De la Rosa a for her support as a research assistant.

REFERENCES

1. Banco Mundial, World Development Indicators (WDI). https://databank.worldbank.org/source/world-development-indicators
2. Rathe M, Suero P. Salud, visión de futuro: 20 años después. Instituto Tecnológico de Santo Domingo (INTEC). Santo Domingo. 2017.
3. Rathe M, Marc G. Atención primaria en salud en América Latina y el Caribe: Experiencias exitosas y lecciones aprendidas. Santo Domingo: Observatorio de Seguridad Social (INTEC). 2020.
4. Rathe M. Repensar las prioridades en salud en tiempos de pandemia. Revista Estudios Sociales. Santo Domingo (en preparación). 2020.
5. GHS. Global Health Security Index: Building collective action and accountability. John Hopkins, Bloomberg School of Public Health. 2019.
6. Ministerio de Salud Pública (MSP). Boletines Epidemiológicos COVID-19. 2020. https://www.msp.gob.do/web/
7. Oxford University. Our world in data. Global Change Data Lab, Oxford Martin School. 2020. https://ourworldindata.org/
8. CNSS. Ley No. 87-01 que crea El Sistema Dominicano de Seguridad Social Promulgada el 9 de mayo del 2001. Santo Domingo: Ministerio del Trabajo. 2001.
9. Ministerio de Salud Pública (MSP). Modelo de Atención para el Sistema Nacional de Salud. Santo Domingo: Ministerio de Salud Pública. 2017.
10. GHED, Global Health Expenditures Database. Organización Mundial de la Salud (OMS). 2020. Disponible en: http://apps.who.int/nha/database/Select/Indicators/en
11. Rathe M. 2018. Dominican Republic: A health protection system to leave no one behind. The World Bank UNICO Series No. 30. Washington, DC: The World Bank.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S236-S241
DOI: 10.47307/GMC.2020.128.s2.11

Perspectives of the pandemic in Ecuador

Dr. Hugo Romo[1]

SUMMARY

By the end of August 2020, the pandemic caused by the new SARS-CoV-2 coronavirus has killed 826 743 people worldwide. All countries have been hit by the infection and have failed to prevent the progression of the infection in their populations. Ecuador, which already had serious social and economic difficulties before the pandemic, now faces very serious funding problems. The rate of diagnostic tests per 1 000 inhabitants is one of the lowest in the region, while the lethality of COVID-19 is one of the highest in the world. The trend has been to have cities paralyzed by fear, hospitals unable to receive more patients, people wandering the streets risking their lives to raising some money to support themselves and their families. Among the dead are friends, colleagues, parents, and grandparents, in addition to the excess mortality recorded in all cities of the country that account for indirect deaths from the pandemic. The health personnel have been the most sacrificed and continues to provide its contingent despite the limitations of supplies and medicines from hospitals.

Key words: *Pandemic, SARS-CoV-2, COVID-19, Ecuador.*

RESUMEN

A finales de agosto de 2020, la pandemia provocada por el nuevo coronavirus SARS-CoV-2 ha causado la muerte de 826 743 personas alrededor del mundo. Todos los países han sufrido el embate de la infección y no han logrado evitar la progresión de la infección en sus poblaciones. Ecuador que ya tenía graves dificultades sociales y económicas antes de la pandemia afronta hoy problemas de financiamiento muy graves. La tasa de pruebas diagnósticas por mil habitantes es una de las más bajas de la región, en tanto que, la letalidad de la COVID-19 es una de las más altas del mundo. La tónica ha sido tener ciudades paralizadas por el miedo, hospitales sin capacidad para recibir más pacientes, personas que pululan por las calles arriesgando sus vidas para recaudar algún dinero que permitan su sustento diario y el de sus familias. Entre los muertos constan amigos, colegas, padres y abuelos, además el exceso de mortalidad que registran todas las ciudades del país dan cuenta de muertes indirectas de la pandemia. El personal de salud ha sido el más sacrificado y continúa prestando su contingente pese a las limitaciones de insumos y medicamentos de las casas de salud.

Palabras clave: *Pandemia, SARS-CoV-2, COVID-19, Ecuador.*

INTRODUCTION

Between 1918 and 1920, the "Spanish Flu" killed more than 40 million people worldwide; it is believed to have been cause d by the influenza A virus, subtype H1N1 (1). By 2020, August 27, the new SARS-CoV-2 pandemic has infected 24 215 678 people and

DOI: https://doi.org/10.47307/GMC.2020.128.s2.11

[1]ORCID: 0000-0002-0585-9450
MSc, Ph.D. President of the Ecuadorian Academy of Medicine,
E-mail address: hromo56@gmail.com

Recibido: 28 de agosto de 2020
Aceptado: 12 de noviembre de 2020

killed 826 743, according to the Johns Hopkins University pandemic tracking website (2). Ecuador contributed to those figures with 110 549 infections and 6,410 deaths, figures that show an exponential increase, the same as the relaxation of confinement. Fifty-four percent of those infected were male (Figure 1).

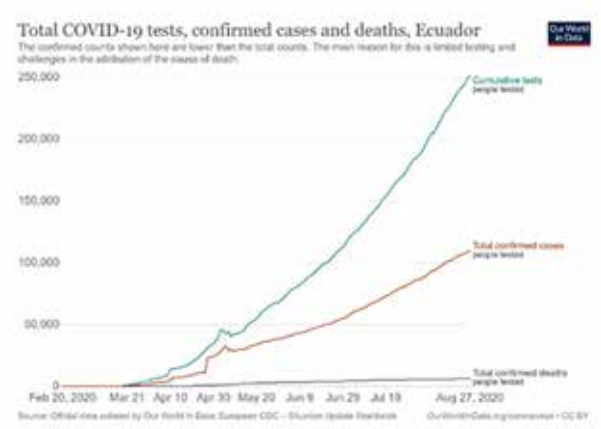

Figure 1. Ecuador: confirmed cases and deaths from COVID-19.
Source: Our World in Data. Oxford University, UK.

It is clear that most countries have failed to manage the pandemic; containment measures never worked, so efforts have been directed almost exclusively to mitigation activities. It should be noted that the management of the crisis by the World Health Organization (WHO) has also left much to be desired, including the late warning of the epidemic, outdated management guidelines without sufficient evidence, and politicization of crisis management (3).

According to official figures in Ecuador, 315 924 laboratory tests have been carried out to detect coronavirus, most of them rt-PCR tests and, to a lesser extent, rapid tests. The provinces of Pichincha, Guayas, and Manabí account for 50 % of those infected and 54 % of the deaths in the country. Although the highest explosive peak of infections and deaths occurred in March and April in the province of Guayas (18.3 %), particularly in the city of Guayaquil, in August, the highest number of infected persons was found in the province of Pichincha (22.7 %), with its epicenter in the city of Quito, and the third-highest frequency of infections was found in the province of Manabi (8.1 %) (4).

Health system response

On this occasion, the protagonist has been the Ecuadorian health system that has shown all its weaknesses. The hospitals are permanently overloaded and forced by circumstances to become COVID hospitals, relegating the care of patients with other pathologies to stay at home, delaying the therapy of catastrophic diseases. For their part, health personnel have been the great sacrificed, at the beginning they did not have appropriate personal protective equipment (EPP) and many had to provide for themselves. In the midst of the chaos, the Pan American Health Organization (PAHO) made the same mistakes it made in the H1N1 epidemic, by initially proposing and achieving centralization of PCR testing, and proposed protective measures against influenza to fight the coronavirus, although underestimating the risk. Doctors in this country and many in the region paid for these mistakes with their lives.

In Ecuador, 150 doctors have died since the beginning of the pandemic, according to reports from the union medical body, the Ecuadorian Medical Federation. While the health authority recognizes only 35 deaths and in an unusual attitude claims that these doctors were infected in their homes. Studies published in the United Kingdom and the United States indicate that hospital personnel has 11.61 [95 % CI 10.93-12.33] times the risk of having a positive test for COVID-19 than the general population (5). These circumstances cannot be different in our countries.

Another aspect that calls for attention is the low number of PCR tests per thousand inhabitants performed. Ecuador and Mexico are the countries with the lowest number of diagnostic tests for COVID-19 per 1000 inhabitants in the region. Since the number of confirmed cases depends on the number of molecular biology tests performed, under-reporting is evident (Figure 2) (6).

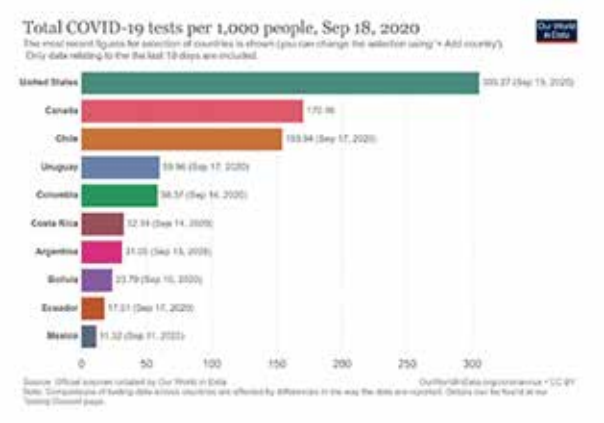

Figure 2. COVID-19, diagnostic tests per 1000 population. Source: Our World in Data. Oxford University, UK.

Consequently, it is certain that the number of infections and deaths reported in the official figures is far from reality and that we have only estimated a fraction of the total infected population.

Given these characteristics, we have resorted to one of the indicators most used by epidemiologists, the lethality rate. Ecuador's case fatality rate has been recorded as one of the highest in the world (Figure 3).

Case fatality rate = (No. COVID-19 deaths / Total confirmed COVID-19)*100.

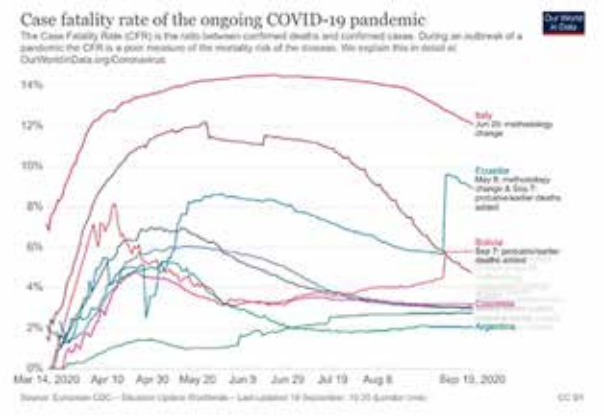

Figure 3. COVID-19: case fatality rate in selected countries. Source: Our World in Data. Oxford University, UK.

Excess mortality

In the city of Guayaquil, during March and April, the explosive outbreak was so intense that it tripled the monthly average of deaths in the two years before the pandemic. Calculations made by The Financial Times of London, with the numbers of deaths of the countries and the Civil Registry of Ecuador estimated that the Province of Guayas had excess mortality of 10 100 people, equivalent to 347 % of the mortality of previous years (7). The Ecuadorian government accepts that an additional 3 500 people would have died from COVID-19 because of the clinical picture described, but without verification with laboratory tests (Figure 4).

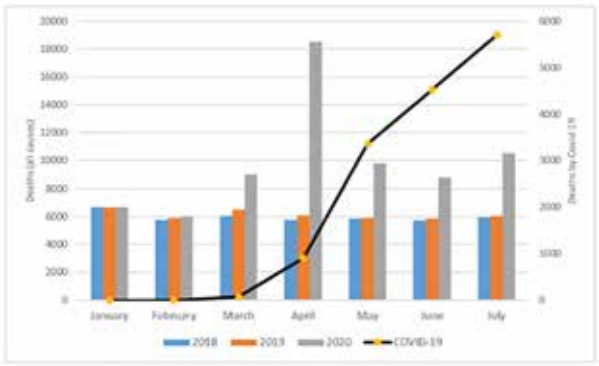

Figure 4. Ecuador: excess mortality January-July, 2020. Source: Civil Registry of Ecuador. National COE.

Excess mortality refers to the number of deaths over the expected average in the same period in previous years. In this case, it indicates the impact of the pandemic, because in these conditions, under-recording is important and not all deaths from COVID-19 are diagnosed. There are also indirect deaths, such as those who suffered from cardiovascular, cerebrovascular, and oncological diseases, among others, who did not receive the necessary health care due to lack of physical space in COVID hospitals.

The most used measure to represent the excess of mortality is the P-score which, in our case, allows us to identify the most affected provinces

and coincides with the different moments in which the increase of infections and, of course, of deaths occurred in each of them.

The peak of deaths in March and April occurred in Guayas and Santa Elena but did not replicate with equal intensity in other provinces where the increase was progressive (Table 1).

Table 1

Ecuador: P-score, excess mortality in the provinces, January-July 2020

PROVINCE	January	February	March	April	May	June	July
AZUAY	0,01	0,04	-0,07	0,00	0,09	0,15	0,40
BOLÍVAR	-0,23	0,13	-0,37	0,58	0,46	0,27	0,67
CAÑAR	0,16	-0,12	-0,20	0,80	0,21	0,02	0,47
CARCHI	-0,03	-0,06	-0,11	-0,07	0,15	0,27	1,04
CHIMBORAZO	0,03	-0,10	-0,12	0,51	0,57	0,70	1,13
COTOPAXI	-0,21	0,14	-0,05	0,03	0,27	0,94	0,68
EL ORO	0,09	-0,09	-0,06	1,46	1,77	1,14	0,78
ESMERALDAS	-0,15	0,14	-0,36	0,23	1,63	1,09	0,50
GALÁPAGOS	0,11	-0,11	1,00	-0,25	-0,75	1,33	-0,20
GUAYAS	0,03	0,02	1,71	5,39	0,54	0,12	0,19
IMBABURA	0,02	0,04	-0,17	-0,03	-0,03	0,39	1,07
LOJA	-0,03	-0,26	-0,29	-0,23	0,12	0,31	0,63
LOS RÍOS	-0,04	-0,06	-0,20	1,18	0,93	0,44	0,40
MANABÍ	0,10	0,01	-0,12	1,78	1,68	0,56	0,60
MORONA SANTIAGO	0,01	0,19	-0,28	-0,49	0,15	0,94	1,13
NAPO	0,04	0,26	-0,59	-0,03	0,97	1,27	0,44
ORELLANA	0,20	-0,27	-0,43	-0,33	0,21	1,39	1,27
PASTAZA	0,42	0,32	-0,17	-0,14	0,25	1,04	1,31
PICHINCHA	-0,06	0,14	0,03	0,24	0,43	0,72	1,62
SANTA ELENA	0,02	0,05	0,34	8,58	2,73	0,22	-0,09
STO. DOMINGO DE LOS TSÁCHILAS	-0,02	0,21	-0,21	0,29	0,54	1,26	1,20
SUCUMBÍOS	0,08	-0,05	0,01	-0,13	0,52	1,17	2,56
TUNGURAHUA	-0,04	0,07	-0,11	0,24	0,69	1,24	1,55
ZAMORA CHINCHIPE	0,13	0,26	-0,38	-0,05	0,45	1,10	0,79

Source: (8). The highlighted cells correspond to the months with excess mortality.

These figures are related to the average variation of the Effective Reproductive Number (Rt), which is a parameter that adjusts the R0 according to time. As the proportion of the population likely to acquire the disease decreases, the transmission would be lower; however, the figures presented by the Pan American Health Organization (9) reveal that the Rt >1 in August 2020 and its projection do not allow us to foresee a decreasing trend (Figure 5).

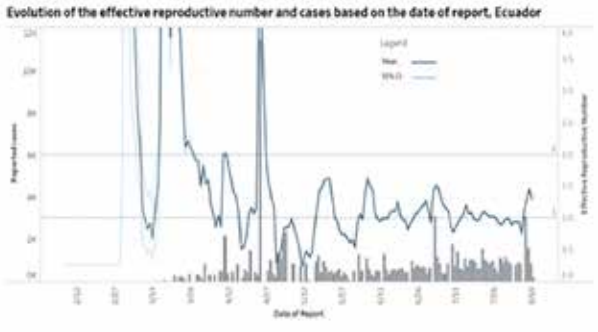

Figure 5. Ecuador: Effective reproductive number (Rt), 2020. Source: (9).

Just as in the Spanish influenza epidemic (1918), the social determinants were those that qualified the new coronavirus pandemic. The most dispossessed social classes could not endure confinement to their homes; large numbers of people took to the streets to seek daily income, became infected, and spread to family and friends. There are no published studies in the country that indicate the quintiles of the population that became infected, but it cannot be different from other countries. The biggest casualty of the pandemic, of course, has been employment. According to estimates from the Central Bank of Ecuador, 335 413 jobs were lost due to the COVID-19, 31 % of which corresponded to the commercial sector. The Central Bank projects that the national economy will fall between 7.3 % and 9.6 % in 2020 due to the crisis, which could mean a loss of 600 000 jobs by the end of the year and an increase in poverty of up to 4 % (10).

Activities developed by the Ecuadorian Academy of Medicine

In the context of this pandemic, the Ecuadorian Academy of Medicine has made efforts to share relevant information on the protection of health care personnel and the management of infected patients. This activity was carried out in collaboration with the San Francisco de Quito University and consisted of six webinars, which attracted the interest and connection of hundreds of Ecuadorian doctors. The topics covered in the sessions dealt with concepts of genetics, bacteriology, molecular biology, critical care, convalescent serum transfusion, mechanical ventilation, among others.

The voice of the Academy was also present in union forums demanding the provision of protective material for health personnel; denying the promotion of false treatments to the Ecuadorian population by pseudoscientists, since, in the absence of specific treatment, offers of treatments of doubtful or no efficacy have proliferated, with the consequent danger to the health of the population.

In the field of research, with regard to the pandemic, members of the Ecuadorian Academy of Medicine are carrying out research sponsored by universities and together with their teams. Soon we will have the results of these studies, which will help us to know this disease better and to help patients.

It is worth mentioning the work done by the Institute of Microbiology of the San Francisco de Quito University that sequenced the complete genome of the virus strain isolated in Ecuador, variant named hCoV-19/Ecuador/HEE_01/2020 (11).

The enormous efforts made by the country's young doctors, the sacrifice that has cost the lives of the health personnel of our hospitals should not go unnoticed, so this Academy pays tribute to the fallen in battle and applauds the work done by the Ecuadorian doctor. Always remember Seneca's words: "Work and struggle always call for the best".

Funding: None

Conflicts of interest: None

REFERENCES

1. Pulido S. La Gripe Española: la pandemia de 1918 que no comenzó en España. Gaceta Médica 2018. Disponible en: https://gacetamedica.com/investigacion/la-gripe-espanola-la-pandemia-de-1918-que-no-comenzo-en-espana-fy1357456/
2. COVID-19 Map - Johns Hopkins Coronavirus Resource Center. Disponible en: https://coronavirus.jhu.edu/map.html
3. Redelmeier DA, Shafir E. Pitfalls of judgment during the COVID-19 pandemic. Lancet Public Health. 2020;5(6):e306-e308.
4. El MSP informa: Situación coronavirus COVID-19 (23-08-2020) – Ministerio de Salud Pública. Disponible en: https://www.salud.gob.ec/el-ministerio-de-salud-publica-del-ecuador-msp-informa-situacion-coronavirus/
5. Nguyen LH, Drew DA, Graham MS, Joshi AD, Guo C-G, Ma W, et al. Risk of COVID-19 among front-line health-care workers and the general community: a prospective cohort study. Lancet Public Healh. 2020;5:e475-e483.
6. How experts use data to identify emerging COVID-19 success stories - Our World in Data. Disponible en: https://ourworldindata.org/identify-COVID-exemplars

7. Global coronavirus death toll could be 60 % higher than reported. Financial Times. Disponible en: https://www.ft.com/content/6bd88b7d-3386-4543-b2e9-0d5c6fac846c?emailId=5ea6e9bcd26cbd000484719d&segmentId=2785c52b-1c00-edaa-29be-7452cf90b5a2
8. Registro Civil – Ecuador . Disponible en: https://www.registrocivil.gob.ec/
9. PAHO. Epidemic Diseases - COVID-19 Effective R by Country, Region of the Americas, Pan American Health Organization (PAHO) PAHO 2020. Disponible en: https://ais.paho.org/phip/viz/COVID19Rt.asp
10. EU: $5249 millones y 335 413 empleos perdidos es impacto del COVID-19 en economía de Ecuador, reporta Banco Central. Economía. Noticias. El Universo. Disponible en: https://www.eluniverso.com/noticias/ 2020/08/06/nota/7932519/ perdidas-impacto-economia-pandemia-COVID-19-ecuador-informe-banco
11. Científicos de la USFQ secuencian el genoma completo de una cepa de COVID-19 - Noticias USFQ. Disponible en: https://noticias.usfq.edu.ec/2020/04/cientificos-de-la-usfq-secuencian-el.html

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S242-S250
DOI: 10.47307/GMC.2020.128.s2.12

COVID-19 situation in Honduras: lessons learned

Drs. Itzel C Fuentes-Barahona[1,2], Karla I Henriquez-Márquez[1], Fausto Muñoz-Lara[3,4,9], Elsa Palou[3,9], Tito Alvarado[5,9], Ivette Lorenzana[6,9], Víctor Manuel Valladares-Rosa[7], Arturo G. Corrales-Alvarez[7,9], Lysien Ivania Zambrano[8,9], Manuel Antonio Sierra-Santos[1,9]

SUMMARY

Introduction: *Several emerging and re-emerging diseases in the last decade have shown the global weakness to detect and act in a timely manner in situations that threaten the health of the planet. Latin America has been vulnerable to outbreaks as a result of increased poverty, social inequity and the poor response capacity of the public health system.* **Objective:** *Describe the situation of COVID-19 in Honduras and the challenges it presents.* **Methodology:** *Analysis of the epidemiology and control strategies applied in the country to contain the spread of SARS-CoV-2, in the context of the social and economic reality until September 18, 2020.* **Results:** *Honduras ranks fifth in Central America in the number of tests performed; the cumulative incidence rate of cases is 7 105 per million inhabitants. The country has an accelerated growth in the percentage of positivity with intense community transmission. Some 63.4 % of cases are concentrated in the group 20-49 years old (43 624 cases); 15.2 % in adults 60+ (10 440 cases) and 7.5 % in children under 20 (5 133 cases). With a disjointed health system and a chronic and recurrent shortage of physical and human resources, the National Risk Management System (SINAGER), which includes the Ministry of Health (SESAL), implemented various strategies to reduce the spread of the virus. Some control measures were border closures, physical distancing and the use of masks were made mandatory by legislative decree. The serious impact on the weak national economy forced an intelligent opening coinciding with the rise of cases.* **Conclusions:** *Current data show that the age group most affected is adults between 20 and 49 years old. The country's socioeconomic situation has been aggravated by the pandemic; the continuous rise in the number of cases, hospitalizations and deaths has collapsed the public health system leaving the majority of Hondurans in continuous vulnerability. Primary care clinics and mobile medical brigades have been implemented as a new way to contain the spread and impact of transmission. Several European countries and cities in the Americas have had to reverse the process of economic reopening when faced with successive waves of outbreaks. Honduras has demonstrated limited capacity to deal with catastrophic*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.12

[1,2]ORCID: 0000-0002-9995-2276
[1]ORCID: 0000-0003-2786-4127
[3,4,9]ORCID: 0000-0003-1221-0518
[3,9]ORCID: 0000-0003-3128-1565
[5,9]ORCID: 0000-0002-9331-2294
[6,9]ORCID: 0000-0002-8128-8602
[7]ORCID: 0000-0002-8115-5084
[7,9]ORCID: 0000-0002-4185-768X
[8,9]ORCID: 0000-0001-9002-5807
[1,9]ORCID: 0000-0001-7684-8735

[1]Facultad de Ciencias Médicas, Universidad Nacional Autónoma de Honduras (UNAH), Tegucigalpa, Honduras.
[2]Departamento de Ginecología y Obstetricia, Hospital Escuela, Tegucigalpa, Honduras.

Recibido: 19 de agosto de 2020
Aceptado: 17 de noviembre de 2020

[3]Departamento de Medicina Interna, Facultad de Ciencias Médicas, Universidad Nacional Autónoma de Honduras (UNAH), Tegucigalpa, Honduras.
[4]Departamento de Medicina Interna, Hospital Escuela, Tegucigalpa, Honduras.
[5]Instituto de Enfermedades Infecciosas y Parasitología Antonio Vidal, Tegucigalpa, Honduras.
[6]Centro de Investigaciones Genéticas, Facultad de Ciencias, Universidad Nacional Autónoma de Honduras (UNAH), Tegucigalpa, Honduras.
[7]Ingeniería Gerencial, Tegucigalpa, Honduras.
[8] Departamento de Ciencias Fisiológicas y Morfológicas, Facultad de Medicina, Ciencias, Universidad Nacional Autónoma de Honduras (UNAH), Tegucigalpa, Honduras.
[9]Plataforma Todos Contra el COVID-19.
Correspondence: Manuel Antonio Sierra-Santos, E-mail: mass_honduras_2006@yahoo.com, Facultad de Ciencias Médicas, Universidad Nacional Autónoma de Honduras (UNAH), Tegucigalpa M.D.C, Código postal 11101.

situations. The national epidemiological surveillance system and access to timely and quality diagnostic tests remain weak and fragmented. There is an urgent need to improve the health and surveillance system to guide strategic evidence-based decision making and to prevent future pandemics.

Key words: *SARS-CoV-2 Infection, COVID-19 pandemic, 2019 novel coronavirus infection, Honduras.*

RESUMEN

Introducción: *Diversas enfermedades emergentes y reemergentes en la última década han evidenciado la debilidad global para detectar y actuar de forma oportuna ante situaciones que amenazan la salud del planeta. América Latina ha sido vulnerable a brotes como consecuencia del incremento de la pobreza, la inequidad social y la pobre capacidad de respuesta del sistema de salud público.* **Objetivo:** *Describir la situación de COVID-19 en Honduras y los desafíos que presenta.* **Metodología:** *Análisis de la epidemiología y estrategias de control aplicadas en el país para contener la propagación de SARS-CoV-2, en el contexto de la realidad social y económica hasta el 18 de septiembre del 2020.* **Resultados:** *Honduras ocupa el quinto lugar en Centroamérica en número de pruebas realizadas, la tasa de incidencia acumulada de casos es 7 105 por millón de habitantes. El país tiene un crecimiento acelerado del porcentaje de positividad con una intensa transmisión comunitaria. Un 63,4 % de los casos se concentran en el grupo 20 a 49 años (43 624 casos); 15,2 % en adultos 60+ (10 440 casos) y 7,5 % en menores de 20 años (5 133 casos). Con un sistema de salud desarticulado y una escasez crónica y recurrente de recursos físicos y humanos, el Sistema Nacional de Gestión de Riesgo (SINAGER), que incluye a la Secretaria de Salud (SESAL), implementó diversas estrategias para disminuir la propagación del virus. Algunas medidas de control fueron el cierre de fronteras, distanciamiento físico y el uso de mascarilla fueron de carácter obligatorio mediante decreto legislativo. El grave impacto en la débil economía nacional obligó a una apertura inteligente coincidiendo con el ascenso de casos.* **Conclusiones:** *Los datos actuales muestran que el grupo de edad más afectado son los adultos de 20 a 49 años. La situación socioeconómica del país se ha agravado por la pandemia; el continuo ascenso en el número de casos, hospitalizaciones y muertes ha colapsado el sistema sanitario público dejando en continua vulnerabilidad a la mayoría de los hondureños. Como una nueva forma de contener la dispersión y el impacto de la transmisión se han implementado clínicas de atención primaria y brigadas médicas móviles. Varios países europeos y ciudades del continente americano han tenido que revertir el proceso de reapertura económica al enfrentar olas sucesivas de brotes. Honduras ha demostrado una limitada capacidad para enfrentar situaciones catastróficas. El sistema nacional de vigilancia epidemiológica y el acceso a pruebas diagnósticas oportunas y con calidad continúan siendo débiles y fragmentados. Se plantea la necesidad urgente de mejorar el sistema de salud y de vigilancia para orientar la toma de decisiones basada en evidencia estratégica y para prevenir futuras pandemias.*

Palabras clave: *Infección por SARS-CoV-2, COVID-19 pandemia, enfermedad por coronavirus 2019, Honduras.*

INTRODUCTION

In the last 10 years, the world has faced several events that have shown the global weakness to detect and act on time in situations that threaten the health of the planet. Among them are various health emergencies: in 2001 the attack by Al-Qaeda, also known as Amerithrax (1) and the emergence of Acute Respiratory Distress Syndrome (SARS) (2); the outbreak of Middle East Respiratory Syndrome (MERS) (3) in 2012; and the outbreak of Ebola (4) in 2014 in West Africa that counted more than 10 000 deaths. Recently, two African viruses were introduced to the American continent, Chikungunya in 2013 (5) and Zika (6) in 2015.

In October 2019, The Center for Health Security at John Hopkins University published the results of its annual report on the Global Health Security Index (GHS) (7). This report analyzed 195 countries and its primary purpose is to assess the global and national capacity to deal with global risks and disasters. The GHS consists of 140 questions organized into six categories: prevention, detection and reporting, rapid response, health system, compliance with international standards, and environmental risk. Out of a total score of 100, the average for participating nations was 40.2. The average for developed countries was 51.9, and for Honduras, it was 27.6. The results are conclusive with respect to the low global capacity to confront situations of global threat. In the case of Honduras, the result obtained is similar to that of several of the most neglected African countries.

COVID-19 is the name given to the condition

caused by the new SARS-CoV-2 virus (8). As a completely new virus, unless an effective vaccine is discovered to protect against infection, the entire world population is at risk of being infected with this highly contagious new airborne pathogen. The pandemic has evolved in epidemic waves that began in southern China, rapidly spread to neighboring Asian countries, to Southeast Asia, then advanced to the Arabian Peninsula, to spread to the European continent, and as early as the second quarter of 2020 began its rapid expansion in the Americas and Africa (9).

COVID-19 was officially declared a pandemic by the World Health Organization (WHO) on March 11, 2020 (10). From a few cases reported in the first weeks of January to WHO from southern China, a total of 30.3 million cases and about 950 493 deaths in 215 territories/countries around the world are reported as of September 18, 2020 (11). On February 25, 2020, the Ministry of Health of Brazil confirmed the first case in Latin America, and since May, this country has become the epicenter of the pandemic in the region (11). The situation in the Americas is equally worrying, with 15.6 million cases reported (51 % of global cases), making it also the new global epicenter of pandemic transmission. Several American countries report figures that exceed one million cases, such as the United States with 6.9 million, Brazil with 4.4 million, Argentina, Mexico, Colombia, and Peru, which individually report more than 600 000 cases (12).

The speed of spread and the impact of the pandemic on morbidity and mortality in each affected country are related to:

- Social exclusion of large sectors of the population from basic health services due either to their irregular migration status or to poverty conditions (13-15) leading to late diagnosis and management of complicated cases of COVID-19.
- Fragility and disarticulation of health systems and epidemiological surveillance subsystems, with poor access to diagnostic tests and timely strategic information for decision making (16,17).
- Our living conditions that favor overcrowding, low schooling, and poor access to prevention services.
- Demografic transition in the region with significant changes in the age structure of the population (16).
- Patterns of undiagnosed and/or poorly controlled comorbidity in the population, with highly prevalent chronic diseases, such as Diabetes mellitus, Arterial Hypertension, Obesity, among the main ones (17,18).

Latin American and African countries show multiple deficiencies in their health care systems and infrastructure, especially a deficit of critical and intensive care beds and mechanical ventilators and high flow equipment required to support patients with a severe respiratory infection so that the risk of an overwhelming increase in deaths is always latent (7).

The crisis in the health sector is multi-causal. Latin America consumes about 4 % of the gross domestic product (GDP) in health, far below the health expenditure in middle- and high-income countries in other latitudes of the world. The relatively low social investment contributes to deficits in health infrastructure, low health workforce, and insufficient and inadequate inputs to address emergencies where response time is vital as it has been in the current pandemic. In Honduras, a tertiary level health services approach predominates, oriented to the management of pathology and its complications, with little emphasis on primary health care (PHC) models. Additionally, scarce highly trained health human resources and diagnostic and clinical management technology are concentrated in the major cities of Honduras. This urban concentration of resources favors the constant flow of cases with complicated pathology from the most neglected areas, which represent almost 75 percent of the national territory, to hospitals (19).

The International Health Regulations (IHR-2003) is a binding document signed by Honduras, which obliges it to create the appropriate sanitary conditions to contain an event that puts national and international health at risk, at all border points (air, land, and sea). The strengthening of health services at these points has been limited. In addition, the national surveillance system and the information system of the Secretary of Health (SESAL) is fragmented, with little capacity to

detect and monitor these events in real-time.

Honduras registered its first case in the first week of March 2020 and as of September 18, 2020 reports 70,611 cases (20,21). The country ranks fifth in Central America in the number of tests performed; fifth and forty-seventh in the number of cases reported in the isthmus and worldwide, respectively (Table 1).

Despite low access to testing, Honduras' cumulative case incidence rate is 7,397.8 cases per million populations, the third-highest in the region and one of the highest in the continent (Table 2).

Table 1

Central America: Indicators of the evolution of the pandemic by COVID-19 (as of September 18, 2020)

Country	Total cases	Total deaths	Tot cases/ 1M hab.	Deaths/ 1M hab.	Total tests	Total 1M hab.	Population
Panama	104 879	2 229	24 226	515	423 054	97 720	4 329 267
El Salvador	27 346	804	4 211	124	359 765	55 405	6 493 351
Guatemala	84 344	3 076	4 689	171	286 730	15 942	17 985 890
Costa Rica	63 374	686	12 220	134	196 377	38 474	5 104 190
Honduras	70 611	2 146	7 105	216	167 103	16 814	9 938 225
Belize	1 590	20	3 983	50	12 429	31 138	399 161
Nicaragua	4 961	147	747	22	-	-	6 641 520

Source: Worldmeter´s COVID-19 Data.

Table 2

Honduras: Cumulative incidence rate per COVID-19 in departments (up to epidemiological week 37, 2020), in descending order

Department	Reported Cases	Cumulative rate/ million hab.
Atlántida	4 910	13 222,70
Islas De La Bahía	953	12 717,20
Cortés	21 595	12 095,50
Francisco Morazán	18 512	11 052,00
Valle	1 709	9 009,40
Colón	2 604	7 539,90
Yoro	4 524	7 176,20
Gracias a Dios	746	7 155,10
La Paz	1 206	5 370,70
El Paraíso	2 329	4 700,10
Choluteca	2 206	4 641,40
Santa Bárbara	1 789	3 809,80
Ocotepeque	571	3 450,50
Comayagua	1 662	2 957,10
Intibucá	775	2 924,50
Olancho	1 450	2 504,70
Copán	901	2 182,00
Lempira	387	1 063,60
Total	68 832	7 397,80

Source: Cases reported by SINAGER until September 16, 2020. Calculations based on the number of positive PCR-TR tests reported by SINAGER, and performed by the Health Surveillance Laboratory, Ministry of Health of Honduras. Data analyzed through Epidemiological Week 37. Comunicado Número 13, Plataforma "Todos Contra el COVID-19". The population data used comes from projection figures from the National Institute of Statistics.

With figures close to 60 %, the country shows accelerated growth in the percentage of positivity to RCP-TR tests conducted by the Health Surveillance Laboratory, Ministry of Health of Honduras, especially since the date that SINAGER authorized the premature opening of the economy on June 8 (Figure 1).

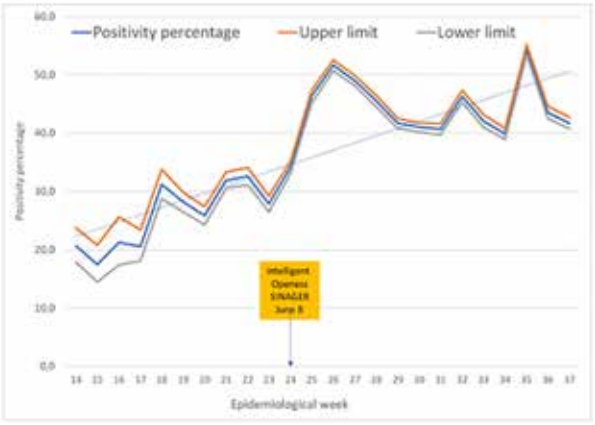

Figure 1. Honduras: Percentage of RCP-TR positivity by epidemiological week, 2020.
Source: Plataforma "Todos contra el COVID-19".

All Honduran population centers with more than 50 000 inhabitants have community transmission, and there are already sixteen departments (of the country's 18) that have a rate per million inhabitants greater than 1,000, with the three most affected: Francisco Morazán, Cortés and Valle (Table 2).

Of the total number of tests performed with positive results, a total of 35,731 (51.9 %) correspond to men and 33 096 (48.1 %) to women. Confirmed cases are concentrated in the group 20-49 years old, with 43,624 cases (63.4 %) (Table 3). In the older age group (60+) there are 10 440 cases (15.2 %) and in the younger age group, there are a total of 5,133 cases (7.5 %).

In accordance with Executive Decree Number PCM-005-2020 published in the Official Gazette "La Gaceta", dated February 10, 2020, Honduras declared a State of Sanitary Emergency

Table 3

Honduras: Distribution of confirmed cases by RT-PCR test, stratified by age group and sex

Age Group	Sex				
	No data	Female	Male	Total	%
< 1		84	87	171	0.2
1-4	1	215	211	427	0.6
5-9		338	343	681	1.0
10-14		631	559	1 190	1.7
15-19	2	1 426	1 236	2 664	3.9
20-29	1	7 341	8 290	15 632	22.7
30-39		7 914	8 242	16 156	23.5
40-49	1	7 737	6 098	11 836	17.2
50-59		4 332	4 554	8 886	12.9
60-69		2 748	3 263	6 011	8.7
70-79		1 386	1 660	3 046	4.4
80-89		522	644	1 166	1.7
90+		93	124	217	0.3
No data		329	420	749	1.1
Total	5	33 096	35 731	68 832	100.0

Source: Cases reported by SINAGER up to September 16, 2020.

throughout the national territory. In the third week of March, the National Risk Management System (SINAGER) was activated, and with the support of the Ministry of Health (SESAL), various provisions were issued to reduce the spread of SARS-CoV-2, such as the implementation of a respiratory code when coughing and/or sneezing, management and isolation of confirmed and suspected cases, physical distancing, use of a mandatory mask, frequent hand washing and the prohibition of events that lead to crowding of people, among the main ones (22).

Despite the limited capacity of its hospital infrastructure, with 70 611 confirmed cases and 2 146 deaths, the country reports 3 % mortality and a cumulative mortality rate of 216 per million inhabitants (Table 1). This low mortality rate is perhaps related to the fact that groups of doctors in San Pedro Sula and Tegucigalpa alerted society and the profession to the importance of early management of the inflammatory and thrombotic phenomenon in cases of COVID-19. However, the hospital capacity is already reaching its limit in all the cities of the country and it is possible that, when exceeding this capacity, a catastrophic

growth in the number of deaths will occur.

After 120 days of lookdown and economic shutdown, Honduras has had to resort, for the first time in its history, to international loans to pay public wages. State revenues have declined dramatically, the tourism industry is paralyzed as are most exports, there is an estimated 30 percent reduction in remittances from the United States and Europe, the unemployment figure is unquantifiable, and the outlook is bleak for the next 2.5 years.

The following is a presentation of the various measures implemented in the country to contain the spread of SARS-CoV-2 and a critical analysis of each in the context of their effectiveness and the social and economic reality that Honduras is experiencing.

Border Closure and Intensified Epidemiological Surveillance at Border Points

After confirming the first imported case and the spread of several contacts at the national level, Honduras took the step of closing national borders and suspending national and international flights. Similarly, individuals confirmed as cases, suspects, or from countries with transmission were followed up for early identification of new cases.

Honduras is the center of the Southern Hemisphere migration corridor to the United States and Canada. Most migration occurs in "blind" spots, so many of the early cases went unnoticed in communities and were not properly monitored. Additionally, surveillance was concentrated in Tegucigalpa, and the epidemiological curve shows that the first cases and the initial planting of the virus in the population occurred on the country's North Coast, especially in the department of Cortés.

Measures to increase the physical distance between people

Several studies have demonstrated the effectiveness of various measures that increase physical distancing to decrease the spread of SARS-CoV-2 such as quarantine, staggered opening, closure of schools, universities, churches, and any activity considered non-essential (23-25).

Honduras was one of the first countries in the Central American isthmus to decree the quarantine in all its territory and this possibly achieved a delay in the growth of the number of reported cases that accelerated until June, when the "Intelligent Opening" of the economy began.

Various factors have contributed to the fact that these measures have not been fully complied with. In the country's cities, up to 70 % of work is part of the informal economy, where the population lives in a daily subsistence economy. Also, there is a big difference in the prices of food sold in supermarkets and those sold in open markets and on the streets. For this reason, street vendors have saturated various sites in the cities and open markets have become transmission sites for SARS-CoV-2.

Poverty belts in Latin America constitute almost 80 % of the urban population (26,27), where overcrowding and precarious housing conditions also favor the spread, and where compliance with minimum measures for home management of confirmed and suspected cases is impossible.

Mandatory use of masks, application of biosecurity protocols

Through Legislative Decree No. 58-2020, published in the Official Gazette "La Gaceta" on May 23, 2020, the National Congress decreed the mandatory use of masks, the observation of social distancing measures, and the mandatory application of biosafety protocols issued by SINAGER.

Since the end of March 2020, the Platform "Todos contra el COVID-19" (All Against COVID-19), recommended the use of obligatory masks (N95 certified for health and surgical personnel for the general population) and personal protective equipment for health personnel not only in the sites assigned for the care of patients suspected by COVID-19 but in all public and private hospital emergencies (28). The shortage of these supplies has been and continues to be one of the main obstacles to the adequate protection of health personnel that has caused multiple infections and deaths.

Compliance with the use of obligatory masks among non-healthcare personnel and the general population has been erratic due to various factors, including hoarding and price speculation that has resulted in little access for the population, low-risk perception and low schooling that condition the lack of use or the inadequate and intermittent use of this protection measure.

Access to public services must also be considered, since in some areas of the country access to drinking water is reduced by various factors, making it difficult to use water for frequent hand washing. Besides, the use of gel was also affected by hoarding and lack of quality control.

Even though the Intelligent Opening law decreed by SINAGER on June 8 obliges companies to provide their employees with biosafety equipment, compliance with which has not been monitored.

Formation of brigades for the detection and home management of confirmed or suspected cases of COVID-19

This strategy began to be implemented in mid-June in the main cities and municipal capitals. It is a new strategy and taking into account that the majority of the population is in denial in the face of the national emergency, it has not achieved the expected results. In addition to the deficit in logistics for health personnel.

Opening of care sites for people suspected or confirmed with COVID-19

Since the beginning of the pandemic, adequate measures were not taken to prevent the National Reference Hospitals with the greatest response capacity in specialties from being affected by the pandemic, such is the case of the Mario Catarino Rivas Hospital (HMCR) and the Honduran Institute of Social Security (IHSS) in San Pedro Sula and the Hospital Escuela and IHSS in Tegucigalpa. Progressively, the various sectors of society are collaborating to open sites that are accessible 24 hours a day, seven days a week in the affected cities and municipalities for the health care of people with symptoms compatible with COVID-19. A major constraint is the lack of qualified health human resources for the management of people with severe illness due to COVID-19. The stigma and discrimination generated by this pandemic has prevented many people from seeking early medical care

Recruitment of personnel for COVID-19 areas

As part of the opening of new care centers and the formation of community brigades, health personnel have been hired. However, Honduras, because it lacks a sustained policy for the development of human resources for health, faces a lack of specialized personnel without risk factors, who can handle various health aspects of the pandemic. The provision of personal protective equipment and supplies continues to be another constraint that has contributed to the nearly 20 % prevalence of infection and the high number of SARS-CoV-2 deaths among health workers.

Border Closure and Intensified Epidemiological Surveillance at Border Points

From March 16, when the borders were closed, until September 18, 2020, a total of 21 879 (29) Hondurans have returned to the country from Mexico and the United States. Since 2018, Central American caravans, mostly Hondurans, have made their way to the U.S.-Mexico border and now, amidst border closures and uncertainty about the pandemic, hundreds of Hondurans have been left vulnerable in areas where cases of coronavirus are on the rise.

On the other hand, the hardening of migration policies has managed to reduce migratory flows in relation to 2019, however, the migrant population returning to the country continues to need medical assistance and to be tested for asymptomatic cases.

CONCLUSIONS

Despite the many measures adopted in the country, the expected result has not been achieved, and many factors influence this. The health personnel hired to provide primary health care

have been limited to direct intervention with the population through education on biosecurity measures and in the care of patients who require hospital or outpatient management.

There is a leadership crisis in the country's health system that is leading to a high turnover of decision-makers during the pandemic, the creation of parallel structures, and the dismantling of the different actors involved in the national response.

Access to timely testing with quality control remains one of the country's main challenges. It is estimated that the arrears in swab samples that have been taken and not processed exceed seven thousand.

The "Todos Contra El COVID-19" platform has a volunteer team of experts in infectious diseases, Internal Medicine, epidemiology, public health, pharmacology, risk management, disaster management, and the use of information and communication technology. The importance of a technology platform is transcendental in the current situation of the country.

An "Intelligent Opening" of the economy is insisted on when only data from swab samples, taken in suspicious cases, contacts, and personnel at risk are available. The data reported is approximately two weeks late. A technology platform can be very helpful in monitoring in real-time the appearance of case outbreaks with compatible symptoms, identifying trends in hospitalizations and mortality.

In the near future, consideration should be given to strengthening weakened health systems in some Latin American countries to provide a better response in cases such as the COVID-19 Pandemic. Good primary care services are required as a basis for any emergency response (9) and to ensure that infection is prevented by the strategies implemented, thus achieving control of the pandemic.

Authors contributions: MASS, FAML, LIZ, ICFB, KIHM conceived the review, develop the preliminary search strategy, and drafted the manuscript. All authors critically reviewed the manuscript for relevant intellectual content. All authors read and approved the final version of the paper.

Funding: None

Conflicts of interest: None

REFERENCES

1. McCarthy M. Anthrax attack in the USA. Lancet Infect Dis. 2001;1(5):288-289.
2. Pelosi P, Gattinoni L. Acute respiratory distress syndrome of pulmonary and extra-pulmonary origin: fancy or reality? Intensive Care Med. 2001;27(3):457-460.
3. Memish ZA, Zumla AI, Al-Hakeem RF, Al-Rabeeah AA, Stephens GM. Family cluster of Middle East respiratory syndrome coronavirus infections. N Engl J Med. 2013;368(26):2487-2494.
4. Organización Mundial de la Salud. Ebola Virus Disease in West Africa — The First 9 Months of the Epidemic and Forward Projections. N Engl J Med. 2014;371(16):1481-1495.
5. Perret C, Vizcaya C, Weitzel T, Rosas R, Dabanch J, Martínez C. Chikungunya, enfermedad emergente en América Latina. Descripción de los primeros casos en Chile. Rev Chilena Infectol. 2018;35(4):413-419.
6. Organización Panamericana de la Salud. Alerta Epidemiológica: Incremento de microcefalia en el nordeste de Barsil. Infobioquimica. 2015. Disponible: https://www.infobioquimica.com/new/2015/12/01/alerta-epidemiologica-incremento-de-microcefalia-en-el-nordeste-de-brasil/
7. John Hopkins Center for Health Security. 2019 Global Health Security Index. 2020. Disponible: https://www.centerforhealthsecurity.org/our-work/Center-projects/global-health-security-index.html
8. Rodriguez-Morales AJ, Sánchez-Duque JA, Hernández Botero S, Pérez-Díaz CE, Villamil-Gómez WE, Méndez CA, et al. Preparación y control de la enfermedad por coronavirus 2019 (COVID-19) en América Latina. Acta Med Peru. 2020;37(1):3-7.
9. Sánchez-Duque JA, Arce-Villalobos LR, Rodríguez-Morales AJ. Enfermedad por coronavirus 2019 (COVID-19) en América Latina: papel de la atención primaria en la preparación y respuesta. Aten Primaria. 2020;52(6):369-372.
10. Organizacion Mundial de la Salud. Coronavirus disease (COVID-19) Situation Report-155. Disponible en: https://covid19.who.int/?gclid=Cj0KCQjwu8r4BRCzARIsAA21i_BSpAvMqNZR9yquRO6Fm-AFtPqtBuRaFQ61D6s76JmLGP1Fm-SOp-waAtR6EALw_wcB.
11. John Hopkins University. Coronavirus COVID-19

Global cases by the center for Systems Science and Engineering (CSSE): 2020. Disponible en: https://coronavirus.jhu.edu/map.html.

12. Worldometer's COVID-19 data. Coronavirus Update (Live) 2020. Disponible en: https://www.worldometers.info/coronavirus/?utm_campaign=homeAdvegas1?%22.
13. Wang ML, Behrman P, Dulin A, Baskin ML, Buscemi J, Alcaraz KI, et al. Addressing inequities in COVID-19 morbidity and mortality: research and policy recommendations. Transl Behav Med. 2020;10(3):516-519.
14. Plagg B, Engl A, Piccoliori G, Eisendle K. Prolonged social isolation of the elderly during COVID-19: Between benefit and damage. Arch Gerontol Geriatr. 2020;89:104086.
15. Ramírez IJ, Lee J. COVID-19 Emergence and Social and Health Determinants in Colorado: A Rapid Spatial Analysis. Int J Environ Res Public Health. 2020;17(11).
16. Bonanad C, García-Blas S, Tarazona-Santabalbina F, Sanchis J, Bertomeu-González V, Fácila L, et al. The Effect of Age on Mortality in Patients With COVID-19: A Meta-Analysis With 611,583 Subjects. J Am Med Dir Assoc. 2020;21(7):915-918.
17. lasencia Urizarri TM, Aguilera Rodríguez R, Almaguer Mederos L. Hipertensión, diabetes y enfermedad renal crónica como factores de riesgo para COVID-19 grave: Congreso Virtual de Ciencias Básicas Biomédicas de Granma. 2020. Disponible en: http://cibamanz2020.sld.cu/index.php/cibamanz/cibamanz 2020/paper/viewPaper/496.
18. Petrova D, Salamanca-Fernández E, Rodríguez Barranco M, Navarro Pérez P, Jiménez Moleón JJ, Sánchez M-J. La obesidad como factor de riesgo en personas con COVID-19: posibles mecanismos e implicaciones. Aten Primaria. 2020;52(7):496-500.
19. Organizacion Panamericana de la Salud. Financiamiento de la salud en las Américas. 2020. Disponible en: v}https://www.paho.org/salud-en-las-americas-2017/?post_type=post_t_es&p=290&lang=es.
20. Plataforma Todos contra COVID-19. Resultados Análisis de Base Verdaderos Positivos y Negativos. 2020. Disponible en: http://www.desastres.hn/COVID-19/Plataforma/8_Plataforma%20Todos%20Contra%20COVID19_Informe_30042020.pdf.
21. Despacho de Comunicaciones y Estrategia Presidencial. COVID-19 Honduras - OFICIAL Coronavirus en Honduras. 2020. Disponible en: https://covid19honduras.org/.
22. World Health Organization. Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus (COVID-19) outbreak. 2020. Disponible en: https://www.who.int/publications/i/item/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak.
23. Dantas RCC, Campos PA de, Rossi I, Ribas RM. Implications of social distancing in Brazil in the COVID-19 pandemic. Infect Control Hosp Epidemiol. 2020:1-2.
24. Taghrir MH, Akbarialiabad H, Ahmadi Marzaleh M. Efficacy of Mass Quarantine as Leverage of Health System Governance During COVID-19 Outbreak: A Mini Policy Review. Arch Iran Med. 2020;23(4):265-267.
25. Parmet WE, Sinha MS. Covid-19 - The Law and Limits of Quarantine. N Engl J Med. 2020;382(15):e28.
26. Notas de la CEPAL. La urbanización presenta oportunidades y desafíos para avanzar hacia el desarrollo sostenible. 2020. Disponible en: https://www.cepal.org/notas/73/Titulares2.html.
27. Programa de Naciones Unidas. Estado de las ciudades de américa latina y el caribe. 2012 Rumbo a una nueva transición urbana. 2012. Disponible en: https://www.zaragoza.es/contenidos/medioambiente/onu//newsletter12/887_spa.pdf.
28. Ong SWX, Tan YK, Chia PY, Lee TH, Ng OT, Wong MSY, et al. Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient. JAMA. 2020. doi: 10.1001/jama.2020.3227.
29. Centro Nacional de Información del Sector social. Sistema Integral de Atención al Migrante Retornado: Estadística. 2020. Disponible en: http://ceniss.gob.hn/migrantes/.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S251-S261
DOI: 10.47307/GMC.2020.128.s2.13

Policies and strategies implemented in Paraguay to control the COVID-19 Pandemic

Drs. María Stella Cabral-Bejarano[1], Felipe Recalde Ibarra[2], Eleonor Conill[3], Diego Ricardo Xavier[4]

SUMMARY

Introduction: *The purpose of this article is to contribute to the discussion on the repercussions and disruptive effects of the COVID-19 pandemic on the region's health systems based on the description of the epidemiological scenario, and the policies and strategies implemented in Paraguay.* **Methodology**: *This is a case study, a cross-sectional descriptive type. The description was operationalized based on the following dimensions of analysis: crisis management model, governance, leadership, media, technological solutions for surveillance, clinical and healthcare management, care for health personnel, socio-sanitary repercussions, complemented with the rapid review of original articles, official documents, administrative and epidemiological data, and gray literature obtained from websites of national and international steering organizations. Structured matrices were used to organize the relevant information.* **Results**: *Health policies were articulated with social policies and solidarity initiatives, immediate suppression measures, and reconfiguration of emergency care and specialized level. The cumulative incidence rate in Paraguay has reached 17 cases per 100 000 inhabitants, with a high proportion of asymptomatic or oligosymptomatic patients. The protagonism of multiple health, economic, scientific, and mass media actors was decisive in activating intersectoral responses, with the predominance of the National Health Authority's steering roles.* **Conclusion**: *Ethical and political dilemmas demand a broad debate and analysis, due to their impact and socio-health, political, and economic consequences. They also constitute opportunities to redesign strategies and measures to contain them in the short, medium, and long term.*

Key words: *Health system, Paraguay, Pandemic, COVID-19, health policies.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.13

[1]ORCID: 0000-0001-5924-4630
[2]ORCID: 0000-0003-4514-0157
[3]ORCID: 0000-0003-4395-0594
[4]ORCID: 0000-0001-5259-7732

[1]Universidad Católica Nuestra Señora de la Asunción, Paraguay.
[2]Instituto Nacional de Salud. Asunción, Paraguay.
[3]Centro de Ciencias de la Salud, Universidad de Santa Catarina. Brasil.
[4]Instituto de Comunicación, Información, Ciencia y Tecnología. Fundación Instituto Oswaldo Cruz. Rio de Janeiro, Brasil.

Correspondence:
Dra. María Stella Cabral de Bejarano. E-mail: cabralbejarano.mariastella@gmail.com

Recibido: 10 de noviembre de 2020
Aceptado: 27 de noviembre de 2020

RESUMEN

Introducción: *El propósito de este artículo es contribuir a la discusión sobre las repercusiones y efectos disruptivos de la pandemia de COVID-19 en los sistemas de salud de la región a partir de la descripción del escenario epidemiológico, y de las políticas y estrategias implementadas en Paraguay.* **Metodología:** *Se trata de un estudio de caso, tipo descriptivo de corte transversal. La descripción fue operacionalizada a partir de las siguientes dimensiones de análisis: modelo de gestión por crisis, gobernanza, liderazgo, medios de comunicación, soluciones tecnológicas para la vigilancia, gestión clínica y asistencial, atención al personal de salud, repercusiones sociosanitarias, complementada con la*

revisión rápida de artículos originales, documentos oficiales, datos administrativos y epidemiológicos y literatura gris obtenida de sitios web de organizaciones rectoras nacionales e internacionales. Se utilizaron matrices estructuradas para organizar la información, relevante. **Resultados:** *Las decisiones político-sanitarias fueron articuladas con políticas sociales e iniciativas solidarias, medidas de supresión inmediata, y reconfiguración de la atención de urgencias y nivel especializado. La tasa de incidencia acumulada en Paraguay ha llegado a 17 casos por 100 000 habitantes, con alta proporción de afectados asintomáticos u oligosintomáticos. El protagonismo de múltiples actores de salud, economía, ciencia y medios de comunicación masiva, fueron decisivos para activar respuestas intersectoriales, con predominio de roles de rectoría de la Autoridad Sanitaria Nacional.* **Conclusión:** *Dilemas éticos y políticos demandan un amplio debate y análisis, por su impacto y consecuencias sociosanitarias, políticas y económicas. También se constituyen en oportunidades para rediseñar estrategias y medidas para su contención a corto, mediano y largo plazo.*

Palabras clave: *Sistema de salud, Paraguay, Pandemia, COVID-19, políticas de salud.*

INTRODUCTION

In December 2019, cases of pneumonia of unknown origin, confirmed and recognized as a pandemic by the World Health Organization (WHO), were reported in the city of Wuhan, China. By March 2020, the new coronavirus called Sars-CoV-2, which causes COVID-19 disease, had spread rapidly globally. To date, the pandemic has affected 216 countries and territories, with more than 46 734 454 million cases and 1 203 494 deaths. In Paraguay, 63 731 cases and 1 418 deaths have been reported (1).

The countries of the region share common scenarios characterized by institutionally weak governments, social deterioration, economic deceleration, limited financial room for maneuver, and medium and low average public spending on health. Such a situation generates an unequal impact on the emerging middle-classes and vulnerable strata with gaps in access to public services, inefficient administrative contexts, medium quality levels in terms of health response, and the need to adapt health systems to respond to the state of emergency and contingency, as pointed out in a recent analysis (2).

Paraguay, a country of 7 152 000 people, has a fragmented and segmented health system, with inequities and difficulties in efficiently addressing the double disease burden of chronic non-communicable diseases and communicable diseases with high health impacts such as dengue, tuberculosis, and HIV. The population profile shows that almost half of the Paraguayan population is under 20 years old, and 7.5 % are older adults. 62.1 % reside in urban areas. The country's metropolitan area concentrates 37 % of the total population. The average annual population growth rate in 2019 was 1.40 % (3). The annual birth cohort is estimated at 150 000, with an average life expectancy of 73 years (71.6 in men and 77.5 in women) (4).

The illiteracy rate for those over 15 is 5.2 %, with 11 % of school absenteeism for those under 15. Only 65 % of the population has access to safe water, 55 % has garbage collection services and internet connectivity has reached 43 % (5).

The figures in the Human Development Report 2019 reflect the effects of the policies on the profile of inequalities, demonstrating the importance of the events and their consequences, beyond income levels. Paraguay, with an HDI of 0.972, varies according to adjustments for inequality of achievement in health, education, and standard of living (income), with Paraguay ranking 0.522 out of 151 countries (6,7).

The Ministry of Public Health and Social Welfare (MSPBS) exercises the steering role of the system, and at the same time carries out the function of providing services through an integrated network of public services, with four levels of care and complexity, and whose effective coverage is estimated at 65 %. Other relevant public hospitals are part of the public hospital network such as the Hospital de Clínicas (HC), which depends on the National University of Asunción (UNA), the Hospital de la Cruz Roja Paraguaya (CRP), a mixed entity with public and philanthropic funding sources. The Instituto de Previsión Social (IPS) covers approximately 18 to 20 % of the population with formal employment. The Military and Police Health hospitals cover approximately 3 % of the population. The private sector is made up of private hospitals and prepaid medical services, with 5 % coverage (8,9).

The provision of services, medicines, equipment, inputs, and technology and the availability of resources are considered unequal, making the quality of care inequitable. The system's providers have different financing modalities, target population, and service provision conditions, according to the type and conditions of employment, social position, and payment capacity (10,11).

As of this new government, reforms aimed at strengthening cross-cutting components began to be implemented, starting with the reorganization of services, territorial planning, and the definition of a portfolio of services by level of care to maximize efficiency and expand opportunities for access by making it more equitable. In the medium term, the progressive expansion of infrastructure standards, equipment, human resources, supplies and medicines, information and communication technologies (ICTs) at the regional and local levels and the renewal of the transportation fleet are also planned. The intermediate component would be the separation of the steering role and the provision of services, assuming the social protection of around 25 % of the excluded population with mixed financing sources as a state responsibility (12,13).

The purpose of this article is to contribute to the discussion on the repercussions and disruptive effects of the COVID-19 pandemic on the region's health systems based on the description of the epidemiological scenario and the policies and strategies implemented in Paraguay.

Methodology

This is a qualitative, descriptive, cross-sectional study, based on a country case study of Paraguay in the specific context of the COVID-19 pandemic. It describes dimensions established a priori, to analyze the response capacity of the health system. Original articles, publications, official documents, administrative and epidemiological data, including grey literature, obtained from websites of national and international leading organizations (Ministry of Public Health and Social Welfare, Pan American Health Organization, John Hopkins University, Andalusian School of Public Health, among others) were reviewed.

RESULTS

The following topics describe the main effects and actions implemented between March and October 2020.

Model of crisis management

Analysis and estimates guided by data provided by epidemiological surveillance and information systems have supported rapid decisions in both health and administrative aspects, such as planning and investment in complex and adaptive scenarios in uncertainty to identify and provide the best responses. Resources from the cooperation of bilateral and public-private agencies have been integrated, installing immediate suppression measures to prevent the spread based on the confinement or mandatory quarantine of the population, as well as massive surveillance and controls to detect cases. It has been necessary to reconfigure the model of care, with emphasis on specialized assistance to mitigate the initial impact and its consequences. This stage was classified as reactive management in European countries, whose effects provided timely lessons to Latin American countries when selecting strategies and reorganizing their services.

Governance and leadership

The political-administrative and health decisions required the protagonism of multiple actors from the executive branch, from the health, economic, academic, scientific and trade sectors, whose recommendations were decisive in the decision-making processes, although the contingency required the predominance of the National Health Authority's steering roles, responsible for issuing "mandatory provisions", establishing priorities and calling for the representation of opinions, with strong support and protagonism from the mass media. Experts affirm that "the greatest number of actors does not guarantee correct governance in times of crisis" (14-16). There were differences in compliance with government recommendations in some regions and municipalities (17).

There is a perception that each country has faced its health contingency individually with national measures, both at the departmental, local, and community levels. At the regional level, there are no visible strategies for joint cooperation between government actors and civil society to resolve specific health problems. The absence of clear regional leadership has been highlighted.

Health policy disruptions and lessons learned

The course of the reforms initiated in the new period of government (2018 - 2023) is temporarily interrupted, clearly projecting the model of a health system that the country needs, in the face of the challenge of COVID-19, a disease that affects all social classes, gender, and ethnic groups, highlighting that in Paraguay 71 % of the population has informal employment and the concern about the lack of guaranteed social protection for this sector (18).

The option for a health system based on primary health care, with the expansion of basic care units in regions with greater vulnerability and processes of functional reorganization, with a portfolio of services that is explicit in terms of levels of care and complexity, points in the right direction (19).

The early suppression measures established included the declaration of a state of a health emergency, the closure of international borders, schools, universities, public spaces, the sale of food in bars and restaurants, shops and malls, the suspension of international flights, and mandatory quarantine of travelers from abroad (in "hostels" and "health hotels"), Rigorous hygiene promotion, mandatory use of masks, social isolation measures (physical separation when confirming active disease and its contacts), social distancing (physical distance between people, avoiding contact), restriction of circulation schedules, and reorganization of passenger transportation. Table 1 shows a balance of lessons learned.

Table 1

Paraguay: Lessons Learned from Health Policies in the Pandemic. 2020.

Health policy decisions articulated with social policies are necessary. Links between the State, the market an society.
Definition and need for sustainable funding modalities in the context of a pandemic.
Rational use and transparent mechanisms for the allocation of material resources and logistics.
Orientation to sustainable reform processes, balancing political and technical times.
Designng a comprehensive social protection, in addition to expanding the range of services.
Assume universal access as a value, as a right and as an objective, not as a mere discourse of minimum coverage.
Clearly identify the weaknesses of the health system and the factors that particularly affect each country.
Reorganize the service networks, with a vision towards integral actions that mitigate the impact of the social and environmental determinants of health.
Need to promote debate on experiences and strategic actions implemented by the regions's health systems (benchmarking).
The qualification of multidisciplinary human resources in health needs to be continuously evaluated.
Ethical approach to the management of resources allocated to the different dimensions of COVID-19.

Source: elaborated by the authors

Media and technological solutions

The media and different modalities of a virtual environment have expanded the opportunities for debate, exchange, and joint learning in real-time, allowing an extraordinary approach to the scientific flow through digital media, pre-print publications and peer review publications, experiences, conferences, and proposals for urgent implementation, including the promotion of responsible behavior in citizenship.

Epidemiological surveillance and the information system

The epidemiological profile of the disease records 67,948 cases according to data from epidemiological week 45, reported through the national surveillance network, which is made up of 1 257 reporting units, local, district, and regional epidemiological units (UER), updated weekly, with a predominance of cases in males (68 %) and in the 20-39 year age group (59 %), with a cumulative incidence rate of 17 per 100 000 inhabitants, 63 % of recovered cases, 48 % active cases, and 1 % of deaths (1 502 deaths).

The development of mathematical models

Through equations and simulations, a predictive curve was estimated, using epidemiological tools and basic statistics, from a baseline, alerting about the risk reflected in figures several times higher than the actual records (Table 2). It is attributed to the early measures of the maintenance of cases below the projected curve for a whole semester, which could be verified comparatively with data of interactive maps in real-time provided by John Hopkins University.

Utilization of PCR diagnostic tests

The diagnostic tests of PCR, carried out in national laboratories, have been insufficient to respond to the demand in the first stage, attributed to the performance of other simultaneous tests (dengue and other prevalent diseases). This scenario generated the incorporation of academic institutions (IICS/UNA/PY: Instituto de Investigación en Ciencias de la Salud/Universidad Nacional de Asunción/Paraguay) and private services to expand the diagnostic capacity and the training of new teams. It was imperative to open new laboratories for biomolecular diagnosis in the metropolitan area and border cities. In the first months, the cumulative incidence rate and the case fatality rate was low. The number of tests performed per million inhabitants had progressive increases.

The interventions made may have influenced mortality indicators and the occurrence of cases observed in Paraguay. A comparison of the occurrence of cases and deaths to date shows much lower numbers than in Latin America (Table 3).

Table 2

Epidemiological surveillance and information systems

Bringing the scientific flow closer through digital media.
Elaborattion of predictive curves using basaic espidemiological and statistical tools.
Moderate cumulative incidence and low case fatality rate in the first semester.
High proportion of asymptomatic or oligosyntomatic population.
Estimation of the basic reproductive number (Ro), to project the exponential growth rate and the transmission rate in the population.
The delay in the increase of the transmission curve was attributed to the early adoption of public health measures.

Source: elaborated by the authors

Table 3

Latin America: Mortality and incidence rates by COVID-19 as of October 30, 2020 (Selected countries)

Countries	Rayes by 100 000 hab.	
	Mortality	Incidence
Argentina	68.52	2 575.02
Bolivia	76.04	1 235.78
Brazil	76.12	2 634.97
Chile	74.10	2 661.67
Paraguay	19.39	875.14
Peru	105.74	2 762.21
Uruguay	1.65	87.59
Venezuela	2.46	284.27

Source: (1).

Management of clinical care services

Adjustments have been made to the organization of services and innovations in emergency care, concentrating efforts on the third and fourth levels of care (specialized hospitals), with the primary objective of saving lives, maintaining minimum reproduction rates, and providing the time needed to progressively expand the installed capacity, testing capacity and sustainable provision of protective equipment for health personnel.

In Paraguay, the availability of functional beds and doctors trained in ICUs does not exceed 220 professionals throughout the country, highlighting the insufficiency of human resources in this specialty in overdemand scenarios such as the COVID-19 pandemic (19). These gaps in installed capacity in a weak system for providing care for serious cases requiring hospitalization have led to mobilization and alliances with the private sector in some regions. Experiences have been made in integrating and complementing joint care for services in the public network of the MSPBS and the social security system (IPS), to expand coverage of intensive care, within the framework of the new lines of "Reforms for Better Health in Paraguay" (2019).

Although the expansion of the disease tested the performance of the available workforce, the over-demand at the third and fourth levels of care has set the agenda on the need for simultaneous expansion of health units at the basic levels, such as the installed capacity at the specialized level, with emphasis on the training of therapists, considering the potential endemicity and circulation of SARS-CoV-2.

The pandemic has tested the health human resources at all levels, which have remained resilient to two overlapping health contingencies, the dengue epidemic, and the COVID-19 pandemic, adapting to the strategies implemented in crisis scenarios, to effectively attend, treat and manage the high volume of affected patients. The patients take longer to recover and the less severe ones can evolve slowly, maintaining a high occupational bed capacity (20,21).

The activation of response mechanisms in-hospital emergencies required adjustments and organizational innovations, defining at all levels, strategic and coordination institutional and inter-institutional directives. The clinical rectory was fundamental to coordinate, inform, articulate logistics, operations, and manage both the available resources and the day-to-day events and experiences, demonstrating adequate activation of the response mechanisms.

The coordination between levels of care has been a challenge and a great effort for the joint and continuous accompaniment, for the identification and control of cases, follow-up of patients in their homes, application of triage and the identification of early complications, promoting and applying in parallel the education and implementation of non-pharmacological measures, and the care of patients with acute and chronic prevalent conditions (22).

In this context, the recent definition of a portfolio of services by life cycle and by levels of care and complexity (2019) constitutes a declaration of explicit commitment to advance in the guarantees for access to basic services for all citizens (23).

The reorganization of the emergency care included the design and implementation of new emergency strategies, ensuring the discrimination of respiratory and non-respiratory patient care, and associated with technological solutions to respond to over-demand (teleconsultations).

Mobilization of resources and strengthening of the installed capacity

The mobilization of resources and the strengthening of the installed capacity focused on the implementation of emergency strategies and the development of capacities in the different links of prevention, diagnosis, and treatment, articulating medium complexity hospitals with high complexity reference centers, and new contingency pavilions in the following services National Hospital of Itauguá, Hospital of Respiratory and Environmental Infections, Regional Hospitals of Ciudad del Este, Caaguazú, Concepción, San Pedro, District Hospitals of Villa Elisa, Limpio, San Lorenzo, General Hospital of Barrio Obrero, and the General Pediatric Hospital.

According to national indicators, Paraguay has 50 % of the expected standardized provision of ICU beds (734 beds), 300 of them distributed in 34 hospitals of the public sector (MSPBS), around 200 in the private sector, 154 corresponding to the Institute of Social Security (IPS), 45 available in the Hospital de Clínicas and 17 in the Tesai Foundation of Ciudad del Este. It is estimated that from 4 beds per 100 000 inhabitants at the beginning of the pandemic, the figure has increased to 10 beds per 100 000 inhabitants. These data demonstrate the opportunity to prepare the health system that the country has had, in the first six months.

Primary health care

Primary health care in different territories has become a great ally, contributing to the monitoring of mild cases, and in the processes of education of families, providing containment during the implementation of mandatory quarantine, although the pandemic had its impact on some priority programs, several of which were able to continue operating, others had to close (hypertension, diabetes, HIV, tuberculosis), in places that failed to incorporate technologies and teleconsultations, or adaptation of operation in safe conditions.

The priority and strategic expansion of family health units at the first level of care, before the pandemic, with institutional agreements at subsequent levels of care with the Institute of Social Security (IPS), especially in vulnerable territories, is considered strength.

The predominant hospital-centric vision of two decades ago has changed significantly towards the integrated implementation of promotion and prevention, in a transversal manner at all levels of care incorporating the notion of continuity of care, and the capacity to resolve processes and make diagnoses at the first and second levels before they become more serious and costly (24,25).

The private subsystem does not currently have coverage standards and affordable costs to respond to eventual integration with the public subsystem, and it is estimated that only about 5 % of the population has access to private services and prepaid medicine.

The supply of inputs, logistics, equipment

The provision of individual protection equipment (EPI), medicines, basic disposable materials, electronic devices, and respirators has been difficult due to the concentration of production in a limited number of countries and the high demand and complexity of mass transportation, which required extraordinary efforts. Health professionals and teams have faced in the first stage the consequences of limited availability of replacement personal protective equipment (EPI), with the availability of inputs estimated to be below average.

Strengthening the skills of non-intensive doctors and nurses

The strengthening of competencies of non-intensive doctors and nurses, assimilated from less complex hospitals, has been an emergency strategy that allowed the expansion of the health workforce, limited to 220 critical care specialists and 700 nursing professionals trained to provide support at specialized levels. It was also necessary to hire professionals from various disciplines and sub-specialists in emergency positions in the last five months to meet the demand.

Table 4

Some relevant considerations on clinical and care management

It is estimated that there are 5 doctors per 100 000 inhabitants. The availability of personnel and health professionals is below average.
There are about 22.5 community health workers per 10 000 people. At the national level, the geographic distribution is not equitable, especially in dispersed and underserved rural areas (26).
About 70 % of health professionals work in the capital and metropolitan area, where 30 % of the population resides.
Epidemiological, clinical, and preventive protocols were continuously adjusted by scientific societies, supported by global and regional regulations (PAHO-WHO-CDC).
Need to increase the number of family doctors and the medium- and long-term training of therapists, to respond to emergencies and contingencies in the event of endemic behavior of the COVID-19.
Return of health professionals from labor markets in the countries of the region.
Non-pharmaceutical measures applied early have influenced mortality indicators compared to Latin American countries.
Law No. 4392/2011 created the National Fund of Solidarity Resources for Health (FONARESS). It was regulated in 2013 to guarantee access to high complexity medicine to people without any kind of health insurance. However, there is no evidence of its compliance.
In practice, the IPS and the MSPBS provide residual coverage for catastrophic diseases.
Postponement of the inclusion of the private sector in integration agreements currently in force for the neonatal, child, and adult intensive care (27) .

Source: elaborated by the authors.

The socio-health approach to the pandemic

The roles of community agents and members of family health teams have not been able to develop community social services, especially health care for more vulnerable populations including indigenous communities, diminishing the potential effects on group well-being, in contexts where the differential impact of social determinants of health is stronger.

It is necessary to guarantee an ethical approach in the use of health resources such as the availability of diagnostic tests with an equity approach, as well as access to vaccines, and the consideration of the ethical implications of clinical trials conducted on human subjects with pre-approved drugs already used in other previous pandemic scenarios.

DISCUSSION

The case fatality rate for COVID-19 observed in different countries around the world has varied between 0.3 and 5.8 % attributed to underreporting of asymptomatic or mild cases (overestimation of case fatality), and to incomplete case follow-up data or underreporting of deaths (underestimation).

At the regional level, the pandemic is evolving unevenly, with highly compromised areas being noted in contrast to less affected areas. The evolution and trends in different countries confirm outbreaks (second wave), reinforcing uncertainty about the behavior of the virus, and the type of immunity it generates, without ruling out an endemic evolution (10,11).

The capacity of the countries to react to the challenges of adaptation and changes implemented in the pandemic has been directly related to the strengths of the governing institutions, in this case, health, academic-scientific and technological institutions, in the search for cost-effective solutions, and interpretation of the opportunities for transformation and change.

There has been little supranational coordination, atomization of efforts, and few initiatives for interregional action. The type of political and technical leadership, the capacity of social organization, and the existence of conflicts derived from the economic effects have influenced the evolution and results between one country and another, aspects that will condition the changes and transformations necessary to face the real impact of the pandemic in the future.

In Paraguay, there is a cumulative incidence rate of 17 cases per 100 000 inhabitants up to epidemiological week 45 of 2020. The behavior of the epidemic curve is attributed to early measures of isolation, suppression (total quarantine), without ruling out possible false negatives, and the under-recording of undetected cases due to initial restrictions on access to reagents that made massive testing difficult at that time.

Paraguay has a deficit of installed capacity at the specialized level, reflected in a single supply indicator (2 intensive care beds per 1 000 inhabitants), compared to other countries in the region. European countries are in a privileged position with rates of 33 per 100 000 inhabitants, attributed to the specialized care they have developed for the care of elderly patients. Spain and Italy have 9 and 8 beds per 100 000 inhabitants.

The COVID-19 pandemic, of which a potential endemicity is estimated, shows the urgent need to invest in the expansion of the installed capacity, the training of intensivists, nurses, and physiotherapists, resuming the previous agendas with more objectivity, considering that only about 24.74 % of the total population of Paraguay have some kind of health insurance, including social security and private insurance.

Early isolation measures modified the flow of patients in hospitals, a factor that contributed to the balance of demand and allowed public systems to provide coverage to all citizens, although this rationalization is estimated to have had an impact on the increase in mortality from other causes, related to chronic and prevalent diseases.

Primary health care has been one of the factors to which the lesser impact of the pandemic is attributed, among others, through systematic contact with the community, to a greater or lesser extent for the attention, information, and care of both chronic-degenerative and acute diseases prevalent in most of the country's departments that have family health units. This shows that the first level must continue to be strengthened, to respond to people's expectations by preparing it materially.

In Brazil, for example, despite an extensive primary care network, uncoordinated measures did not allow the use of this workforce to identify and track cases, which brought high rates of cases and deaths in the country (28), Giovanella et al. (29), highlights the potential of PHC in the response to surveillance, monitoring of individual case care through community work. They describe examples of actions carried out in some Brazilian federal capitals and municipalities, despite the absence of a national policy. They also point out the importance of the role of PHC in the care of other ailments that continue to affect the populations. The authors map out in detail the actions that can be implemented, consistent with the attributes of PHC, recognizing that what is critical in this issue is to ensure resources to strengthen these practices.

The level of the informal economy makes this model of care the option for acting on social and environmental determinants in unfavorable economic and social contexts. This facilitates the periodic evaluation of lessons on what does not work and the strengthening of urgent components that are still delayed, projected as a qualified and accessible PHC, with the incorporation of technologies and communication systems, information, education, and health promotion networks that empower the population.

The availability of open data and the modeling of the pandemic in real-time, since the beginning, has contributed to the understanding of the transmission patterns of SARS-CoV-2, showing variation in the impact in the different Latin American countries. Several of these

countries have had predictable evolutions, going through different stages, in which suppression-oriented measures have been applied followed by mitigation strategies, with highly contagious behaviors for long periods.

In most cases, control of the pandemic has faced uncertain scenarios. The mathematical models and the estimation of the basic reproductive number have provided useful projections to dimension the average number of citizens that would be infected from a primary case, discriminating comparatively differential attack rates by countries, regions, and territories. In this way, it is possible to anticipate, intervene and evaluate the magnitude of the effects and the direct and indirect impact of the pandemic on health, as well as to guide the selection of measures and the flexible design of surveillance and containment strategies. For this purpose, it should be assumed the heterogeneity of cultural factors, social contact structures, biological conditions, crossed immunity with other viruses, susceptibility related to natural immunity factors, transmissibility, exposure mechanisms, severity, and super-propagation effects attributed to hyperconnectivity nodes and bridges, to closed spaces where dissemination occurs very quickly, suboptimal working conditions, which modify the patterns in more contacted societies, with a higher degree of intergenerational contact, demonstrated in seroprevalence studies as opposed to compartmentalized structures. All of this makes it difficult for health systems to develop strategies and respond in a quality manner (30).

The level of data disaggregation is restricted in regions and territories that lack digital notification systems. That is why only aggregated data is obtained, incorporating not only sex and age variables but also disaggregation by ethnicity. Since mortality databases are not public, there are delays in updating data by weeks, affecting the availability of nominal data, with acceptable periodicity. This is due to the lack of connectivity, transmission infrastructure, trained personnel with analytical skills, regulatory protection systems, and access to open data (31,32).

CONCLUSION

The challenges faced by Latin American health systems in the face of the pandemic trigger ethical dilemmas that require extensive debate and analysis, due to their impact and socio-health, political and economic consequences, which at the same time constitute opportunities to redesign strategies and measures for their containment in the short, medium and long term.

The emerging knowledge of global, regional, and sub-regional experiences has allowed the expansion of the scientific knowledge in all areas related to the management of the pandemic by the new SARS-CoV-2 and the COVID-19 disease. The accelerated exchange of scientific communications in the political-health, epidemiological, clinical, economic, and social fields, has contributed to the formulation of new options for health policy, clinical management, strengthening of information systems, and processes for the promotion and prevention of responsible behavior among citizens.

Finally, the pandemic reproduces previous conditions of inequality in scenarios of poverty and social vulnerability in Paraguay and Latin America.

Funding: None

Conflicts of interest: None

REFERENCES

1. Universidad John Hopkins. https://coronavirus.jhu.edu/. 2020.
2. Malamud C. El COVID-19 en América Latina: desafíos políticos, retos para los sistemas sanitarios e incertidumbre económica estudios internacionales y estratégicos. Real Instituto Elcano. 2020.
3. República de Paraguay. Direccion General de Estadisticas, Encuestas y Censos. Datos abiertos 2000 – 2025. 2020. Disponible: https://www.dgeec.gov.py/microdatos/indicador.php?ind=16.
4. CEPAL. Perspectivas económicas de América Latina 2019, Desarrollo en Transición. 2019.
5. República de Paraguay. Ministerio de Salud Pública y Bienestar Social. Dirección General de Información

Estratégica en Salud. http://portal.mspbs.gov.py/digies/wp-content/uploads/2020/01/Indicadores-Basicos-de-Salud-IBS-2019.pdf.

6. UNDP. Informe de Desarrollo Humano, Paraguay. 2019.
7. CEPAL. Balance Preliminar de las Economías de America Latina y el Caribe. 2019. 2019.
8. Ministerio de Salud Pública y Bienestar Social. Organización Panamericana de la Salud. MSPBS/OPS. Perfil de los sistemas de salud de Paraguay: monitoreo y análisis de los procesos de cambio y reforma. Paraguay, 2008. 2008.
9. Alum N, Cabral-Bejarano MS. Sistema de salud de Paraguay. Rev Salud Púb Paraguay. 2011;1(1): 13-25.
10. Nuguer V, Powell A. Políticas para combatir la pandemia. Informe macroeconómico de América Latina y el Caribe. Banco Interamericano de Desarrollo. 2020. Disponible: https://flagships.iadb.org/es/MacroReport2020/Politicas-para-combatir-la-pandemia
11. United Nations. Shared responsibility, Global solidarity: Responding to the socio-economic impacts of COVID-19. ONU. 2020.
12. Organización para la Cooperación y el Desarrollo Económico (OCDE). Reformando el sistema de salud paraguayo. In: Estudio multidimensional de Paraguay: Volumen 3: Del Análisis a la Acción, OECD Publishing. Paris. https://doi.org/10.1787/504e4366-es
13. Jiménez Paneque R. Indicadores de calidad y eficiencia de los servicios hospitalarios: Una mirada actual. Rev Cub Salud Pública. 2004;30(1). http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-34662004000100004
14. Vidal J. Governança democrática. Para uma nova coordenação da sociedade. Tirant, Brazil. 2019.
15. Jimenez Asensio R. Empleo público 2020-2030 (y II): Líneas de trabajo y esbozo de propuestas. 2020. Disponible: https://rafaeljimenezasensio.com/2020/04/20/empleo-publico-2020-2030-y-ii-lineas-de-trabajo-y-esbozo-de-propuestas/
16. Arellano Gault D, Sánchez Cetina J, Renata Soto B. ¿Uno o varios tipos de gobernanza? Más allá de la gobernanza como moda: la prueba del tránsito organizacional. Cuad Gob Admin Pública. 2014;1(2):117-137.
17. Morales-Fajardo, M.E. CCI. Conferencia: Notas de coyuntura del CRIM. Alternativas de construcción a la gobernanza: policy networks. In México. UNAd, editor. (Des) organizando la (des) gobernanza en tiempos de pandemia.; 2020.
18. Alvarez P, Harris P. COVID-19 en América Latina: Retos y oportunidades. Rev Chil Pediatría. 2020; 91(2):179-182.
19. Ministerio de Salud Pública y Bienestar Social. Cartera de Servicios por Curso de vida y Niveles de Atención y Complejidad. Paraguay. 2019.
20. Organización Panamericana de la Salud. Orientaciones para la aplicación de medidas de salud pública no farmacológicas en grupos de población en situación de vulnerabilidad en el contexto de la COVID-19. 2020.
21. CEPAL. Observatorio Regional de Planificación para el Desarrollo. Disponible: https://observatorioplanificacion.cepal.org/es.
22. Organización Panamericana de la Salud. Acciones de alistamiento en hospitales para la respuesta a la COVID-19. 2020.
23. Ministerio de Salud Pública y Bienestar Social. Dirección General de Desarrollo de Servicios y Redes de Salud. Manual de Organización de los Servicios en el marco de las RIISS, Paraguay.2019.
24. Organización Panamericana de la Salud. Organización Mundial de la Salud. De Alma-Ata a Astaná 2018. Conferencia Mundial sobre Atención Primaria de Salud. 2019.
25. Banco Interamericano de Desarrollo (BID). Mejor gasto para mejores vidas: cómo América Latina y el Caribe puede hacer más con menos. Washington D.C. 2018.
26. Ministerio de Salud Pública y Bienestar Social. UTI: 220 médicos especialistas a nivel país. Noticias. Paraguay. Disponible: https://www.mspbs.gov.py/portal/21400/uti-220-medicos-especialistas-a-nivel-pais.html
27. Ministerio de Salud Pública y Bienestar Social. Dirección General de Planificación y Evaluación. Dirección de Economía de la Salud. Cuentas Nacionales en Salud 2018. 2018.
28. Giovanella L, Vega R, Tejerina-Silva H, Acosta Ramírez N, Parada-Lezcano M, Ríos G, et al. ¿Es la atención primaria de salud integral parte de la respuesta a la pandemia de Covid-19 en Latinoamerica? Trabalho, Educácao e Saúde (online). 2021; 19. DOI: 10.1590/1981-7746-sol00310
29. Giovanella L, Martufi V, Ruiz Mendoza DC, Magalhaes de Mendonca MH, Moraes Bousquet AE, Guimaraes Pereira RA, et al. A contribuição da atenção primária à saúde na rede SUS de enfrentamento a COVID 19. Saúde em Debate. 2020. DOI:10.1590/SciELOPreprints.1286
30. CDC. Infection Control Guidance. Updated. 2020. Disponible: https://www. cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations. html
31. Natera Peral A. Nuevas estructuras y redes de gobernanza. Rev Mex Sociol. 2005; 67(4): p. 755-791.
32. Beck U. La sociedad del riesgo. Hacia una nueva modernidad. Barcelona. Paídos Ibérica. 1998.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S262-S272
DOI: 10.47307/GMC.2020.128.s2.14

COVID-19 pandemic in Uruguay: evolution, lessons learned and challenges

Drs. Alicia Alemán[1]**, Lic. Franco González Mora[2]*, Ima León[3]**, Ana Sollazzo[4]**, Rodolfo Vázquez[5]***

SUMMARY

America has become a new epicenter of the COVID-19 pandemic but the epidemic in Uruguay has had an atypical behavior compared to the region, with positive results in the management and control of the health crisis. This article describes the socio-sanitary characteristics of the country, the evolution of the pandemic, and the sanitary policies implemented, as well as the challenges to face the next stages. Since the beginning of the pandemic, the national health emergency was declared, the national emergency system was launched and a Coronavirus Fund was created to finance the required interventions. An outbreak mitigation strategy was implemented by recommending non-mandatory physical distancing. Likewise, the increase in diagnostic testing capacity through national developments, the management of suspected cases at the household level, and the implementation of telemedicine stand out. There is currently little community circulation of the virus. The largest increases in the number of cases have occurred mainly in clusters, institutional agglomerations, and small cities. In all these situations, index cases and contacts were quickly identified. An important role is attributed to the participation of the academic scientific community and the epidemiological surveillance system of the Ministry of Health, which has made it possible to effectively manage the outbreaks through surveillance and active search for cases.

Keywords: *COVID-19, Uruguay, health policies, risk management, mitigation strategies.*

RESUMEN

América es un nuevo epicentro de la pandemia por COVID-19 en donde Uruguay ha tenido un comportamiento atípico para la región, obteniendo resultados positivos en el manejo y control de la crisis sanitaria. Este artículo describe la característica socio sanitarias del país, la evolución de la pandemia y las políticas de control implementadas, así como los retos a enfrentar en próximas etapas. Desde el inicio de la pandemia se declaró la emergencia sanitaria nacional, se puso en marcha el sistema nacional de emergencias y se creó el Fondo Coronavirus para el financiamiento de las intervenciones requeridas. Se implementó una estrategia de mitigación del brote mediante la recomendación del distanciamiento físico no obligatorio. Asimismo, se destaca el incremento de la capacidad de testeo diagnóstico a través de desarrollos nacionales, el manejo de los casos sospechosos a nivel domiciliario y la implementación de la telemedicina. Actualmente se observa una escasa circulación comunitaria del virus. Los mayores incrementos en el número de casos han ocurrido fundamentalmente a partir de aglomeraciones institucionales y en ciudades

DOI: https://doi.org/10.47307/GMC.2020.128.s2.14

[1]ORCID /0000-0002-9247-1031
[2]ORCID 0000-0002-0606-4174
[3]ORCID /0000-0001-5854-6362.
[4]ORCID0000-0002-1798-7361
[5]ORCID0000-0001-5565-6064
*Adjunct Professor of the Department of Preventive and Social Medicine, School of Medicine, University of the Republic of Uruguay.
**Aggregated Professor of the Department of Preventive and Social Medicine, School of Medicine, University of the Republic of Uruguay.
***Acting Director of the Department of Preventive and Social Medicine, School of Medicine, University of the Republic of Uruguay.

Correspondence: Dr. Alicia Aleman
aaleman@unicem-web.org
cellphone:+598 98557679

Recibido: 12 de octubre de 2020
Aceptado: 17 de noviembre de 2020

de pequeño porte. En todos los casos se ha podido identificar rápidamente los casos y los contactos. Se atribuye un papel fundamental a la participación de la comunidad científico académica y al sistema de vigilancia epidemiológica del Ministerio de Salud que ha permitido gestionar eficazmente el brote a través de la vigilancia y la búsqueda activa de casos.

Palabras clave*: COVID-19, Uruguay, políticas sanitarias, gestión de riesgo, estrategias de mitigación.*

INTRODUCTION

Latin America has become since June 2020 a new epicenter of the COVID-19 pandemic, in this context Uruguay has positioned itself as an atypical case in the region, obtaining very good results in the management and control of the health crisis (Figure 1).

The objective of this article is to describe the evolution of the COVID-19 epidemic in Uruguay, the strategies defined to control it, the lessons learned, and the challenges and perspectives for the next stages in the management of COVID-19 in the country. To achieve this objective, a review of official documents, websites, and scientific articles was carried out in relation to the subject. This section outlines some of the main aspects that make up the Uruguayan reality to date.

Characteristics of the country and evolution of the epidemic

Uruguay is a small country in the southern region that borders Argentina and Brazil and has a continental surface area of 176 215 square kilometers (1). The total population is 3 530 912 inhabitants, approximately 40 % live in the

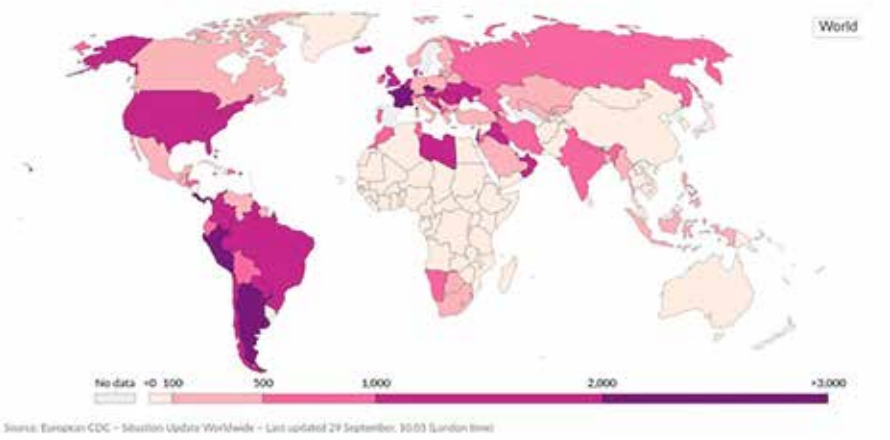

Figure 1. Biweekly (previous two weeks) cases of confirmed COVID-19 per million people (14 al 29/9/2020).

capital Montevideo and if we consider this city and its metropolitan area, the proportion of the population that lives in the region exceeds 60 % of the total. The global population density is 20 inhabitants per Km^2, given its condition as a macrocephalic country (a large part of its population is concentrated in the capital and metropolitan region), the population density presents a heterogeneous behavior in the territory: it is 6 662 inhabitants per Km^2 in Montevideo (a city with an area of 536 Km^2) and 12.2 in the rest of the country (1).

The first cases of COVID-19 in Uruguay were identified on March 13, 2020. The government almost immediately declared a health

emergency and implemented a mitigation strategy by recommending non-mandatory physical distancing. Likewise, it began the monitoring of travelers from risk areas, the closure of airports, educational centers, and large shopping centers, the prohibition of public shows, the promotion of teleworking, and the dissemination of the "Stay at home" strategy (2). In the package of more specific measures, the increase of the diagnostic testing capacity through national technology development, the management of suspected cases at the home level, and the implementation of telemedicine to avoid crowds in healthcare centers stand out. Uruguay has an Integrated National Health Care System that provides universal access to care to all residents of the country, with additional strength in this context, a good endowment of beds for intermediate and critical care.

From the time the first case of COVID-19 was identified in the country to the end of September, 197 days (28 weeks) has elapsed (3). In that period, 225 803 tests were carried out for the diagnosis of COVID-19 (one test per 15 inhabitants until 25th September), 1 967 cases were confirmed by laboratory techniques (cumulative incidence of 55.71 cases per 100 000 inhabitants), 210 are active cases, 1 710 are recovered cases and 47 have been deceased (case fatality rate is 2.4 %) (4).

Taking into account the number of PCR tests performed and the number of them being positive, it can be affirmed that the pandemic in Uruguay evolved with little community circulation. In fact, 66 % of the cases have contracted the SAR-CoV-2 viruses through contact with confirmed cases and 19 % were travelers from endemic areas (3).

In the country, the greatest increases in the number of cases have occurred from crowds in institutions or social events and small cities located in the interior of the country[1]. Timely tracking of cases and contacts by the system of health surveillance of the Ministry of Public Health has allowed each outbreak to be managed efficiently, making that the curve of confirmed accumulated cases never reached an exponential trend.

Preparation of the country to face the pandemic: the health system and the scientific-academic network

On March 1, 2020, the new authorities of the Ministry of Public Health (MPH) took office at the beginning of a new government administration in the country. Technical teams of the Epidemiology Division of the MPH had already begun developing some documents to define control measures considering the global context of the pandemic. On February 26, the first technical recommendations for case management were published in coordination with all health institutions (5). This document details an initial Epidemiological Surveillance Strategy, based on the increase of sentinel surveillance of severe acute respiratory infection (SARI) and influenza-like illness (ILI), to detect a possible unusual behavior of an important event for public health.

Once the health emergency in the country was declared, all actions were lead and supported by the Ministry of Public Health. The MPH's active epidemiological surveillance system, with great experience in managing outbreaks of other communicable diseases (the last one in 2019) was an enormous strength. This system made possible by contact tracing that there were no more than five generations of virus transmission in the country during the beginning of the epidemic (in most of the outbreaks, the chain was stopped in the second generation) (6). The Uruguayan State through the National Integrated Health System offers universal health care coverage based on the conception of Health as a right. This new paradigm began with the reform of the health system in 2007. Currently, the health sector represents more than 6.5 % of public spending as a percentage of GDP, compared to an average of less than 6 % in Latin America (7). Financing and governance of the system is the direct responsibility of the State and medical care is accessible to the population as a whole, including the most vulnerable (which does not contribute to the national health fund) (8).

Therefore, when facing the pandemic, the country had an institutionally strengthened health system and a decentralized health care network

[1]Among the affected cities, the border city of Rivera stands out. It is a city of approximately 80 thousand inhabitants that borders by land with a Brazilian city of Santana do Livramento with approximately 140 thousand inhabitants.

with adequate development of its infrastructure. The broad social protection system that operates in a context of relatively low informality in the labor market also stands out. These characteristics of the country, consolidated in the last decade, contributed to the mitigation of the socio-economic and health effects in the health emergency. Likewise, it can be affirmed that the extensive existing health infrastructure also contributed to the success that the country has been obtaining to date in controlling the epidemic (1,9). Uruguay has approximately 5 doctors per 1 000 inhabitants and the availability of hospital beds per inhabitant is among the highest in the continent: 8 940 moderate care beds (2.5 / 1 000 inhabitants) and 963 critical care beds (0.2 / 1 000 inhabitants) at the beginning of the epidemic in the country (9). This starting point allowed rapid action to be taken to increase the availability of intensive care beds, as well as the supply of ventilators.

In a comprehensive analysis of the Uruguay an case, the State is positioned as the main actor in the management of the crisis. A large part of the measures arose from a presidential decree that established all the measures already mentioned, which altogether and others included in Table 1, represented an alternative strategy to mandatory quarantine (10,11). Another very important aspect that contributed to the control of health crisis is the long civic tradition of the Uruguayan population, which has surely made it possible for awareness campaigns on good health practices and hygiene protocols to have both echo and level of compliance (10,11)

Another aspect to emphasize is the scientific development of the country and its academy. The University of the Republic (UDELAR), the Pasteur Institute, the Clemente Stable Institute, and other public institutions quickly became involved in the development of diagnostic tests, allowing early application on a large scale (12).

As a consequence, the systematic and timely testing of the identified contacts was possible and the consequent early isolation of the positive cases. The development of contact traceability technologies and the use of mobile applications[2]contributed to community monitoring of the infection in outbreak areas and prevention of the spread (13).

The broad consensus of the leading groups in giving relevance to the issue and in defining strategies is also highlighted. The alignment occurred in all spheres of national and municipal government and among all political parties with parliamentary representation. It was also possible to coordinate and take advantage of highly qualified human resources with the capacity to contribute to scientific development and detection and tracking tasks in a context of the limited expansion of the epidemic, an aspect that, according to the existing evidence, was not possible in other countries of the region. The Uruguayan government convened an advisory group of scientists headed by experts -medical and from other disciplines- of the first level (Honorary Scientific Advisory Group)[3] that provided recommendations for scaling up or de-scaling the control measures with some basic criteria: recommendations based on the best possible scientific evidence, step by step, monitored before and after scaling them and based in a transdisciplinary and intersectoral vision (14). The government also sought coordination with the private sector, including the industries involved in addressing the problem.

In Uruguay, an application for cell phones called "Coronavirus UY" was designed, with the aim of monitoring cases. The application made it possible to issue alerts in situations of close contact with cases detected as positive. This method has also been applied in other

[2]In Uruguay, an application for cell phones called "Coronavirus UY" was designed, with the aim of monitoring cases. The application made it possible to issue alerts in situations of close contact with cases detected as positive. This method has also been applied in other countries. In the case of Uruguay, it seems to have not been widely accepted by the population. Among the possible factors that explain this is skepticism regarding the guarantee of personal data protection and also the requirements involved in downloading and activating the application on the cell phone (it should be taken into account that in Uruguay there are still important gaps in the use of information and communication technologies).

[3]Prior to the creation of this honorary scientific group and immediately after the first positive case of COVID-19 in Uruguay, the Epidemiology Division of the MPH called an advisory group to contribute in the design of inputs for the first measures adopted by the government. This group was made up of technical officials of the institution and experts in the field of epidemiology, infectology, geography and sociology, most of them from the University of the Republic.

countries. In the case of Uruguay, it seems to have not been widely accepted by the population. Among the possible factors that explain this is skepticism regarding the guarantee of personal data protection and also the requirements involved in downloading and activating the application on the cell phone.

Control policies for COVID-19: implementation and lifting of measures

After the first cases of COVID-19, the national health emergency was declared, decrees were established defining control measures and the Coronavirus Fund was created to make it possible to finance in part some of the strategies deployed (Table 1) (10).

Prior to the creation of this honorary scientific group and immediately after the first positive case of COVID-19 in Uruguay, the Epidemiology Division of the MPH called an advisory group to contribute in the design of inputs for the first measures adopted by the government. This group was made up of technical officials of the institution and experts in the field of epidemiology, infectology, geography and sociology, most of them from the University of the Republic.

Table 1

Interventions implemented to control the COVID-19 epidemic in Uruguay 2020

Interventions	Date*
Global public health measures to prevent infection	
The exhortation of the population to voluntary physical distancing (two meters), especially the population at risk	13/3/2020
Appeal to the population to maintain environmental and hands hygiene	13/3/2020
Transparent reporting of information on cases and evolution of the epidemic through the Secretariat of the presidency and the National Emergency System	14/3/2020
Popular education on virus transmission and non-pharmacological measures to control the epidemic (National Coronavirus Plan) 15 minutes a day on TV.	19/3/2020
Mandatory use of face masks for the general population	24/4/2020
Surveillance measures	
Definition of case/quarantine and isolation for suspected cases and contacts	13/3/2020
Contact tracking system by phone and app (later)	13/3/2020
Quarantine of Uruguayans returning to the country	16/3/2020
Travel restrictions to specific sites	16/3/2020
Suspension of comercial flights	20/3/2020
Availability of diagnostic tests for extensive testing of the population (developed at the national level)	2/4/2020
Scaling up of sanitary controls at border crossings with Brazil	5/5/2020
Measures to promote physical distancing	
Closure of study centers (schools, high schools, universities, etc.), maintenance of distance education and telework	16/3/2020
Closure of bars, shopping centers, and shows with an audience representing crowds of people	17/3/2020
Parties, dances, religious celebrations, and in general social events of significant attendance of people are suspended	17/3/2020
Closure of game rooms and equestrian venues	19/3/2020
Authorization to stay at home, to all those 65 years of age or over, under cover of the sickness allowance, especially in public bodies. Telecommuting.	25/3/2020

Continues on p. S267...

… continued from Table 1.

Interventions	Date*
Measures to optimize medical care	
Clinical management of suspected cases at home.	13/3/2020
Implementation of the use of telemedicine to give continuity to the medical care of the population as a whole	2/4/2020
Prevention and control of respiratory infections (all usual measures including flu vaccination)	13/4/2020
Reinforcement of third-level health services (suitable personnel and ventilator) and development of protocols for the use of personal protective equipment and care. Flexibility for the importation of necessary equipment.	20/3/2020
Mitigation measures for the socio-economic effects generated by the pandemic	
Authorization to suspend cuts for non-payment of electricity supply and telecommunications services provided by state companies during the first months of the epidemic.	4/4/2020
Expansion of subsidies from the Ministry of Social Development for poor households	4/4/2020
Percentage exemptions of personal and employer contributions during the period	16/4/2020
Extension of the unemployment insurance allowance	19/5/2020
Technical advisory measures	
Honorary Scientific Advisory Group	17/4/2020

*Approximate date
The measures implemented to promote physical distance and air connectivity are being lifted in stages (under sanitary protocol) since May 2020.

Successes and limitations in controlling the epidemic in Uruguay

The measures adopted were timely and based on guaranteeing the individual freedoms of all people without putting third parties at risk. The strategy was based on the trust of the population and the transparency of information on the evolution of the epidemic.

Self-responsibility, symptom reporting, notification of contacts, and voluntary quarantine in case of self-perceived risk were promoted, as well as immediate consultation, prioritizing telephone contact, and encouraging non-attendance at health centers in cases considered of low severity.

The socio-demographic characteristics of Uruguay are also an aspect to take into account when analyzing the good results obtained so far. The magnitude and intensity of social interactions are considered risk factors for the transmission of the virus; therefore, the low population density of the country favors the control of outbreaks. Although Montevideo (where approximately half of Uruguayans live) is a city of 1.3 million inhabitants, its structure maintains a balance in terms of the distribution of green areas and public spaces that makes it possible to keep a physical distance from the population.

The country has only one large port and one large airport; this facilitates the control of Uruguay's interaction with other countries in the world (except for Argentina and Brazil, with which the land border is shared).

Another aspect to highlight is that the virus has hardly affected the low-income population and the most socially vulnerable. The initial spread has been restricted to the upper and middle classes of the city of Montevideo.

The epidemic had its initiation milestone in a conglomerate (grouping of cases in a defined space, in a greater quantity than could be expected by chance). This first outbreak arose as a result of

one of the first four cases entering the country and became a superspreading event. Although these types of events are difficult to predict and prevent, once detected, the speed of response is essential and rapid deployment of case identification and follow-up of contacts is critical (15). The speed with which this situation was addressed has been the constant in all other outbreaks subsequently generated in the country (Figure 2).

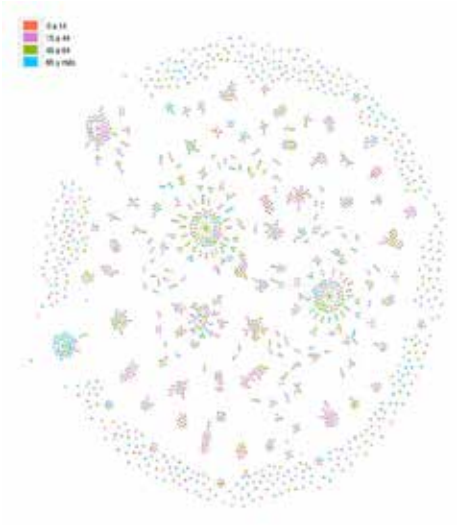

Figure 2. Identified transmission chains of COVID-19 cases by age group. Uruguay, 2020 (09/18/2020). Elaborated by the department of surveillance of the Ministry of Public health, 2020.

From the beginning, events that could lead to super spread were prohibited, that is, events that take place in closed, poorly ventilated environments, with many people meeting for a long time (weddings, churches, choirs, gyms, funerals, etc.) especially when speaking or singing and not wearing face masks. Taking into account the evidence that indicates that the spread of the disease probably presents a 20/80 pattern (20 % of patients are responsible for 80 % of infections) through superspreading events, it is reasonable to infer that the measures adopted by the country in this regard contributed to the reduction of infections and the low community circulation of the virus (15-17).

The circulation of the virus can be verified by observing the value of the reproductive number (Rt). This remained low in our country throughout the entire process until the latest available data, being greater than one only with the appearance of rapidly controlled outbreaks[4] (Figure 3).

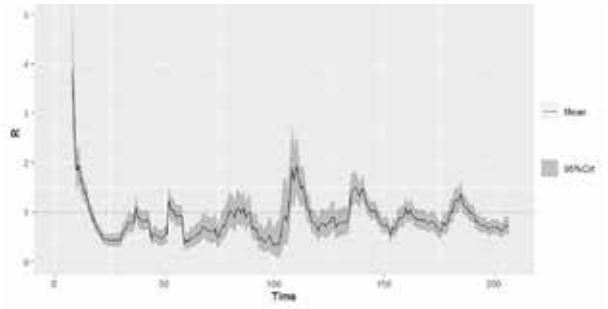

Figure 3. Estimation of the reproductive number (Rt) of COVID-19 in Uruguay. 03/03/2020 - -09/25/2020. Source: (2).

The Rt value is an average value that does not always fully represent reality (since it often does not represent well the evolution by clusters or outbreaks), but it is a widely used indicator and valued as positive when it is below one (18).

The Department of Health Surveillance of the MPH has a data recording system used for the analysis of epidemiological situations in almost real-time. Decisions of lifting some control measures were based on evidence obtained from this rigorous national data, centralized by the MPH and analyzed by the Health Surveillance team and by the Scientific Advisory Group. Having access to these databases (even though it was not always complete and timing) was a strength in the management of this epidemic. As an example, the decision to reopen schools was influenced by the fact that the chains of contacts analyzed had their last link in the children (according to transmission maps generated with the surveillance team of MPH), making it unlikely that there would be a greater spread of the disease

[4]The Rt value is an average value that does not always fully represent reality (since it often does not represent well the evolution by clusters or outbreaks), but it is a widely used indicator and valued as positive when it is below one (18).

due to in-person educational activities (Figure 1 developed by Health Surveillance Department).

The role of academic scientific participation not only had to do with making recommendations through the Scientific Advisory Group but also to the creation of a consortium of laboratories (Pasteur Institute of Montevideo, Faculty of Sciences, Clemente Stable Institute) that were able to develop national diagnostic tests that were quickly available at an appropriate cost (19). Viral sequencing techniques were also carried out in this context, allowing us to know more about circulating viruses and their spread. The University of the Republic, through several of its services, also worked to generate knowledge in real-time to better understand this epidemic (20,21).

The government promulgated decrees that allowed a proportion of the people employed in the orbit of the State to go to telework; the same happened in the private sector, where many companies adopted similar measures. In cases where it was not possible, the State relaxed the criteria for access to unemployment and sickness insurance subsidies, as well as reinforced non-contributory transfers aimed at the most vulnerable population (who are over-represented among informal workers). These measures promoted the permanence of employed persons in their homes during the first months without losing their jobs (10). The evolution of the incidence of effective teleworking in employed persons was 19.3 % in April and 11.8 % in July 2020 (22).

Social impact of the COVID-19 sanitary emergency

Although epidemic control has been successful so far, it has had collateral effects on other areas of health and people's lives, affecting different sectors of the population differentially.

In the sanitary field, the implemented measures may have contributed to the decrease in mortality from respiratory infectious diseases due to isolation in the early stages of the epidemic and possibly have also impacted on mortality from external causes, especially due to traffic accidents given the low traffic activity in the first months of the pandemic (23). Likewise, there was a record coverage of influenza vaccination in the context of the pandemic (in Uruguay influenza vaccination is voluntary) (24).

The health emergency has also had a high impact on the living conditions of the most vulnerable segments of society. Although there is not yet enough information to show the magnitude of these effects, it is reasonable to consider that the incidence of poverty and indigence has increased in the country and it can be pointed out with certainty that household income at the global level has dropped and so did the employment rate (Figure 4 and 5).

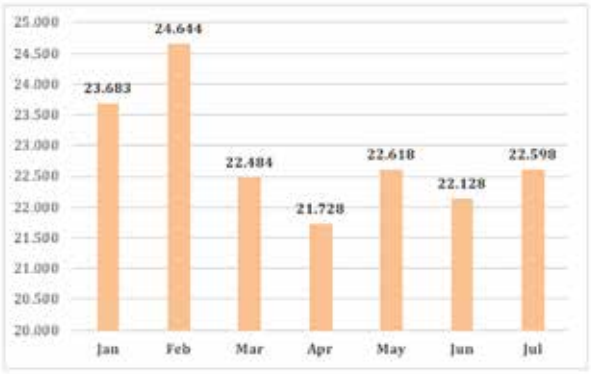

Figure 4. Evolution of average per capita household income ($ U). January - July 2020.
Source: Authors elaboration based on INE's Technical Report on household income. Available at http://www.ine.gub.uy/inicio

Figure 5. Evolution of the employment rate. Total, Country (%) January - July 2020.
Source: Authors elaboration based on INE's Technical Report on household income. Available at http://www.ine.gub.uy/inicio

Teleworking has been an option for some people and has prevented a further drop in employment; however, the experience has surely been uneven taking into account, for example, existing gender inequalities. In general, women are the ones who are overloaded with domestic and care work, and it is possible that in our country this aspect has been aggravated in the context of a health emergency. So far there have been no signals from the government accounting for this situation.

On the other hand, during the health emergency, it was not possible to fully account for the worsening of situations of intrafamily violence and domestic violence against children, women, and the elderly in a context of massive confinement.

In relation to the school-age population, the degree to which students remained linked to their educational centers during the suspension of face-to-face classes and the degree to which they participated in the different educational proposals developed by their teachers during this period is one of the most relevant unknowns for monitoring the educational situation in the context of the health emergency. According to studies that have been carried out, in general terms, a non-majority, but important group of students, in all education cycles and all modalities, did not manage to maintain regular contact with the educational system and to participate in teaching proposals developed by his teachers.

Likewise, it has not been measured yet the effects of the health emergency on food insecurity, on mental health eventually deteriorated by isolation, on the adequate continuity of medical care through telemedicine, and the weakening of health care and care of dependents networks.

Prospects and challenges for the next stages in the control of the epidemic

The main challenge for the future is to continue scaling the main activities at the population level (work, education, recreation), keeping the country in a green zone of sanitary risk and attending not only to the needs related to the COVID-19 epidemic but also responding to the situations that the control measures have generated in other socio-economic and health aspects.

There is special concern about the exhaustion that the maintenance of sanitary measures has generated on the population.

The massive return to face-to-face classes imposes some of the most important challenges such as maintaining the physical distance between students, hygiene in the centers, and the availability of elements such as alcohol gel and masks.

Measures are being gradually descaled with continuous monitoring of the consequences, balancing the risks and benefits, in an environment in which the health system has managed to generate a certain shield for the care of critical cases.

The reactivation of ports and airports, and the movement of people and cargo, is also a challenge that must be carried out under protocols and in permanent surveillance and must be accompanied by the implementation of international health regulations, currently under review by the WHO. In this sense, regional diplomatic work with the governments of the region is critical since the greatest mobility of people entering and leaving the country is to and from neighboring countries, which are in a different epidemiologic situation from that of Uruguay

The approach of the summer season and the need to reactivate tourism, an important source of income for the country, is also a challenge. The study of lessons learned by other countries concerning tourism is an important basis to take into account when defining a strategy in Uruguay. The development of predictive models of different opening scenarios is an important input in this regard. Criteria for recommendations should take into account the progressivity of measures, regulation, and monitoring.

Summarizing, the great perspective to take into account for the future management of the epidemic in Uruguay is to manage the risk that lifting control measures imposes, balancing the different consequences on the general well-being of the population.

Finally, the decision to be made regarding the use of the COVID-19 vaccine and its application strategy (reduction of the burden of disease or protection of the population at risk) should be taken into account in future perspectives. We

also see as challenges: the surveillance of vaccine safety in a marketing framework with abbreviated studies, costs, and the possibilities of vaccine acquisition for the countries in the region, in a world, struggling to obtain a solution to the problem of COVID-19.

Funding: None

Conflicts of interest: None

REFERENCES

1. National Statistical Yearbook 2019, 96th version. 2019. National Institute of Statistics of Uruguay. ISSN 1688-101X number. Available: thttp://www.ine.gub.uy/documents/10181/623270/Anuario+Estadistico+2019/f854fb27-ad7f-4ce3-8c37-005ade0a6140
2. Government measures to address the health emergency due to coronavirus (COVID-19). Presidency of Uruguay. Available: https://www.presidencia.gub.uy/ comunicacion/comunicacionnoticias/medidas-gobierno-educacion-emergencia-sanitaria-COVID19
3. Situation report on COVID-19 coronavirus in Uruguay (9/25/2020). Available: https://www.gub.uy/sistema-nacional-emergencias/comunicacion/comunicados/informe-situacion-sobre-coronavirus-COVID-19-uruguay-2592020
4. Epidemiological report 9/25/2020. DEVISA-MSP. Available: https://www.gub.uy/ministerio-salud-publica/comunicacion/noticias/informe-epidemiologico-del-1o-octubre
5. Technical recommendations for the management of COVID-19 cases. Available at: https://www.gub.uy/ministerio-salud-publica/comunicacion/noticias/comunicado-sobre-coronavirus-COVID-19
6. Epidemiological report. COVID-19. 2020. Available at: https://www.gub.uy /ministerio-salud-publica/sites/ministerio-salud-publica/files/documentos/publicaciones/ Informe%20epidemiol%C3%B3gico%2014082020.pdf
7. Advances in the consolidation of the National Integrated health system. Available at:https://www.paho.org/uru/index.php?option=com_content&view=article&id=1481:avances-en-la-consolidacion-del-sistema-nacional -health-integrated &Itemid = 451
8. Population coverage of medical assistance. Ministry of Public Health Uruguay 2020. Available: https://www.gub.uy/ministerio-salud-publica/tematica/cobertura-poblacional
9. Healthcare Performance Indicators. MSP 2020. SINADI: www.msp.gub.uy
10. Decree No. 101/020. Suspension of the teaching of classes and closure of public and private educational centers at all levels of education, as well as centers for child and family care (caif centers) 3/16/2020. Available: https://www.impo.com.uy/bases/decretos/101-2020/210
11. General regulations on COVID-19. Available: https://www.impo.com.uy/ normativa-COVID-19-2
12. Moreno P, Moratorio GA, Iraola G, Fajardo A, Aldunate F. Preira-Gómez M, et al. An effective COVID-19 response in South America: the Uruguayan Conundrum. medRxiv; 2020. DOI: 10.1101/2020.07.24.20161802.
13. Coronavirus Uy. Electronic Government and Information and Knowledge Society Agency (AGESIC). 2020. Available: https://play.google.com/ store/apps/details?id=uy.gub.salud.planCOVID19uy&hl=es_UY
14. GACH report, structure and degree of progress. Presidency. Uruguay 2020. Available: https://medios.presidencia.gub.uy/tav_portal/2020/noticias/AG_280/Informe_ GACH.pdf
15. Moncecchi G, Pintos, Ponzo J, Fariello MI, Fiori M, Lecumberry F. Eventos de Super-contagio. Nota 8 del Grupo Uruguayo Interdisciplinario de Análisis de Datos (GUIAD). Available: https://guiad-COVID.github.io/post/reporte8/
16. Adam DC, Wu P, Wong JY, Lau EHY, Tsang TK, Cauchemez S, et al. Clustering and superspreading potential of SAR-CoV-2 infections in Hong Kong. Nat Med. 2020;26:1714-1719.
17. Bi Q, Wu Y, Mei SJ, Ye C, Zou X, Zhang Z, et al. Epidemiology and transmission of COVID-19 in 391 cases and 1286 of their close contacts in Shenzhen, China: A retrospective cohort study. Lancet Infect Dis. 2020;20(8):911-919.
18. Ridenhour B, Kowalik JM, Shay DK. The basic reproductive number (R0): Considerations for its application in public health Am J Public Health. 2018;108(Suppl 6):S455-S465.
19. Moreno P, Moratorio GA, Iraola G, Fajardo A, Aldunate F, Preira-Gómez M, et al. An effective COVID-19 response in South America: the Uruguayan Conundrum. medRxiv; 2020. DOI: 10.1101/2020.07.24.20161802.
20. Uruguayan Interdisciplinary Group for COVID-19 Data Analysis. Available: https://guiad-COVID.github.io/
21. Bermolen P, Herrera D, Cabana A, Fariello MI, Arim M, Romero H. Dinámicas de COVID-19 a bajos números: estados alternativos y sus implicancias de manejo. Grupo Asesor Científico Honorario

(GACH). Secretaría Nacional de Ciencia y Tecnología de Presidencia de la República. Available: https://www.gub.uy/secretaria-nacional-ciencia-tecnologia/tematica/

22. INE Technical Report on Activity, Employment and Unemployment. Available in: http://www.ine.gub.uy/documents/10181/30865/Actividad%2C+Empleo+y+Desempleo+Julio+2020/2cbfbb74-76e1-4ac0-9d20-ce33012d8975

23. COVID-19 epidemiological report. Health Surveillance Department. MSP. 2020. Available: https://www.gub.uy/sistema-nacional-emergencias/comunicacion/comunicados /informe-situacion-relacion-coronavirus-COVID-19-uruguay-del-12052020

24. Flu vaccination campaign 2020. Available: https://www.gub.uy/ministerio-salud-publica/vacunacion-antigripal-2020

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S273-S288
DOI: 10.47307/GMC.2020.128.s2.15

Measures for the management of SARS-CoV-2 in Venezuela: An analysis from the data

Drs. Victoria Eugenia Castro Trujillo[1], Julio Simón Castro Méndez[2]

SUMMARY

Since March 13, 2020, the COVID-19 virus has been detected in Venezuela. The country had a situation before the pandemic, where the notorious thing was a very important weakness of the health system, a compromised situation of hyperinflation and economic precariousness in the last four years, and a tense political situation. Although the growth of cases in the first wave was not as intense as in other countries in the region (probably related to their economic precariousness), the impact it has had on hospitals and national life has been very important. What is striking about the State's management has been a few policies that are not very transparent, not very cohesive, and very dispersed, which has made it difficult to interpret and analyze the real impact on the epidemic. It is likely that the difficulty in obtaining gasoline and an extremely reduced economy in recent years have been a negative incentive for the transmission of the virus in the population as has been seen in the African continent at this time. Despite this, vulnerability persists, the capacity for improvement and the preparation of hospitals has not been substantially modified yet. It is estimated that the number of cases may increase significantly and that consecutive waves may be repeated and increase the impact that the virus has had in other latitudes.

Key words: *Venezuela, health policy, COVID-19, transmission, determinants.*

RESUMEN

Desde el 13 de marzo de 2020, el virus COVID-19 ha sido detectado en Venezuela. El país tuvo una situación previa a la pandemia, donde lo notorio fue una debilidad muy importante del sistema de salud, una situación comprometida de hiperinflación y de precariedad económica en los últimos cuatro años, y una tensa situación política. A pesar de que el crecimiento de casos en la primera ola no fue tan intenso como en otros países de la región (probablemente relacionado con su precariedad económica), el impacto que ha tenido en los hospitales y en la vida nacional ha sido muy importante. Lo que llama la atención por parte de la gestión del Estado han sido unas pocas políticas poco transparentes, poco cohesionadas y muy dispersas que han dificultado la interpretación y el análisis del impacto real sobre la epidemia. Es probable que la dificultad para conseguir gasolina y una economía extremadamente reducida en los últimos años, hayan sido un incentivo negativo para la transmisión del virus en la población como se ha visto en el continente africano en este momento. A pesar de ello, la vulnerabilidad persiste, la capacidad de mejora y la preparación de los hospitales no se ha modificado sustancialmente todavía. Se estima que el número de casos puede aumentar significativamente y que las oleadas consecutivas se pueden repetir e incrementar el impacto que el virus ha tenido en otras latitudes.

Palabras clave: *Venezuela, política de salud, COVID-19, transmisión, determinantes.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.15

ORCID: 0000-0002-4016-3045
[1]Lic. Estudios Internacionales (UCV) – Especialista en Gerencia Pública (UNIMET). Analista de datos Grupo de Investigación de Enfermedades Tropicales e Infecciosas (GIDETI) / Médicos por la Salud. @medicosxlasalud @vickycastroT

ORCID: 0000-0001-9509-2910
[2]Médico Internista Infectólogo UCV. Profesor Instituto Medicina Tropical Universidad Central de Venezuela. Corresponding author. E-mail: juliocastrom@gmail.com

Recibido: 03 de noviembre de 2020
Aceptado: 01 de diciembre de 2020

INTRODUCTION

Since the last week of December 2019 when the first global alarm of cases was reported in Wuhan province, China, the SARS-CoV-2 epidemic has been spreading for eight months. No country has not recorded cases to date. Despite this, the transmissibility and impact of cases in each country and region are beginning to be different. The virus has behaved homogeneously and has not presented genetic variability that explains the changes or differences we have seen in impact in each of the countries. The explanation of the differential impact must be in other factors that we are still understanding.

In Venezuela, the first case of COVID-19 by PCR test was officially reported on March 10, 2020. The objective of this paper is to outline the profile of the epidemic in Venezuela and correlate it with the control and mitigation policies that have been implemented.

Estimation of impact through the calculation of the number of affected

From March 10 to the date of writing this article, the only definition accepted by the Ministry of Health as a case of coronavirus is the positive result of the polymerase chain reaction (PCR) test (1). This definition, despite being quite strict from the medical point of view, has a deficiency from the epidemiological point of view, since in a large part of the national territory the access to PCR tests is significantly limited. A clinical definition has not yet been accepted: the only indicator of monitoring the epidemic is exclusively the number of daily cases of PCR.

Another important aspect of the definition's limitation is that in much of this time only one institution at the national level has the technical and regulatory capacity to perform PCR testing, the "Instituto Nacional de Higiene" Rafael Rangel (INHRR). Although at the beginning of the epidemic, when there were few cases, access was not a major problem, as the number of cases increased, access to PCR testing has become much more limited, not only because of the number but also because of the transportation of samples, particularly from the interior of the country.

An indicator of the difficulty of access to the test and the weakness in the processing capacity is that once March has passed, the time for reporting the result of the PCR test has remained around 10 to 15 days in any part of the national territory, with a tendency for the results to take longer in more distant areas than in nearby areas.

The limitation of access to PCR tests and the time of the return of the result represent very important limitations both for the clinical activity and for the epidemiological follow-up. Identifying the patients, as well as their contacts after 15 days of knowing the positive result, is practically impossible. Most experts in the world recommend that a result of a rapid molecular test, both for clinical management and epidemiological management, should be available in less than 48 hours, otherwise the urgency of the test is lost.

In September 2020, according to official information, the Venezuelan Institute of Scientific Research (IVIC) and the Research Institute of the State of Lara Dr. Felix Pifano joined the certification of PCR tests. Despite the increase in the number of centers for PCR testing, in practice, there is no improvement in reporting times or in health services' access to test results.

The comparison between the data provided by the spokespersons of the Ministry of Health (MPPS) and those obtained through the hospital follow-up, shows differences in the trends that, although subtle in some cases, imply differential interpretations according to the indicator being analyzed.

In the case of the number of patients diagnosed per day, the PCR graph shows a significant trend of decreasing cases since the second week of September (Figure 1), while the monitoring of hospital ARI cases presents more of stabilization with a trend of variation in the weeks. This difference may be related to the fact that the capacity of performing PCR is compromised during the weeks between September and October. If fewer tests are performed, there are fewer cases. Although hospital monitoring reports a slowdown or change in the pattern of case growth that could be interpreted as a decrease in cases, the orders of magnitude are different. In the case of PCR results, the interpretation is of a control epidemic, while when clinical cases are taken into account it is a stabilization.

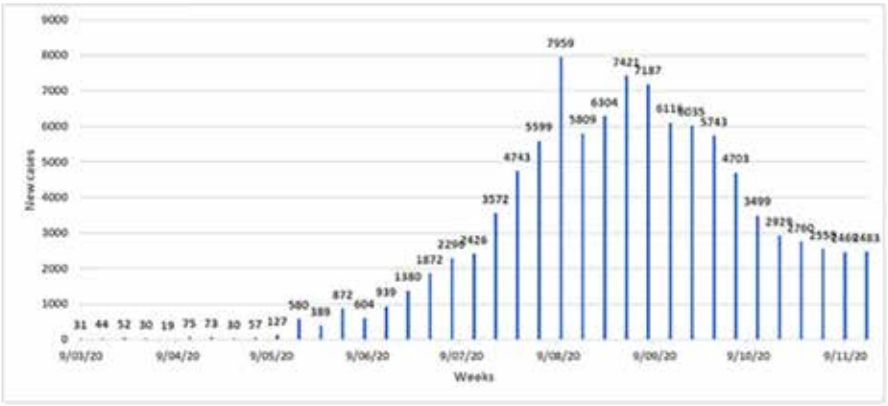

Figure 1. Venezuela: new cases of COVID-19 per epidemiological week between March 9 and November 16, 2020. Source: Ministry of Health (MPPS), Venezuela.

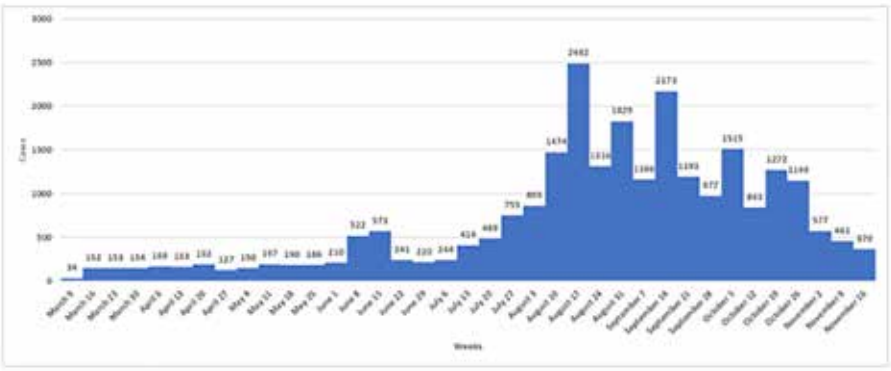

Figure 2. Venezuela: cases of acute respiratory infections (ARI) per epidemiological week between March 9 and November 16, 2020. Source: (2).

Similarly, there is a discrepancy between the number of deaths reported by the Ministry of Health (MPPS) and the number of deaths reported by the hospital monitoring of the COVID-19 National Hospital Survey (2) (Figure 3). This difference can be explained by the definition used by the MPPS to recognize dead people, that is, to register a positive PCR before death. The logistical limitations and access to diagnostic tests have already been explained, so a large number of the deceased have not had a PCR performed and this does not imply that they are not real cases of SARS-CoV-2. In fact, the number of deaths with clinical signs of ARI compatible with COVID-19 disease is three times higher than the cases reported by the MPPS.

The management of information on PCR results implies an excessive centralization and difficult access to health centers to the results. In an effort to decentralize PCR tests, other laboratories in the academic field and private institutions with technical and logistic capacities to perform them were verified. This information was sent by the Pan American Health Organization (PAHO) to the Ministry of Health, but none of these laboratories have been certified so far, which could improve access at the national level.

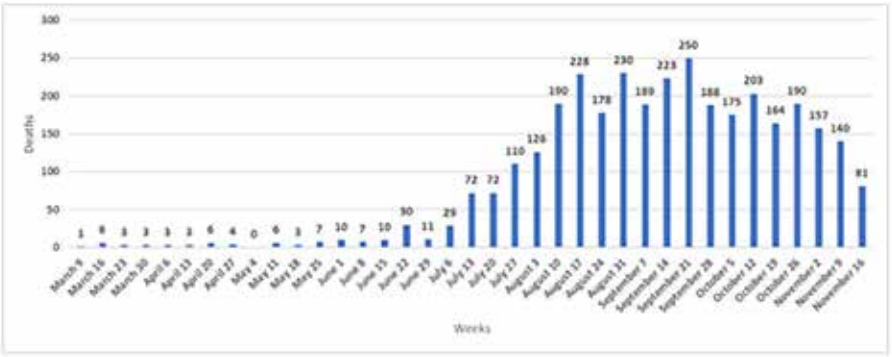

Figure 3. Venezuela: deaths reported from acute respiratory infections (ARI) per epidemiological week between March 9 and November 16, 2020. Source: (2).

This lack of decentralization of PCR testing and practice of excessive control of those results by the central government has not been positive for the management of the epidemic. Similarly, at no time from March 10 to date has the number of PCR tests performed per day been reported. Only a cumulative number of tests has been reported in some news reports without specifying the number of rapid tests compared to the number of PCR results per day. Considering that not only the absolute value of positive PCR test per day but also the percentage of positivity of the test as a function of the total number of tests performed are indicators of the evolution of the epidemic, it is critical that the real operational capacity of PCR tests in our country has not been revealed so far.

Only through indirect information elaborated by the United Nations System regarding PCR tests accumulated in time (3), it has been possible to make extrapolations and comparisons, according to the rate of PCR tests carried out with other countries in the region and the world (Figure 4). According to this, Venezuela has the lowest PCR index per capita in the region, probably the lowest in the world, which puts us in a situation of extreme weakness, not only for the diagnosis of patients but also for maintaining the monitoring, identification, and tracking of cases and contacts in an adequate manner.

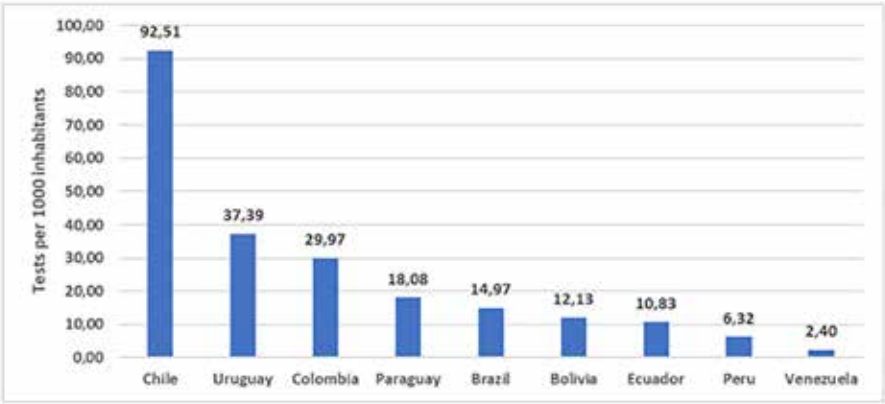

Figure 4. PCR tests for COVID-19 per 1 000 population, 2020, selected countries. Source: (3).

One of the few clear indicators so far of the management of the epidemic is that those countries that have conducted an extensive number of PCR tests to identify cases are those that have controlled the epidemic much better, among which we can cite South Korea, Vietnam, Singapore, New Zealand, and Australia. According to international data reported to the WHO, Venezuela has an index of PCR tests in relation to the countries of the region that is four or five times below international standards. For example, in October in Colombia 50 000 PCR tests/day were performed, while in Venezuela the number ranged from 2 000 to 2 500 PCR tests/day, in the best scenario.

On the other hand, the Venezuelan government has not published the weekly epidemiological bulletin that reports the number of diseases that are mandatory to be reported to the Pan American system for four years now. There is a blockage to high quality systematic epidemiological information, not only with this epidemic but with other previous epidemics. It is also quite clear that the concealment of epidemiological figures (which should be of public information), has been a persistent state policy in recent years in Venezuela.

Although a significant number of countries in the world have joined the open science initiative with access to data for analysis and research, and execution of public policy measures, in Venezuela the only information that is revealed is the number of positive PCR results per day. While in other parts of the region and the world, other indicators are available that are used to measure the epidemic, such as percentage of positive CRP per day, number of intensive care beds available at each moment, percentage of hospital occupation related to cases of coronavirus, geographical origin of cases, forms and sites of infection. All these are very important indicators for the follow-up of the epidemic that unfortunately in Venezuela are not available at the moment. On the other hand, the incorporation of the definition of a clinical case to have a better perspective of the total number of infected cases has been a claim and a request from the academic sectors of the country to the official entities, but so far this has not been included.

Case management and access to the health care system

In the first week of March 2020, with the first cases diagnosed by PCR in Venezuela, the presidential regulation is established for the hospitalization of any type of patient with a positive PCR or rapid test (positive PDR). Although the cases, in numerical terms, were not as high at that time, the worldwide situation of distress due to the epidemic caused a significant number of people to consult health services, both primary and specialized, with potential symptoms associated with COVID-19.

In the weeks following the beginning of the epidemic, a significant number of people and contacts who had some definition as positive cases, either positive contacts or positive rapid tests, were admitted to both the traditional primary care centers and the primary care centers of the "Barrio Adentro" system. It became very clear from the beginning of the epidemic that primary care services did not have the logistical or technical capacity to deal with potential cases of COVID-19. Early deaths occurring in outpatient settings that did not have minimal conditions made this trend notorious.

In addition to patients, primary care workers, especially doctors and nurses from the "Barrio Adentro" system, and law enforcement officials were also among the first affected. This aspect is an important marker of the lack of protection or knowledge of the protection of health care workers who must attend to this type of illness. State agencies reported that these groups of people in the health and security sectors were infected in the performance of their professional duties from very early in the epidemic.

There have also been reports from patients, doctors, and others about the precarious conditions in which they were treated in primary care services due to the lack of personnel and minimal conditions for clinical and laboratory follow-up. Progressively, the form of access to patients with respiratory symptoms was modified towards more specialized hospitals with greater logistic resources to attend this contingency. In fact, these hospitals began to progressively show a higher percentage of occupation by patients with an acute respiratory infection (ARI).

According to the official spokesperson, in the first months, an important number of rapid tests were made according to reports of the public media, approximately 2 to 3 million rapid tests (PDR). These tests, being performed without epidemiological criteria, gave contradictory results that were difficult to interpret. For this reason, they were progressively discontinued. Many of the official reports reported a high percentage of asymptomatic people over the total number of positive cases announced each day, which is an indirect expression of the lack of criteria for the identification of positive patients in epidemiological terms.

During the increase in the number of cases, the Ministry of Health and the central government announced increased resources for the care of asymptomatic contacts and patients through hotel beds. This initiative, in principle of adequate orientation, in practice generated many questions for the implementation, because patients and contacts were transferred in a coercive way and without the express approval. The logistic conditions of isolation and minimum care to avoid transmission was unknown. The information obtained from the people assisted indicated that the minimum conditions to avoid horizontal infections were not guaranteed.

While it is possible that this strategy of mobilizing contacts and positives with rapid tests to the hotels was able to somewhat alleviate the pressure on the sentinel hospitals, as moderate to severe cases increased, the pressure on these hotel hospitalization centers has progressively decreased. Perhaps the greatest difficulty in managing hotel cases was related to improper case classification, that is, in certain areas people who had different types of definitions were confined or isolated, for example, the suspected case with contacts, contacts with asymptomatic patients, symptomatic cases with people who were only asymptomatic contacts, among others.

Another problem was accounting for hotel beds as hospital beds. In many of the official communications made by high-level government spokespersons, hotel beds were counted in the same way as hospital beds, which is technically incorrect.

Access to high complexity hospitals

The Ministry of Health defines "sentinel" hospitals as those that had specific competence in each of the country's states for the care of patients with COVID-19. While this strategy is important for citizens and primary care services to know the referral and care route to high complexity centers, in practice it did not necessarily work that way. On the one hand, the very definition of "sentinel" implies an orientation of epidemiological monitoring and not necessarily of clinical care. Secondly, the selection of the sentinel hospitals does not seem to have been made taking into account the logistic conditions to attend patients with respiratory pathology, nor the estimation of human resources and training required.

Some examples are demonstrative of the lack of coordination or specific definition criteria of the so-called sentinel hospitals in the list of the Caracas Metropolitan Area (4). The Ricardo Baquero González de Coche Hospital was included, although it has been closed for four years. The Hospital Universitario de Caracas, one of the academic hospitals with the longest history of care for patients with severe respiratory diseases and with one of the highest operational capacities, at least architecturally, within the Caracas Metropolitan Area, was not included. The Hospital del Algodonal, oriented to the care of patients with respiratory diseases, was included despite having very basic operational and human resource logistical conditions and extreme deficiencies to care for patients with a high level of complexity.

Adequacy, performance, and capacity of sentinel hospitals

From the first moment, it was clear that the infrastructure conditions, demonstrated by the lack of basic services such as water and electricity, and specific care inputs for the emergency (Figure 5-A) and intensive care area (Figure 5-B), were very critical in the hospitals defined as sentinel.

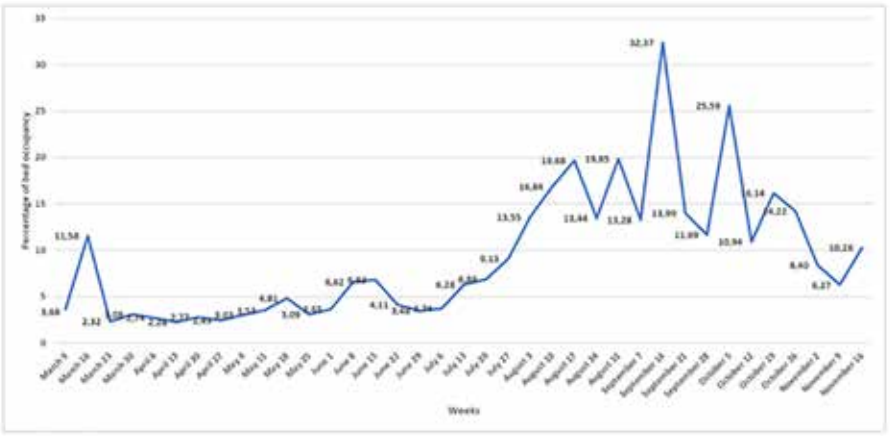

Figure 5-A. Venezuela: Venezuela: bed occupancy in emergency units for acute respiratory infections (ARI), by epidemiological weeks (average percentage), 2020. Source: (2).

Figure 5-B. Venezuela: bed occupancy in intensive care units for acute respiratory infections, by epidemiological weeks (average percentage), 2020. Source: (2).

This situation is a consequence of the fact that the public health system has an extremely deteriorated infrastructure, especially aggravated in recent years. The fact that 60 % of the country's largest national hospitals do not have running water on a routine basis is a very important indication of this lack of infrastructure (Figure 6-A). This is even more relevant when basic coronavirus transmission control measures include regular handwashing with soap and water (Figures 6-B, 6-C).

As for personal protective equipment to prevent infection by health personnel, the situation was no different (Figures 7-A, 7-B). Very low levels of protection have been reported using as a marker the percentage of hospitals that had mouthpieces in the emergency and intensive care units. This indicator has shown, after eight months, a slight increase due to the help of organizations of the United Nations system, donations from NGOs. There does not seem to be a formal strategy on the part of government agencies for the provision of protective equipment for health personnel.

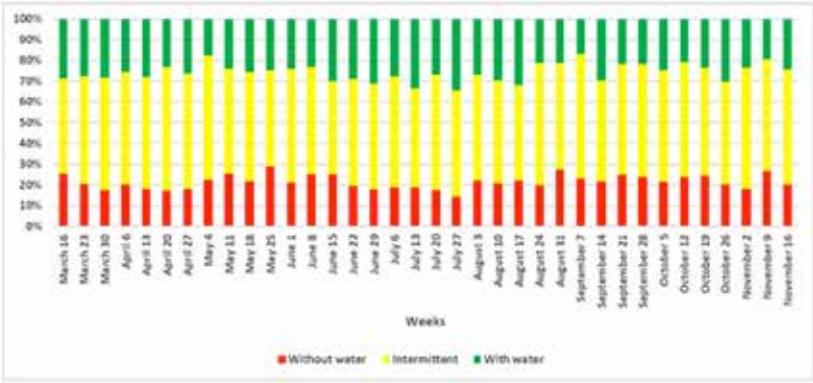

Figure 6-A. Venezuela: water availability in hospital emergency units (in percentage), by epidemiological weeks, 2020. Source: (2).

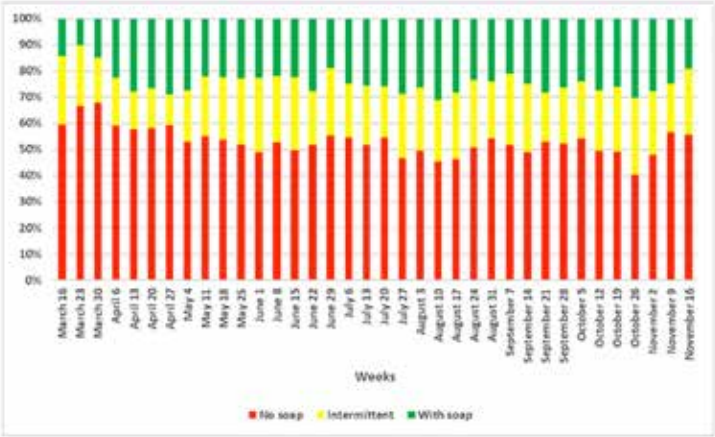

Figure 6-B. Venezuela: availability of soap in hospital emergency units (in percentage), by epidemiological weeks, 2020. Source: (2).

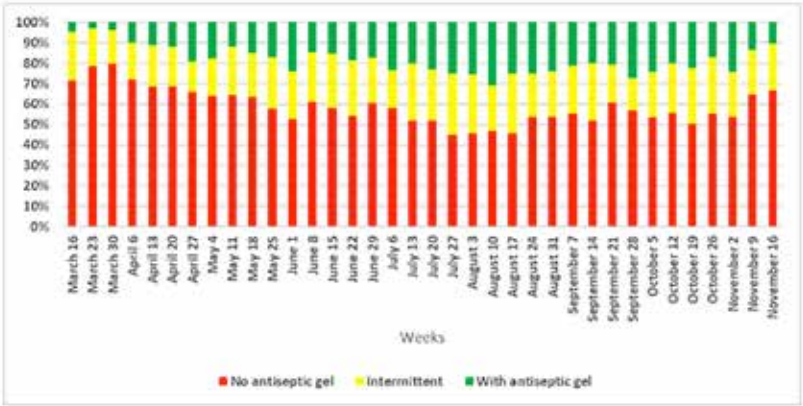

Figure 6-C. Venezuela: availability of antiseptic gel in hospital emergency units (in percentage), by epidemiological weeks, 2020. Source: (2).

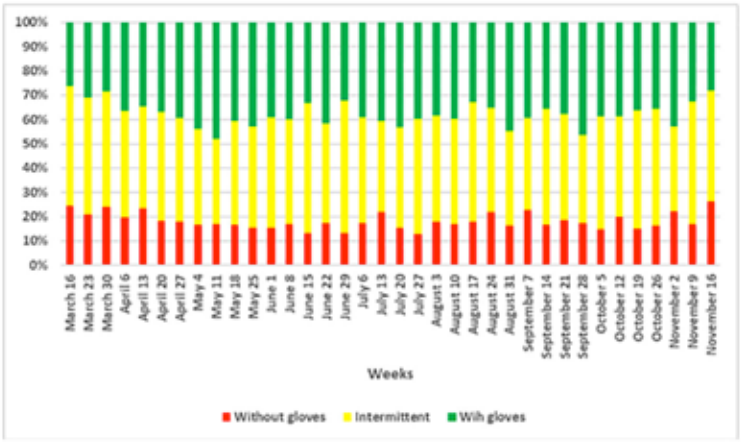

Figure 7-A. Venezuela: availability of gloves in hospital emergency units (in percentage), by epidemiological weeks, 2020. Source: (2).

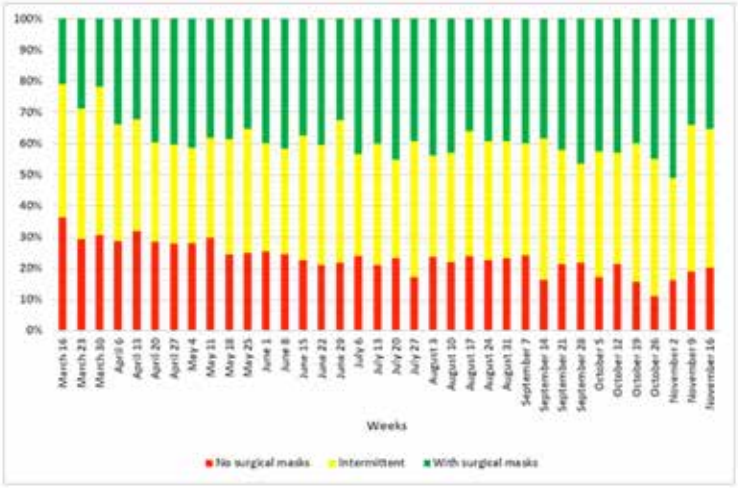

Figure 7-B. Venezuela: availability of surgical masks in hospital emergency units (in percentage), by epidemiological weeks, 2020. Source: (2).

A central aspect in the adaptation of hospitals for the care of patients with COVID-19 involved improving the basic conditions of the emergency units and intensive care units, not only in terms of medical-surgical supplies and materials but also in terms of the actual availability of beds in each of the centers. Our census of the number of beds in intensive care units has remained stable since the beginning of the epidemic until the end of October (2), contrasting with the numbers that have been officially reported, which far exceed the number that we have registered in the 40 most important hospitals in the country. A possible interpretation on this aspect is that the government has counted as intensive care beds units that are not in the national hospitals, and that may be in the "Barrio Adentro" system or eventually in some other care center. Despite this, the total number of beds available in emergency rooms and intensive care units, as well as the number of artificial respirators or ventilators (Figure 8), has remained stable since the beginning of

the epidemic. The monitoring of the National Hospital Survey (2) has reported a progressive increase in the occupation of intensive care units, reaching at its worst 40 % to 50 % at the national level.

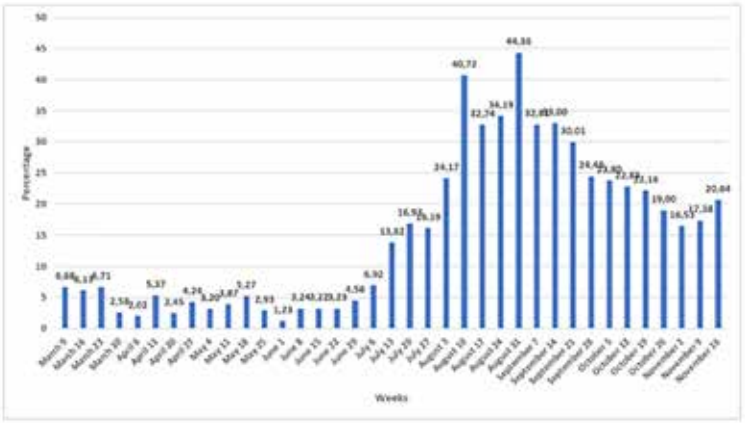

Figure 8. Venezuela: percentage of ventilator occupancy in intensive care units, by epidemiological weeks, 2020. Source: (2).

Emergency rooms showed during the course of the first phase of the epidemic progressive levels of occupation with patients with the definition of an acute respiratory infection that correlated with the number of cases of COVID-19 in the country. During July and August 2020, occupancy levels reached their highest levels yet. This affected the subjective feeling that hospitals in large cities were "collapsed" by the admission of patients with COVID-19.

It is very striking that despite the fact that the occupancy rate, both in intensive care units and in emergencies, never reached values higher than 60 %, it was extremely difficult to obtain beds or ventilators, at least in the highly populated areas such as Maracaibo, Caracas, Valencia, Puerto La Cruz.

The explanation we propose for this aspect is that the real capacity to care for critically ill patients is less than their operational capacity (number of beds), among other things because of the lack of oxygen connections, availability of human resources and supplies. Somehow, the occupation of nearly 50 % of the intensive care units, generates a real operational inability to receive more patients with acute respiratory failure or diagnosis of COVID-19 in hospitals. Therefore, the real operational capacity for patient care at this level of complexity is less than that reflected in the actual availability of beds throughout the national public health system.

Assessing the performance of hospital units according to morbidity-mortality data has been impossible due to the lack of real epidemiological information in each of these hospitals. For this reason, the unofficial monitoring system that has been used in recent years has reported a rate of deaths associated with acute respiratory infection three times higher than the number of deaths from COVID-19 reported by Ministry of Health sources (MPPS).

At present, we do not have rigorous epidemiological data that would allow us to establish mortality from COVID-19 in intensive care units. The brief information available in some centers reports that practically 100 % of patients with COVID-19 who have received mechanical ventilation in the country's hospitals have died. This information was obtained from some centers such as the Luis Razetti Hospital in Barcelona during June and July. The technical evaluation of the performance of the emergency and intensive care units in the management of COVID-19 cases is still pending due mainly to

the lack of official epidemiological information.

Governmental measures to restrict movement

Since March 16 (4 days after the first case of coronavirus in Venezuela) the national quarantine was approved by the national government. From that moment until June 1, severe restrictions were maintained on circulation, classes were suspended throughout the national territory, commercial activities were reduced to the minimum necessary, and circulation on communication routes was rigorously restricted. This regulation was quite similar to that of other Latin American countries such as Colombia, Argentina, Peru, and Chile. In the case of Venezuela, the strict quarantine was maintained despite the relatively low rate of infection, according to the PCR testing indicator.

As of June 1, a phase of quarantine relaxation began, which has had different definitions over time. The first definition was the establishment of a policy of what was called "14 x 7" in which there were 14 days of restriction of movement and 7 days of partial relaxation. Similarly, sometimes there were criteria for regional flexibility, but without a sufficiently clear communication policy so that the majority of the population could simply understand when they were in each of the country's states or municipalities. In a couple of weeks, it went from "14x7" to "7x7".

We believe that the approval of the quarantine was an early measure which may have had an impact on the slow rate of infection in Venezuela during the first four months of cases (from March to June). It is likely that this measure, also adopted in other countries in the region, was in some way conditioned by the high transmission rates observed in North America and Europe. As time went by, it became increasingly clear in Latin America that maintaining strict quarantine for long periods was not only difficult to comply with, but also threatened basic functions of the state and citizens. That is why the relaxation of quarantine in our country coincided with a very fast curve of new cases which was clearly counter-intuitive. Likewise, it went against the WHO recommendations for the beginning of the flexibilization phase, which required that the epidemic be brought under control.

By October 2020, the "7x7" scheme was maintained, with greater flexibility in the weeks of non-circulation, but there did not seem to be a clear public policy, with transparent indicators for the population and for government bodies, that would make it possible to identify which type of work or activities were a higher priority than others and therefore susceptible to flexibilization. One of the main criticisms made of the policy of restricting movement is that there does not seem to be a clear objective indicator of the number of people who circulate daily, or a plan organized by sector and by risk activities that would allow for better control over the measures and their impact on the cases. We have reviewed Big Data published on the web in which the impact of traffic restriction can be measured comparatively among several countries in the region (Figure 9). According to this analysis, it has been persistent that Venezuela, even despite the restrictions, is one of the countries in which circulation was proportionally less affected when compared to nearby countries such as Colombia and Ecuador.

In the data of the "Google Community Mobility Report" it is clearly evident that the variability between the periods of flexibility and non-flexibilization does not exceed 10 %. This low variability is also noticeable from the data of the social monitoring system according to self-reporting of quarantine compliance (Figures 10,11).

In Venezuela, there have been factors external to the epidemic that has been able to influence transmission, and therefore the number of cases. One of them is the shortage of fuel (gasoline). According to the monitoring of public services, it is observed that the rate of growth of cases according to the data of the MPPS reached its peak at the time that the restriction of gasoline begins (Figures 12, 13). According to the monitoring report for July 15 - August 15 it is reported that 85 % of the citizens did not have access to gasoline throughout the country. In the following weeks, a change in the pattern of cases per week was observed with stabilization and subsequent decrease. It should be remembered that there were also difficulties in processing PCR tests, but equally the hospital monitoring reported a change in the pattern after the peak of the gasoline shortage in August 2020.

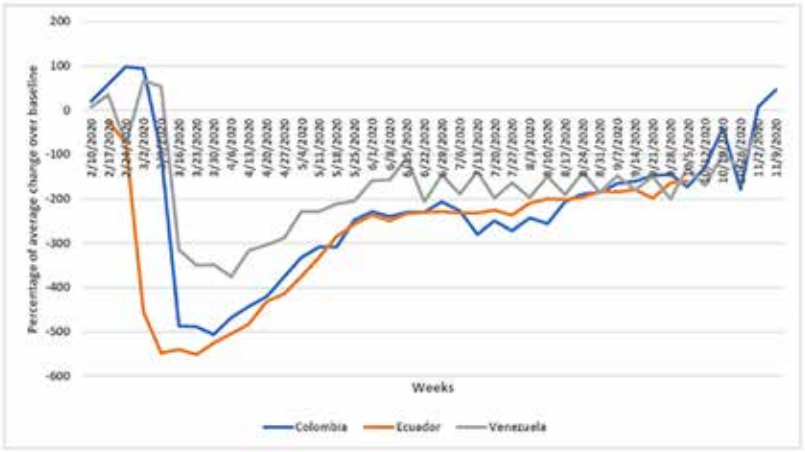

Figure 9. Changes in mobility to workplaces (as percentage of weekly average), selected Latin American countries, February-November 2020. Source: Google Community Mobility Report (https://www.google.com/covid19/mobility/)

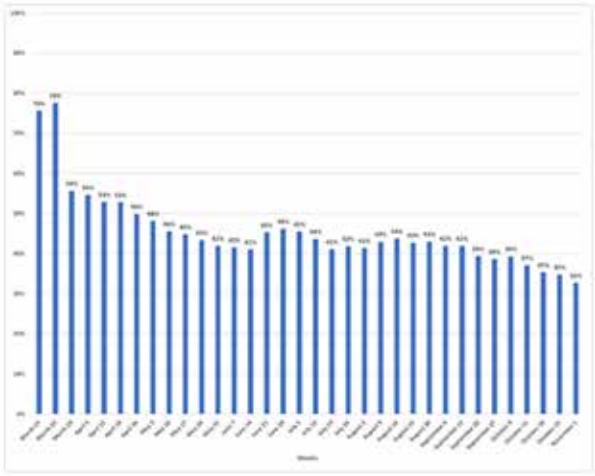

Figure 10. Venezuela: quarantine compliance (weekly percentage), March-November, 2020. Source: (5).

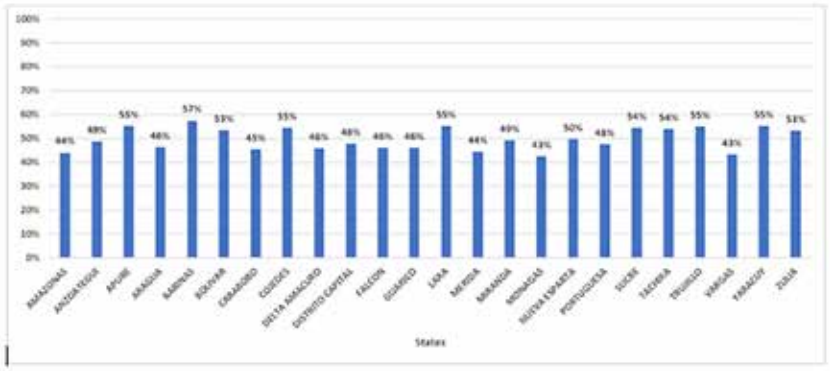

Figure 11. Venezuela: quarantine compliance by state (percentage), 2020. Source: (6).

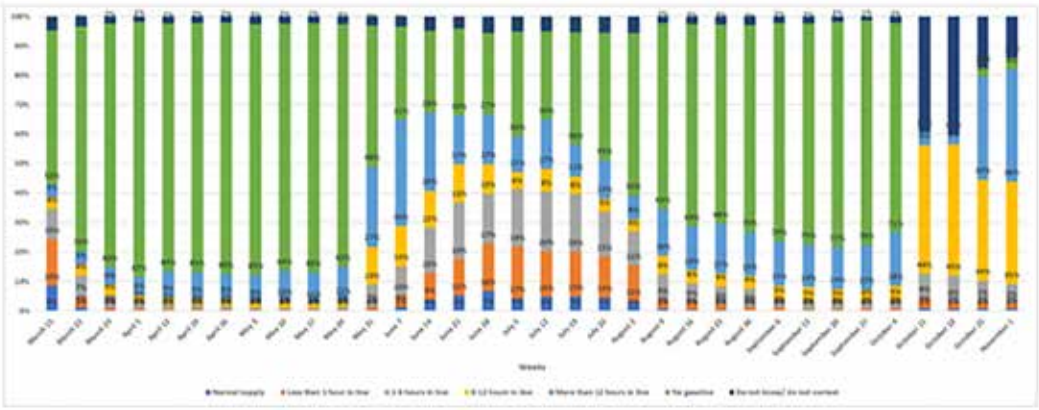

Figure 12. Venezuela: reported gasoline availability (weekly percentage of population), March-November, 2020. Source: (7).

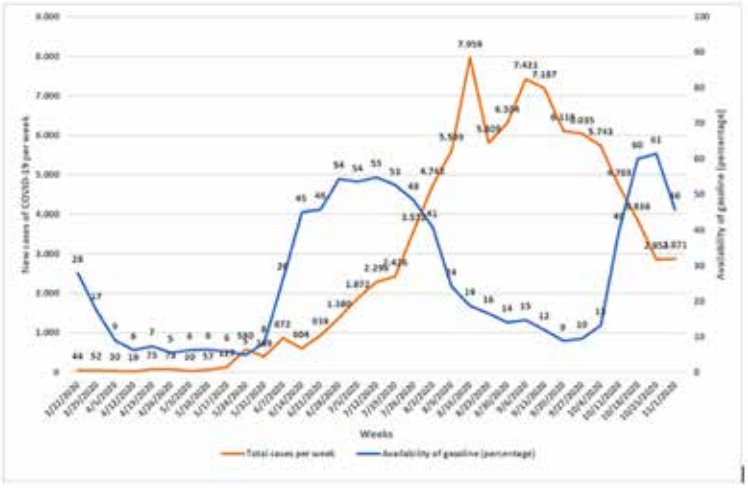

Figure 13. Venezuela: comparison of new cases of COVID-19 and availability of gasoline. March-November, 2020. Sources: Ministry of Health, (7).

National Therapeutic Committee and access to medicines

One of the main functions of the State is to define the treatment schemes in high prevalence diseases. This is particularly useful in a situation such as the current COVID-19 epidemic. This role is especially critical in a situation such as the current one, where there are almost no scientifically valid treatment options, but at the same time, there are a number of drugs in trial with little evidence of effectiveness in treating patients with COVID-19. In a normal situation, it would have been logical for the national government structures to convene the country's academic bodies to reach agreements and define single management, identification, strategy, and treatment policy. Unfortunately, this has not been possible in Venezuela until now. According to information provided by the academic organisms, they have not been summoned to discuss these aspects with the government entities since the first days of March 2020. We know from information from the Pan American Health Organization

(PAHO) that there have been attempts to conciliate and to bring together working tables between the academic and governmental sectors, but until the end of October 2020 this has not been possible.

In practice, there are some recommendations made by what has been called the "National Therapeutic Committee" in relation to the definitions and treatments recommended by the Ministry of Health (MPPS) in our country (8,9). Likewise, some scientific societies such as the Venezuelan Society of Infectious Diseases published in September some guidelines for the treatment of COVID-19 according to a review of the evidence available up to that moment (10). The difference between these documents only expresses the inability to reach minimum agreements or the necessary dialogue so that the government health world would have some form of interrelation with the Venezuelan academic world. The government document is a kind of progressive incorporation of therapeutic schemes available in the world up to this point, but it does not seem clear that there is a thorough evaluation according to evidence-based medicine criteria; therapeutic strategies have only been incorporated to the extent that they have been available worldwide but without a formal qualification of how rigorous the analysis is or how much evidence each of the therapeutic schemes has for the effects of the treatment of COVID-19.

Beyond the strictly academic aspects of COVID-19 treatment, an alternation of recommendations and treatment access schemes has been observed in government policy, which has been quite erratic. So far, beyond what is indicated in the guidelines of the "National Therapeutic Committee" there is no document, explanation, or educational format that allows citizens to understand how to access the different therapeutic schemes that the government team has recommended. An illustrative example of this problem is access to the antiviral drug Remdesivir. This drug, which has been promoted by official media such as radio and television stations and communications from different government agencies, is not linked to a logical algorithm of how citizens can access the drug through official channels. In a certain way, access to this drug through official channels has been very restricted and the information that we obtain from some hospitals is that access is only through non-formal, non-regular channels, or that it depends on the connection that the family members or the patient have with State structures.

On the other hand, the common citizen most of the time only has access through direct purchase in pharmacies with a very high cost of around $1,500 for a 5-day treatment scheme, which in the economic context of Venezuela represents more than 5 years of the minimum salary of an average doctor. The direct consequence of this situation is that access to this and other medicines generate very important inequities. Only those who have some form of connection with the national government or with incomes that are beyond the reach of most Venezuelans could have access to this type of medicine. It has been equally striking that different unqualified government spokespersons in the area of science have disseminated therapeutic schemes (under study or in the process of being researched), which creates false expectations among citizens who cannot understand that these therapeutic strategies are far from being real at present. As an example of these, we can name the use of ozone, herbal medicine, medicines not registered in Venezuela, serum from convalescent patients or other non-human species, which up to the moment have no evidence of clinical use in daily practice. Worse still is the use of communication during the epidemic to spread the word that these therapeutic schemes are the solution to the management of the epidemic, which in some way contradicts the international regulations on information to be followed on these risks. Another very characteristic example was the offer of the vaccine of Russian origin as a solution for the epidemic, when in fact what is being offered is a very limited solution as part of the research process of phase III, with the possibility of incorporating between 3 to 4 thousand Venezuelans to the study.

Communication management, risk, and state control

Communication management and risk education in epidemics have a fundamental role in today's world. Citizens must be directly aware of the risks of epidemics to which they are exposed on a daily basis. Some aspects have been highlighted in the communication policy of

the high government in relation to the pandemic. Among them we can mention:

Criminalization of Venezuelan migrants who are returning to Venezuela across the border from Brazil and Colombia. High government spokespersons have criticized the country's entry and have exposed the returning migrants to a kind of public derision with epithets such as bioterrorism. Most of them are returning to the country in precarious conditions. Even though there is a theoretical risk of entry of people with infection or potential contagion of coronavirus for the locals, it has been very striking that the prevalence of the disease in the border areas, particularly on the Colombian side, has been much lower than on the Venezuelan side. In addition, it seems unlikely that people leaving from a destination that requires days or weeks of strenuous travel will be able to carry the disease and voluntarily transmit it to fellow citizens once they enter the national territory. High-level national institutions such as the Catholic Church, non-governmental organizations, human rights organizations, and scientific organizations have spoken out against the criminalization of returning migrants. This criminalization not only violates fundamental human rights but also does not help in the epidemiological management that involves early identification and contact tracing. Criminalization generates a negative environment for diagnosis, identification of possible cases and thus preventing the spread of the virus.

Another fundamental element in government advocacy has been the sponsorship of treatment strategies that have no foundation or on which there is no demonstrable scientific evidence so far.

The lack of transparency with regard to epidemiological information has been a constant feature of this government, not only in this epidemic but also in other previous epidemics. Pressure on health personnel and abuses in the labor or trade area have been frequent due to their denunciations of hospital deficiencies or inconsistencies in the data on the epidemic in Venezuela. Access to information to be provided through the public media has been very restricted, which violates fundamental rights regulations.

CONCLUSIONS

The main characteristics of the COVID-19 pandemic control policies implemented in Venezuela are as follows: 1) difficulty in accessing diagnostic tests and excessive centralization of their processing and information, 2) little transparency on epidemiological data, 3) little response capacity for hospital adaptation, 4) situation of the extreme vulnerability of the public health system, 5) early and prolonged quarantine with little technical criteria to decide on flexibility, 6) lack of linkage of the governmental world with social sectors related to the epidemic, in particular with the academic health sector and NGOs, 7) communication policy with stigma on the most vulnerable and favoring therapies with political purposes whose effect is not internationally validated.

Funding: None

Conflicts of interest: None

REFERENCES

1. República Bolivariana de Venezuela. Patria blog. COVID-19. Estadísticas Venezuela. https://covid19.patria.org.ve/estadisticas-venezuela/
2. Monitor COVID ENH. National Hospital Survey. Unpublished data. https://public.tableau.com/profile/juliocastrom#!/vizhome/monitorcovid19ENH/Story1?publish=yes
3. United Nations Office for the Coordination of Humanitarian Affairs (OCHA). Reliefweb. RW COVID-19 page. Venezuela: COVID-19 Flash Update No 4 (22 May 2020).
   https://reliefweb.int/report/venezuela-bolivarian-republic/venezuela-covid-19-flash-update-n-4-22-may-2020
4. Gobierno Bolivariano de Venezuela. Ministerio del Poder Popular para la Salud. Hospitales y centros centinelas para la atención el coronavirus. https://drive.google.com/file/d/1V1KeHDpw6F9Z4Sacc2Gu9Rzg2vw1fKV3/view

5. National COVID-19 Social and Epidemiological Surveillance. Acatamiento de la cuarentena. 2020.
https://public.tableau.com/profile/juliocastrom#!/vizhome/servicio_PUB_SURV_BALANCEADO_2_15887050242250/Acatamiento
6. National COVID-19 Social and Epidemiological Surveillance. Acatamiento de la cuarentena por estados. 2020.
https://public.tableau.com/profile/juliocastrom#!/vizhome/servicio_PUB_SURV_BALANCEADO_2_15887050242250/acatamientoestados
7. National COVID-19 Social and Epidemiological Surveillance. Situación combustible. 2020.
https://public.tableau.com/profile/juliocastrom#!/vizhome/servicio_PUB_SURV_BALANCEADO_2_15887050242250/combustible
8. República Bolivariana de Venezuela. Ministerio del Poder Popular para la Salud. Comité Terapéutico COVID-19. Guía para el manejo y tratamiento de contactos y pacientes con COVID-19.
https://drive.google.com/file/d/1ggnR9Tz0ghLI5-MD8hMM71-OJMqkoL5J/view
9. República Bolivariana de Venezuela. Ministerio del Poder Popular para la Salud. Viceministerio de Salud Integral. Recomendaciones del Comité de Medicina Tradicional y Terapias Complementarias, en el Marco de la COVID-19.
https://drive.google.com/file/d/1BzAlq5DYAJCsD2Fl4u1kLfBvExN-Rf9_/view
10. Sociedad Venezolana de Infectología. COVID-19: Abordaje terapéutico y recomendaciones. 2020. September. http://svinfectologia.org/images/Coronavirus2020/COVID-19%20 consenso%20 terapeutico%20SVI%20sept%202020 %20final-4.pdf

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S289-S300
DOI: 10.47307/GMC.2020.128.s2.16

Coronavirus, maternal fetal care and bioethics

Drs. Carlos Cabrera Lozada[1], Jeiv Gómez[2], Pedro Faneite Antequi[3]

RESUMEN

La pandemia por la infección por el nuevo coronavirus (SARS-CoV-2) durante el embarazo conlleva problemas bioéticos potenciales en obstetricia crítica, asesoría prenatal y decisiones sobre la interrupción de la gestación y vía de resolución obstétrica. La atención materno fetal utilizando la medicina basada en evidencias del equipo de salud en MMF, en conjunto con disciplinas asociadas como la epigenética y la inmunología perinatal, debe utilizar valores bioéticos, guía y protocolos productos de consensos multidisciplinarios junto con la asesoría de comités de bioética, donde es indispensable manejar los principios de beneficencia y respeto por la autonomía además de la consideración del feto como paciente particularmente cuando hay viabilidad. El uso del diálogo esclarecedor y el juicio clínico deliberativo reflexivo tomando en cuenta los hechos, valores y deberes para tomar decisiones es la pauta ética y humana a seguir ante el tremendo desafío que representa la pandemia durante el embarazo en América Latina.

Palabras clave: *Bioética, coronavirus, SARS-CoV-2, atención maternofetal.*

SUMMARY

The novel coronavirus (SARS-CoV-2) pandemic infection during pregnancy brings potential bioethical issues in critical obstetrics, prenatal counseling, and making decisions over pregnancy termination and delivery. Maternal-fetal care using evidence-based medicine from the MFM health team, along with disciplines such as epigenetics and perinatal immunology, should use ethical values, guidelines, and protocols born of multidisciplinary consensus provided along with ethical committees assistance, where it is essential to apply the principles of beneficence and respect of autonomy, in addition to fetal consideration as a patient, particularly in presence of viability. Using enlightening discussion and reflexive prudent clinical judgment taking into consideration facts, values, and duties to make decisions is the ethical and human guideline to face the tremendous challenge represented by the pandemic during pregnancy in Latin America.

Key words*: Bioethics, coronavirus, SARS-CoV-2, maternal-fetal care.*

INTRODUCTION

The pandemic occasioned by the disease known as COVID-19, disease originated from a coronavirus that appeared in 2019 (SARS-CoV-2), related to the reports of cases from November of that year in the city of Wuhan, province of

DOI: https://doi.org/10.47307/GMC.2020.128.s2.16

[1]PhD. Ms.Sc. En Bioética. Director del Programa de Especialización en Medicina Materno Fetal. Universidad Central de Venezuela. Caracas, Venezuela.
[2]Médico Especialista en Obstetricia y Ginecología, Medicina Materno Fetal. Coordinador del Programa de Especialización en Medicina Materno Fetal, Universidad Central de Venezuela. Sociedad de Medicina Materno Fetal. Caracas, Venezuela
[3]MD. PhD. Especialista en Obstetricia, Ginecología y Perinatología. Individuo de Número de la Academia Nacional de Medicina de Venezuela.
Correspondence: Carlos Cabrera Lozada. ORCID: 2-3133-5183
E-mail: carloscabreralozada@gmail.com

Recibido: 24 de julio de 2020
Aceptado: 16 de octubre de 2020

Hubei, China, and people that visited the city's market (1-5), is the first topic of discussion of professionals related to biomedicine. Such a situation was formally notified by the People's Republic of China's health authorities to the World Health Organization (WHO) in late December of 2019. One of the most unsettling questions for any professional or participant in the disciplines dedicated to health care in maternal-fetal medicine (MFM) in Latin America has the following formulation: Is the maternal-fetal health care team prepared for the big challenge of the attention of patients with COVID-19?

To paraphrase Kant (6), the previous conundrum is related to the illustrious three questions formulated in relation with the interests of reason: What can I know?, What should I do?, What am I allowed to expect?

To start with the answers to these questions we first need to remember the conception of contemporary medicine and in particular, the conception of MFM. According to León (7), medicine is a practice endowed with a necessary humanistic and moral orientation. The science and technique progress, just as the art state, that amplifies the capacity of attention and health care, raise proportionally the necessity of subordinate its use to increasingly ethical demands.

MFM by Cabrera et al. (8), is born from the need for prepartum vigilance, even from the preconception period of the mother-fetus pairing. For this, diverse clinical and paraclinical resources must be available, including biochemical, hormonal, radiologic, ecographic (with doppler and volumetrics), electronics, amniotic fluid parameters, in such a way that they allow to considerably decrease the maternal-fetal morbimortality.

In these times of pandemic for the COVID-19, that represents a public health crisis, experts in bioethics such as Seoane (9), highlight the multiplicity of languages such as the warlike language that occupies a large part of the governmental speeches and predominates in areas such as the communicational ("the war against the coronavirus", "the invisible threat"); the scientific language, closer to MFM, used to inform the evolution of the population's health in statistic terms; or political language, to transmit the social, economic and organizational measures adopted.

The bioethical approaches can contribute to solving the mistakes arisen from a warlike conception of SARS-CoV-2. "Crisis" comes from the Latin *crisis*, that comes from the greek *krísis*, which means decision, what the deduction entails is that this situation doesn't require to combat an enemy but to have a deliberative and reflexive sense to make good decisions that direct to an accurate intervention with a scientific and clinical component against the virus, as well as personal, social and economic measures (9).

War is not apart from civilization; not everything counts and not even the final goal (saving lives) justifies any means chosen to accomplish it. Even in war, we act in a moral world, and even though concrete decisions are hard, problematic, or atrocious, our language mirrors our moral world and allows us to formulate shared judgment (9). In particular, every medical decision derives in an ethical decision that requires the elaboration of value's judgment as well as rational judgment consequently the bioethical considerations in every scenario related to MFM must come together with medical professionalism with its four components (specialized knowledge, autonomy in the making of decisions, social service commitment and autoregulation).

Seoane (9), analyzes that for the construction of the decisions that the deliberation is the language of Bioethics and the method of the clinical ethic. Reflected if acting and deciding prudently, in a flexible manner going from concrete to single. Consequently, a health care professional in MFM should not rest on intuition, experience, theoric knowledge, imitation, or common sense so that the decisions during the pandemic in MFM reach the range of science. The method to make decisions must be structured in three levels: facts, values, and duties (10-12). As such, deliberative prudence in MFM would opt for the intermediate ways that harmonize every valor involved, rejecting the extreme courses of action, born from the belic approach and language.

In this line, Seoane refers that "saying something is doing something", because language determines the behavior of the person, configuring the social reality. Thus, the language of deliberation receives the minorities or discordant voices and fosters constructive dialogue in the decision (9,13-17).

The situation for MFM in Latin America could be resumed in what was announced by Esparza (1), "*The pandemic of COVID-19 is only starting and probably the worst has yet to come. Although we should wait for the better, we have the duty to prepare for the worst. Which makes necessary to answer with energy to the epidemic of COVID-19 is not what we know about it, but what we don't know*" The epidemiologic behavior of COVID-19 is different in its attack and lethal rate according to the country and region affected; because of this, the planned scenario for the preparation of the sanitary system in its different attention levels are diverse, as happens for instance in China, where the province of Hubei differs considerably from the rest of the country (18).

Although it is the initial stage of knowing the implications of COVID-19 during pregnancy, partum and postpartum, there are reports about pregnant women with COVID-19 infection with repercussions in their pregnancy and clinical, radiologic and paraclinical characterization in comparison with patients without pregnancy (19-21). Even if there are international clinic protocols, of organizations like the ones from the International Federation of Gynaecology and Obstetrics (FIGO as the acronym for its French name), or the International Society of Ultrasound in Obstetrics and Gynecology (ISUOG) or Society for Maternal-Fetal Medicine (SMFM) with varying grades of standardization, addressing the initial approach for the health care professionals in MFM, there is still much to know and uncertainty predominates around the therapeutic and prognosis in the mother-fetus pairing, vertical transmission possibility, congenital abnormalities or other disorders in medium and large term (22-24). In the same way, WHO recommends prioritizing maintaining the services of sexual and reproductive health, including the attention during pregnancy and partum using design mechanisms and simple goals in the coordination and governance of the answering protocols, identifying relevant services, optimizing the health attention centers, establishing the effective flow of patients in every level, quick redistribution of the capacities in the health care team, keeping the availability of health supplies, equipment and essential consumables (25).

Latin America can follow orientations from the *Pan-American Organization of Health* (*Organización Panamericana de la Salud*, OPS) and the bioethics network from the United Nations Educational, Scientific and Cultural Organization (UNESCO) about the ethical duty of the health care providers in MFM in giving the best attention possible and doing so in an equitable form; of each State in having systems with universal access and coverage to fulfill the right of health, without resources restrictions, with advice from bioethics commissions and civil societies in the attention of vulnerable populations such as pregnant women, eliminating individualist behavior, fostering the use of ethical and clinical-scientific criteria, based in equity, cooperation, solidarity and no discrimination (26,27). The magnitude of the situation is as the grave that, for April 10th, 5 months after the first cases in China, the situational report from WHO refers to 1 521 252 cases confirmed with 92 728 deaths globally, which 493 173 confirmed cases and 17 038 deaths are from America (28). Potential problematic situations exist that urgently need a bioethical approach in the attention of MFM during the pandemic of COVID-19 in Latin America such as the admission criteria in critical obstetrics, prenatal counseling of the infection of SARS-COV-2, and the decision of interruption of pregnancy and obstetric resolution.

DISCUSSION

Bioethics y Critical Obstetrics

Even though it is complicated doing estimations of the proportions of COVID-19 in pregnancy and its impact on the capacity of the sanitary systems in Latin America, specifically in the availability of critical obstetrics or intermediate care beds in MFM, experts in bioethics such as Emanuel et al. (29) refer that it can be predicted in statistic models, that the infection of SARS-CoV-2 is in 80 % of the cases asymptomatic or mild symptoms, of the 20 % left, 15 % have a serious illness and 5 % critical disease in the general public. Including conservative models, even the 5 % of the population in a country like the United States of America infected in the following 3 months after the first case in that

country take for granted (except in the flattening of the epidemiologic curve of infected individuals for a long period scenario) shortage of hospital beds, intensivists, beds in intensive care and ventilators.

This scenario of a shortage of sanitary resources for the pandemic is given in a country with 5 918 community hospitals and 209 federal hospitals with 96 500 beds in intensive care, which 23 000 are for neonatal and 5 100 pediatrics with 62 000 ventilators with a range between 10 000 to 20 000 are permanently in use. By the end of March 2020, with the Johns Hopkins CSSE data contributed and updated every 24 hours it was estimated that such numbers could increase in new cases up to 35 % each day after a country reaches 100 confirmed cases, although the use of the logarithmic scale can compare more the growth of the pandemic between countries, the use of the lineal scale allows to evaluate the real human impact (30). The reflection of the Hastings Center remains valid: "*The traditional approach of analysis of cost-benefit excludes formal considerations of distributive effect, of the type of equity and justice. Although discrepancies exist between the economists on how to resolve this problem, the equity considerations probably keep being underestimated in practice"* In other words, in the topics related to sanitary justice, ethic neglects economy and politics, and these, separate from ethic when they don't opt to replace it (31,32).

Thus, it is imperative to have certain preconceptions of the ethical considerations for a just distribution (equitable) of limited resources during the pandemic of COVID-19 to the obstetric population, to make conciliatory multidisciplinary approaches with politics and economic approaches. Emanuel et al. (29), refers that bioethical values for the assignation of limited sanitary resources in the middle of the pandemic, even though the different sanitary models in Latin America, can't be bypassed because they lead to better results without leaving the justice that influences the Latin American macro bioethic :

a) Maximize benefits: Save most lives, maximize the prognosis (save the most life years possible) have a higher priority.

b) Treat people equally: The first come first served guideline should not be used but instead the selection prioritizing the pregnant patient with a similar prognosis.

c) Promote and reward the instrumental value (benefit to others): In retrospective, give priority to those that have made relevant contributions in prospective form, give priority to those to those that most probably will make relevant contributions; for example, expectant mothers from sectors that maintain operative infrastructure during the pandemic such as civil or military security personal, health care sector and others. Under this consideration, give priority to the participants in investigations, when other factors such as maximizing benefits are equal.

d) Give priority to the worst: The guidelines that prioritize the sicker and younger are used when they are aligned with higher benefits, in particular, the polemic point of younger expectant mothers first if it can prevent the dissemination of the virus.

They realize six recommendations in consonance with these four value considerations, which is deeply important for critical obstetrics the following recommendations, that the authors consider important to highlight: a) give priority to health care workers and those sectors that maintain critical infrastructure operative for pregnant women, in centers with MFM about the use of personal protection equipment (PPE), diagnostic tests, prophylaxis and treatment, availability of beds in intensive care, potential vaccination; b) It should not be a difference in the disposition of limited resources (like the beds in intensive care and ventilators) between patients with COVID-19 and others with other conditions that require urgently availability of resources in critical obstetrics, such as patients with postpartum hemorrhage, hypertensive disorders of pregnancy or sepsis.

To give shape in clinical scenarios closer to our experience during the pandemic, about the making of ethical decisions regarding critical obstetrics, it is better to follow the criteria of classification of priority established by the *Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias* in the context for the crisis of COVID-19 (33):

1) Priority 1: Critical and unstable patients which need monitoring and intensive treatment that cannot be provided outside the intensive care unit (invasive mechanic ventilation, renal continuous depuration...).
2) Priority 2: (Could be admitted in the intermediate care unit in MFM): Need intensive monitoring and could need immediate interventions, without intensive mechanic ventilation, receiving oxygen therapy of high flow or non-invasive mechanic ventilation for PaO2/FiO2 <200 or <300 with another organ failure.
3) Priority 3: Critical and unstable patients with low possibilities of recuperation because of a base disease or clinical and paraclinical predictors of COVID-19, being able to receive intensive treatment establishing therapeutic limits, such as no intubation or no cardiopulmonary resuscitation.
4) Priority 4: Admission not indicated because of minimal benefit or improbable for COVID-19 of low risk or patients with a terminal disease and irreversible associated with imminent death.

In this context of decisions in critical obstetrics, the chronologic age (for example, young expectant mothers above the older expectant mothers) should not be the only factor to consider. A global evaluation of the mother-fetus pairing must be done, adapting the therapeutic intensity according to the evolution, so in case of bad evolution, a therapeutic des-intensification could be proposed without delay, deriving the patient from areas of intermediate care in MFM or minimal, guaranteeing palliative attention. Likewise, there should be a consensus in the health care team in critical obstetrics in the criteria to apply in expectant mothers with COVID-19, with the planning of alternatives, respecting the principle of proportionality, and managing the transparency and trust in the communication with patients and family about the extraordinary of the situation and justification of the measures proposed (33).

Seoane (9), proposes denying the uniform treatment and quantifier of the problems from the data, in conjunction with the concept of Medicine Based on Evidence (MBE) in MFM presented by Cabrera et al. (34), neglecting the influence of the context and the biographic condition in the solution of the individual case. The authors consider that before anything else it is important that the health care team in critical obstetrics do not allow for emotions to dominate, such as fear or anguish, and to discard emotivism, that bases the decisions only on emotions without submitting to the scrutiny of reason. It is not about only curing but also caring and attending the situations of the vulnerability of the pregnant women, flexibilizing the criteria of visiting arrangements to facilitate accompaniment, and avoiding a departure in solitude: life is not the only valor that deserves protection.

In case that anguish and moral-assistance stress of the professionals hinder their activity, it is advisable to separate the making of decisions at the triage and the attention of patients in critical obstetrics, that answer to criteria and different goals from different perspectives as well (equitable and efficient distribution of resources to protect the collective health impartially; indicated and effective use of the resources that benefit the individual health), assigning the duties to an independent interdisciplinary committee. To reach decisions with equitable distribution of the resources combining efficiency and justice, it is needed to resist the urgency of the rule of rescue, remembering that COVID-19 is not the only pathology and not always the necessary priority that deserves the immediate response of the health system and the society connected to it (9,35-38).

Bioethics and prenatal counseling

One of the most complex problems at the course of the infection of SARS-CoV-2, in light of the novel and universal of the pandemic, is the making of prenatal counseling in an adequate manner about the potential effects of COVID-19 in gestation and potential effects on the fetus such as the possibility of vertical transmission, congenital abnormalities or posterior disorders in the medium and long terms.

In the first place, the health care team in MFM and the assistance and academic institutions should take into account in a dynamic form the

course of the pandemic in the region, as has been exposed by Cabrera et al. (34), is the MBE, defined as the conscious, explicit and prudent use of the best available scientific evidence at the moment of the mentoring, what has changed in the actuality in the relation professional-user of the health services in MFM. In this sense it is needed to institutionalize the government of the art in the region, the adjustment in the counseling to the available protocols or clinical practice guidelines in Latin America about the infection of SARS-CoV-2 in the course of the gestation, giving explicit recommendations based on systematic reviews of the literature, done by multidisciplinary teams, availability of resources, just as the specific professional training of the responsibility of doing the mentoring. The apparition of Big Data with the 5 "V" (volume, variety, velocity, validity, and valor), routinely implicated in MFM in the reality of Latin America and the Caribbean, has changed the attention in the prenatal counseling, from a perspective of the pathology to one starting from health, just as from a "therapeutic" approach to a preventive one and changes the patient into user, consumer or "digital citizen" (34,39-41).

Certainly, both parental anxiety and the scientific community's concern about COVID-19 and its effects on gestation are well-grounded. Like Pacora et al. (42) exposes, in the fetal disease pathogenesis, either congenital abnormalities or another medium to long term disorders, exists the genetic inheritance represented by the interaction of maternal genes with the genes of the product of conception acquired from the father, and the biological, psychological and social environment that determine constraints of fetal disease. These stressor factors are of eight types: anatomical, toxic-polluters, vascular, nutritional, metabolic, infectious (like SARS-CoV-2), psychological, and social. These factors individually or simultaneously influence the maternal-fetus/placenta unit with an adaptative response in two ways: 1) local with low perfusion of vital organs and anatomical abnormalities in their growth (congenital abnormalities), 2) diffuse with the development of the metabolic disease, pro-inflammatory cytokines and cellular oxidation that gives place to atherosclerosis and vascular disease. The fetal disease appears when stressor factors overcome the adaptative response (like is potentially feared in the infection of SARS-CoV-2).

The over activation of the antiangiogenic and the inhibition of the angiogenic ways subsequently to the stressor factors are related to the apparition of the large obstetric syndromes like a hemorrhage of the first, second and third trimester, hypertensive disorders of pregnancy, preterm partum, premature rupture of membranes, fetal or embryo's death, intrauterine growth restriction, postpartum hemorrhage, or neonatal morbidity associated with any of these in a subclinical presentation or deficient record of the stressor factors (what could happen with the infection of SARS-CoV-2) or by the fetal and maternal inflammatory syndrome (in case of symptomatic COVID-19). Additionally, it should be remembered that pregnant women usually have worse respiratory infections compared to their non- pregnant counterpart in addition to the known mechanical and biochemistry factors that affect the gas exchange and pulmonary function, related to immunologic factors like low activity of natural killer cells, macrophages, and T cells, with a predominance of TH2 humoral immunity over the TH1 response.

According to Barañao (44), during pregnancy, the prevalence of the TH2/TH3/TR1 response derives from an increase of the immune response with a predominance of anti-inflammatory cytokines. The production of antibodies is favored and in particular, to maintain the viability of the pregnancy, it is important the higher amount of blocking or asymmetric antibodies. However, the perinatal immunology still has multiple mechanisms in study and validation for obstetric syndromes or in normal conditions during viral aggression, like the action of female sexual hormones (estrogen and progesterone), cytokines production, antibodies production, the action of immune modulation proteins induced by progesterone, the role of the HLA-G antigen, the activity of certain immunocompetent cells like regulatory T cells, NK cells, and dendritic cells; the effect of apoptosis and the activity of macrophages, tryptophan metabolism and iron transport from the embryo, the inhibitory mechanism of complement and the expression of annexins.

It should be noted what was exposed by Avila,

Karchmer, and Salazar (43), and Avila, Avila, and Karchmer (45), concerning the perinatal epigenetic and immunology, consequently increasing reserves around the potential effects of SARS-CoV-2 and the influence of symptomatic or subclinical effect in pregnancy, with its immunologic tolerance response even though there is little evidence in particular to date due to the novelty and unpredictability of the pandemic with its viral genomic mutation capacity between regions and countries and the immunologic interaction between mother-fetus. Epigenetics is the branch of biology that studies the inheritable changes in the genetic function without a variation in the DNA sequence. It is still unknown how SARS-CoV-2 interacts and to what degree with the capacity of the humans to adjust their growth characteristics to the requirements imposed by the environment (genetic adaptation), either reversible by the composition of tissue and metabolism (accommodation) or permanent (plasticity) generating an early metabolic programming to early aggression or sensible stimuli producing structural or functional changes (45).

In these conditions exposed accordingly by Avila et al. (46) the ethic principle of beneficence acquires relevance and requires acting reliably to reach a higher balance of advantages over the damages in the lives of others. The prenatal counseling during the pandemic of the COVID-19 context requires an account of potential and relevant benefits and damages where the higher balance is produced considering the medical benefits for the mother-fetus pairing. It should be remembered that a paternalism risk exists in beneficence based on clinical judgment. Paternalism is a dehumanizing answer, and as such, should be avoided in MFM. All the alternatives related to beneficence, known as "reasonable medical alternatives" should be identified and explained to all patients based in the MBE around the infection of SARS-CoV-2 in gestation, accessible at the time of counseling.

The health care team in prenatal counseling should respect the parental autonomy, not interfering unless needed; helping the patient in their evaluation and classifying the diagnostic and therapeutic alternatives in a present or past infection by SARS-CoV-2, for medical management and the doctor should obtain and request the authorization or refusal of the procedures to apply from the patient. The approach of the health care team in MFM at prenatal counseling during the pandemic should be based around the health and interests of the expectant mother and this works as the base for the concept of beneficence and the duties of the doctor for her, although her perspective proportionate the base in autonomy related with the obligations of the doctor for her (46).

The ethical concept of the fetus as a patient is vital in this context of the pandemic by COVID-19 and pregnancy. When the fetus is considered the patient, the appropriate counseling recommends following management decisions for the fetus benefits. When the fetus is not the patient, the concept is based around a protocol of decisions for the mother, considering the available tools and their correct interpretation in the actuality for the diagnostic and potential treatment of the infection of SARS-CoV-2 during pregnancy. The authors share the vision of Avila et al. (46) who argue that the base of beneficence-duties with the fetus exists when the fetus reaches an independent moral state of a child and a person. That is to say, the fetus is a diagnosable and treatable patient whenever it is reasonable to expect a higher balance of beneficence over the damages in infection by SARS-CoV-2 still in later stages including postnatal medium and long terms. The ethical meaning of the concept of the fetus as a patient in MFM depends on the potential links established between them and their posterior attainment of an independent moral state (46-48).

Bioethics in the interruption decision and obstetric resolution

Another potential problem for the health care team with the infection by SARS-CoV-2 during pregnancy is the making of decisions and the obstetric resolution.

Product of false impressions that usually come from parents and other familiars could be part of the health care team preconceptions in MFM, and could also be demanded by the patient or their family such as treatment for COVID-19 in gestation, interruption of pregnancy (preferably by cesarean delivery) accepted like a proposal to follow from the start by the health care team in MFM, being a pre reflexive judgment

and therefore not being an adequate clinical judgment by definition according to Garcia (12). In this scenario, it is pertinent to make certain considerations from the bioethics standpoint. The authors share the point of view of Seoane (9), in that the method to make decisions about the interruption or continuation of the gestation, as well as the partum vs cesarean dilemma should be structured in three levels: Facts, Values, and duties, ones that are not based in the intuition, experience, theoretical knowledge, imitation or common sense. Then, prudent deliberative in MFM would opt for intermediate ways that lead to practical reasoning in this sense, together with the justification of the use of MBE that allows the evaluation of the decision and justifies the proportionality of the decision at the harmed values (9-12).

With respect to the level of the facts, three challenges are replied: what is happening (diagnostic), how will the situation evolve (prognostic), what can we do (treatment), remembering that the scientific propositions do not have an irrefutable or absolute characteristic. Regarding the level of values (health care team in MFM, patient, and family) that are the qualities we add to something or someone converting it in appreciated and deserving of respect, it is presented eventually the conflict of values, in which two or more positive values contradict each other and it is not possible to respect them both. Concerning the level of the duties, the ethic prudent deliberately answer the question "what should we do?" leading the resources to intermediate actions. In this case, that is dilemmatic, opting to continue or interrupting the gestation, or partum *vs* cesarean is not colliding opposing values, particularly if the enlightening dialogue is used, suggested by Gil (49), with the following functions:

a) Informative: It consists of a dialogue with variable time length, during which it is transmitted essential notions considered useful and needed to be known by the patient and family, accordingly to the most recent knowledge available and applicable to the professional practice in the region about SARS-CoV-2 and its complications in pregnant women, just as the implications of continuing or interrupting gestation and resolution particularly in the mother-fetus prognosis. It's considered an ethical imperative, a claim of medical morals, and the elemental attention of the patient as a person.

b) Educative: The health care professional in MFM that does not educate is halfway so, being necessary to mold or remodel the expectant mother and their family group according to the specific conditions of their particular unexpected process such as the COVID-19 pandemic, and their considerations regarding the interruption of pregnancy and the resolution; Henceforth, this situates the patient in their real condition, awakes their cooperation, reaches collaboration with the medic, teaches to continue the periodic observation, circumvents therapeutic obstacles related to the absence of cooperation from the patient or their families particularly regarding preventive measures, nurtures hygienic in a personal level, fosters the responsibility of the patient, helps with rehabilitation, leads the ill to reach a general educational level.

c) Motivational: A base of sustentation is generated through the doctor's attitude, which induces the patient to accept and follow their indications, understanding their situation concerning the interruption or continuation of pregnancy and the resolution.

d) Consensual: Every medical act done by the health care team in MFM should be consensual, with a strong ethical-legal commitment, requiring the convincing labor of the doctor for the making of decisions from the patient or their close relatives, depending on the case.

e) Psychotherapeutic: The words of the health care team in MFM have an undoubted action over the corporeality of the mother-fetus pairing, supporting and discharging its specific valor of healing agent, being patent the intention of beneficence for the patient, oriented eventually to elemental psychotherapy to attend emotional aspects.

Additionally, regarding the dilemmas raised about the interruption of the gestation and its resolution, it is important to remember the considerations of fetal viability exposed by Chevernak, McCullough, and Briozzo (50), defined as the capacity of existing after birth

with complete professional support and should be understood in terms of biological and technologic factors. The fetus's survival is related to the biomedical and technological capacities in a variable degree, that are different around the world. Because of this, there is no uniform gestational age globally. In industrialized countries, it is set approximately at 24 weeks of gestational age while in Latin America could be from stages of higher intrauterine growth. Dialogue and making of decisions in MFM based on beneficence should take into account the presence and severity of the detected fetal alterations, the gestational age, and the obligations based on the stage of severity of COVID-19 and the status of commitment or absence of the fetus as a patient.

Lastly, the author's share what exposed Becharano (51), who recommends avoiding following "trends" or "tendencies" without a solid scientific base and not fall into the "epidemic" of unnecessary interventions. Knowing necessary interventions from "unnecessary" is needed, finding balance, exerting MFM in an ethic and human way to address the tremendous challenge that represents the pandemic of COVID-19 during pregnancy in Latin America.

CONCLUSIONS

The course of the pandemic of COVID-19 and pregnancy in Latin America is complex and *in crescendo,* where even though the course of investigation in MFM associated in disciplines such as epigenetics and perinatal immunology related to the susceptibility maternal-fetal for the subclinical infection or symptomatic by SARS-CoV-2 has dynamically brought new knowledge, there is still much to know, such as congenital abnormalities and disorders in the medium and long postnatal terms, all which brings diverse scenarios of bioethical considerations, further than the apparition of clinical guidelines and protocols of international ethical orientations.

The potential bioethical problems in critical obstetrics, related to the just assignation (equitable) of limited resources should consider bioethical values that search the maximization of benefits, equal treatment of people, to promote and reward the instrumental valor and give priority to the worst, the use of criteria of prioritization in crisis situations for the admittance to intensive care units with the help of multidisciplinary bioethics committees, with the resources to make decisions following MBE's protocols, with global evaluation of the mother-fetus pairing, adapting the therapeutic intensity according to the evolution where, in case of bad evolution propose therapeutic des-intensification without delay and palliative care, making consensual decisions with planning to alternatives, under the principles of proportionality, transparency, and trust with the patient and their families, remembering that COVID-19 during pregnancy is not the only pathology needing an answer from the sanitary system.

Prenatal counseling from the health care team in MFM about the potential effects of COVID-19 in gestation and potential effects in the fetus such as the possibility of vertical transmission, congenital abnormalities or disorders in medium to long terms should not forget the use of the MBE in the context of Big Data at the individual and institutional level, in the expectation that the investigation in MFM, along with epigenetic and perinatal immunology, bring new knowledge usable during the prenatal counseling. The ethical principle of beneficence also requires an account of the relevant and potential benefits and damages that make the better balance in clinical benefits for the mother-fetus pairing, the principle of respect to the autonomy, avoiding paternalism. The ethical concept of the fetus as a diagnosable and treatable patient is essential in this context of the pandemic for COVID-19 and pregnancy when reasonably it is expected a higher balance in benefits over damages at the infection by SARS-CoV-2.

In light of the disjunctive about the making of decisions in continuing or interrupting gestation and partum or cesarean section, the prudent deliverance should precede pre reflexive judgment and structured in three levels: facts, values, and duties, deriving in practical reasoning in this sense, together with the justification of the use of MBE that allows the evaluation of the decision and justifying the proportionality. Enlightening dialogue is fundamental in communication with the patient and their families in their informative, educational, motivational, consensual, and

psychotherapeutic functions. The bioethical considerations based on the beneficence should take into account fetal viability, the presence and severity of fetal alterations detected, gestational age, and obligations based in the stage of severity of COVID-19 and the status of commitment or absence of the fetus as a patient to make decisions in an ethic and human way to address the tremendous challenge that represents the pandemic of COVID-19 during pregnancy in Latin America.

The authors declare that they have no conflict of interest in the development of this scientific report.

REFERENCES

1. Esparza J. COVID-19: Una pandemia en pleno desarrollo. Gac Méd Caracas. 2020;128(1):1-7.
2. Carvajal A, Márquez D. Nuevo coronavirus (SARS-CoV-2) y embarazo. Rev Obstet Ginecol Venez. 2020;80(1):53-63.
3. World Health Organization. Ginebra: Pneumonia of unknown cause – China; 2020.Disponible en: https://www.who.int/csr/don/05-january-2020-pneumonia-of-unkown-cause-china/en
4. ECDC. Estocolmo: Cluster of pneumonia cases caused by a novel coronavirus, Wuhan, China. Disponible en: https://www.ecdc.europa.eu/sites/default/files/documents/Risk%20assessment%20 %20pneumonia%20 Wuhan%20China%2017 %20Jan%202020.pdf
5. Carvajal A, Peña OS, Rísquez A, Walter C, Oletta JF. Primera alerta sobre el nuevo coronavirus. Nuevo coronavirus (2019-nCoV): una amenaza potencial. Caracas: Red Defendamos la Epidemiología Nacional; Sociedad Venezolana de Salud Pública; 2020 Disponible en: https://drive.google.com/file/d/1TIecdo TJU8mlgMEylcls5LmllzJO6Tm7 /view.
6. Kant I. Crítica de la razón pura. Buenos Aires: Editorial Losada; 1981.
7. León A. Ética en Medicina. Barcelona: Editorial Científica Médica; 1973.
8. Cabrera C, Escudero P, Sarmiento C, Espinoza F, Rivero A, Romero M, et al. Rev Latin Perinat. 2019; 22(4):227-234.
9. Seoane J. Bioética, Lenguaje y COVID-19. Disponible en: http://www. asociacionbioetica.com/blog/bioetica-lenguaje-y-covid-19.
10. Gracia D. La deliberación moral: el método de la ética clínica. Medicina Clínica. 2001;117:18-23.
11. Aristóteles. Ética a Nicómaco. Araujo M, Marías J, traductores. 7ª edición. Madrid: Centro de Estudios Político y Constitucionales; 1999.
12. Gracia D. Teoría y práctica de la deliberación moral. En: Feito L, Gracia D, Sánchez M, editores. Bioética: el estado de la cuestión. Madrid: Triacastela; 2011.p.120-125.
13. Austin J. Cómo hacer cosas con palabras. Carrió G, Rabossi E, traductores.5ª reimpresión. Barcelona: Paidós; 1998.
14. Searle J. Actos de habla. Ensayo de filosofía del lenguaje. Valdés L, traductor. 4ª edición. Madrid: Cátedra; 1994.
15. Habermas J. Teoría de la acción comunicativa. Racionalidad de la acción y racionalización social. Jiménez M, traductor. 4ª edición. Madrid: Taurus; 1987.
16. Searle J. La construcción de la realidad social. Doménech A, traductor. Barcelona: Paidós; 1997.
17. Gutmann A, Thompson D. Deliberating about Bioethics. Hastings Center Report 27. 1997;3:38-41.
18. Rísquez A, Márquez B. Proyecciones de epidemia en Venezuela por coronavirus 2019 y sus preparativos para el 05 de marzo de 2020. RFM. 2020;43(1):7-19.
19. Chen H, Guo J, Wang C, Luo F, Yu X, Zhang W, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: A retrospective review of medical records. Lancet. Disponible en: https://www.sciencedirect.com/science/article/pii/S0140673620303603?via%3Dihub.
20. Favre G, Pomar L, Musso D, Baud D. 2019-nCoV epidemic: What about pregnancies? The Lancet. 2020;395 (10224):PE40. Disponible en: https://www.thelancet.com/journals/ lancet/article/PIIS0140-6736(20)30311-1/fulltext.
21. Liu Y, Chen H, Tang K, Guo Y. Clinical manifestations and outcome of SARS-CoV-2 infection during pregnancy. J Infection. 2020. doi: https://doi.org/10.1016/j.jnf.2020.02.028. pii: S0163-4453(20)30109-2.
22. FIGO. Londres: Maternidad segura y COVID-19. Federación Internacional de Obstetricia y Ginecología; 2020. Disponible en: https://www.figo.org/maternidad-segura-y-covid-19.
23. Poon L, Yang H, Lee J, Copel Y, Leung T, Zhang Y, et al. Guía provisional de ISUOG sobre la nueva infección por coronavirus 2019 durante el embarazo y el puerperio [Internet]. Cafici D, Pianigiani E, traductores y revisores. International Society of Ultrasound in Obstetrics and Gynecology; 2020. Disponible en: https://www.isuog.org/resource/isuog-interim-guidance-covid-spanish.html.

24. Society for Maternal-Fetal Medicine. Washington, D.C. Publications & Clinical Guidance. 2020. Disponible en: https://www.smfm.org/covidclinical.

25. OMS. Ginebra: COVID-19: Operational guidance for maintaining essential health services during an outbreak. Organización Mundial de la Salud; 2020. En: COVID-19: Operational guidance for maintaining essential health services during an outbreak.

26. OPS. Washington, D.C.: Orientación ética sobre cuestiones planteadas por la pandemia del nuevo coronavirus (COVID-19). Organización Panamericana de la Salud; 2020. Disponible en: https://www.paho.org/es/documentos/orientacion-etica-sobre-cuestiones-planteadas-por-pandemia-nuevo-coronavirus-covid-19.

27. UNESCO. Montevideo: Declaración de la Redbioética UNESCO frente al COVID-19. Red Latinoamericana y del Caribe de Bioética de la United Nations Educational, Scientific and Cultural Organization; 2020. Disponible en: https://es.unesco.org/news/redbioetica-se-pronuncia-derecho-universal-salud-ocasion-pandemia-covid-19.

28. WHO. Ginebra: Coronavirus desease 2019 (COVID-19) Situation Report – 81; 2020. Disponible en:https://www.who.int/docs/default-source/coronaviruse/situation-reports/ 20200410-sitrep-81-covid-19.pdf?sfvrsn=ca96eb84_2

29. Emanuel E, Persad G, Upshur S, Thome B, Parker M, Glickman A, et al. Fair Allocation of Scarce Medical Resources in the Time of Covid-19. N Engl J Med [Internet]. 2020. doi: 10.1056/NEJMsb2005114. Disponible en: https://www.nejm.org /doi/full/10.1056/NEJMsb2005114.

30. Burn-Murdoch J. An interactive visualization of the exponential spread of COVID/19. 91-DIVOC. 2020. Disponible en: https://91-divoc.com/pages/covid-visualization/.

31. Gracia D. ¿Qué es un sistema justo de servicios de salud? Principios para la asignación de recursos escasos. Bol Sanit Panam. 1990;108(5-6):570-585.

32. The Hastings Center. Appendix D: Values, ethics, and CBA in health care. In: Office of Technology Assessment. The Implications of Cost-Effectiveness Analysis of Medical Technology. Washington, DC: U. S. GovernmentPrinting Office; 1980.p.175.

33. Grupo de Trabajo de Bioética de la SEMICYUC. Recomendaciones éticas para la toma de decisiones en la situación excepcional de crisis por pandemia COVID-19 en las unidades de cuidados intensivos. Sociedad Española de Medicina Intensiva, Crítica y Unidades Coronarias; 2020. Disponible en: https://semicyuc.org/wp- content/uploads/ 2020/03/%C3%89tica_SEMICYUC-COVID-19.pdf.

34. Cabrera C, Escudero P, Sarmiento C, Espinoza F, Rivero A, Romero M, et al. Rev Latin Perinat. 2019;22(4):227-234.

35. Callahan D. The goals of medicine. Setting New Priorities. Hasting Center Report. 1996;26(6):S1-27.

36. Berlinger N, Wynia M, Powell T, Hester M, Milliken A, Fabi R, et al. Ethical Framework for Health Care Institutions Responding to Novel Coronavirus SARS-CoV-2 (COVID-19). Guidelines for Institutional Ethics Services Responding to COVID-19. Managing Uncertainty, Safeguarding Communities, Guiding Practice. The Hastings Center 2020. Disponible en: https://www.thehastingscenter.org/wp-content/uploads/Hastings CenterCovidFramework2020.pdf.

37. Truog R, Mitchell C, Daley G. The Toughest Triage — Allocating Ventilators in a Pandemic. NEJM. Disponible en: https://www.nejm.org/doi/full/10.1056/NEJMp2005689.

38. Jonsen A. Bentham in a Box: Technology Assessment and Health Care Allocation. J Law Med Ethics. 1986;14(3-4):172-174.

39. International Bioethics Committee of UNESCO (IBC). Report of the IBC on big data and health. París: Ed. UNESCO; 2017.

40. Lecuona I. Evaluación de los aspectos metodológicos, éticos, legales y sociales de proyectos de investigación en salud con datos masivos (bigdata). Gac Sanit, 2018. Disponible en: https://doi.org/10.1016/j.gaceta.2018.02.007.

41. Puncheta L. Big data y su impacto en el ámbito de la salud. Reporte del Comité Internacional de Bioética (UNESCO). 2017. Disponible en: http://centrodebioetica.org/ 2017/11/big-data-y-su-impacto-en-el-ambitode-la-salud-reporte-del-comite-internacional-debioetica-unesco/.

42. Pacora P, Núñez R, Huanco D, Ticona M. Medicina Fetal: el feto como paciente. En: Ávila D, Karchmer S, Mardones F, Salazar L, editores. Origen fetal de las enfermedades del adulto. Primera edición. Federación Latinoamericana de Asociaciones de Medicina Perinatal, Federación Latinoamericana de Sociedades de Obstetricia y Ginecología, Sociedad Internacional del Origen Fetal de las Enfermedades del adulto. Guayaquil: ECUASALUD S.A; 2019.p.155-165.

43. Ávila D, Karchmer S, Salazar L. Epigenética e Inmunología. En: Ávila D, Karchmer S, Mardones F, Salazar L, editores. Origen fetal de las enfermedades del adulto. Primera edición. Federación Latinoamericana de Asociaciones de Medicina Perinatal, Federación Latinoamericana de Sociedades de Obstetricia y Ginecología, Sociedad Internacional del Origen Fetal de las Enfermedades del adulto. Guayaquil: ECUASALUD S.A; 2019.p.2-43.

44. Barañao R. Inmunología del embarazo. Invest Clín. 2011;52(2):175-194.

45. Ávila D, Ávila F, Karchmer S. Origen fetal de las

enfermedades del adulto. En: Ávila D, Karchmer S, Mardones F, Salazar L, editores. Origen fetal de las enfermedades del adulto. Federación Latinoamericana de Asociaciones de Medicina Perinatal, Federación Latinoamericana de Sociedades de Obstetricia y Ginecología, Sociedad Internacional del Origen Fetal de las Enfermedades del adulto. Guayaquil: ECUASALUD S.A; 2019.p.44-52.

46. Ávila D, Azin A, Riccardi J, Alcázar B. Dimensiones legales y éticas del feto como paciente. Rev Latin Perinat. 2016;19(2):147-151.
47. Chervenak FA, Brent RL, McCullough LB. The professional responsibility model of obstetric ethics: avoiding the perils of clashing rights. Am J Obstet Gynecol. 2011;205: 315.e1-5.
48. McCullough LB, Chervenak FA. Ethics in Obstetrics and Gynecology, NY: Oxford Univ. Press; 1994.
49. Gil C. Tres estudios sobre medicina antropológica. Caracas: Editorial Médica Venezolana; 1977.
50. Chervenak F, McCullough L, Briozzo L. Principios bioéticos en obstetricia y perinatología. Rev Latin Perinat. 2019;22(4):235-239.
51. Becharano M. Estrategias para volver a la vía natural de nacimiento. Rev Latin Perinat. 2014;17(2):108-121.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S301-S311
DOI: 10.47307/GMC.2020.128.s2.17

Health Strategies in Latin America for the Elderly in relation to COVID-19

Drs. Nidia-Johanna Bonilla-Cruz[1], Lorena Cudris-Torres[2], Beatriz-Milagros Mendoza-Rincón[3], Andres-Sebastian Gamboa-Aldana[4], Jesús Forgiony-Santos[5]

RESUMEN

Introducción: *Las medidas de confinamientos social adoptadas ante la pandemia de COVID-19, ha implicado el diseño e implementación de programas en salud mitigando los efectos de la misma y reconociendo las implicaciones a nivel de salud mental en el adulto mayor, considerando uno de los grupos poblaciones de mayor vulnerabilidad.* **Objetivo:** *Caracterizar las estrategias y programas implementadas por países de América Latina en respuesta al control de la pandemia de COVID-19, focalizada en la población adulta mayor.* **Métodos:** *Se revisaron 45 documentos entre artículos científicos, decretos y lineamientos emitidos de los ministerios de salud de 13 países de Latino América bajo los criterios de búsqueda, COVID-19, salud y adulto mayor.* **Resultados.** *Se ejecutaron estrategias de acuerdo a las etapas y niveles de incidencia de la pandemia, los grupos más vulnerables fueron protegidos en el caso del adulto mayor con edades entre 60 o 65 años. Permitió clasificar los países según el objetivo de sus acciones en salud enfocadas en la prevención, la promoción, rehabilitación y la restauración del enfermo.* **Discusión:** *Se han reorientando los servicios sanitarios y la rigurosidad de los mismo priorizando el aumento de promoción de salud y prevención de enfermedad a través de estrategias de información, educación y comunicación.* **Conclusiones:** *La emergencia sanitaria decretada por los países, no priorizo estrategias o políticas frente a los aspectos emocionales y mentales, y las afectaciones subsecuentes del aislamiento social que ponen a prueba las estrategias de afrontamiento y los recursos psicológicos en lo que se puede llamar nueva normalidad.*

Palabras clave: *COVID-19, Estrategias en salud, Adulto mayor.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.17

[1] ORCID: 0000-0003-3375-4303
[2] ORCID: 0000-0002-3120-4757
[3] ORCID: 0000-0003-0450-0267
[4] ORCID: 0000-0002-6365-6942
[5] ORCID: 0000-0002-2686-7679

[1]*Universidad Simón Bolívar, Facultad de Ciencias Jurídicas y Sociales, Cucutá – Colombia.n.bonilla01@unisimonbolivar.edu.co*

[2]*Fundación Universitaria del Área Andina. lcudris@areandina.edu.co*

[3]*Universidad Simón Bolívar, Facultad de Ciencias Jurídicas y Sociales, Cúcuta – Colombia. b.mendoza@unisimonbolivar.edu.co*

[4]*Universidad Simón Bolívar, Facultad de Ciencias Jurídicas y Sociales, Cúcuta – Colombia.* a.gamboa@unisimonbolivar.edu.co

[5]*Universidad Simón Bolívar, Facultad de Ciencias Jurídicas y Sociales, Cúcuta – Colombia.* j.forgiony@unisimonbolivar.edu.co

*Corresponding author: Jesús Forgiony-Santos, *Universidad Simón Bolívar, Facultad de Ciencias Jurídicas y Sociales, Cúcuta – Colombia.* E-mail: j.forgiony@unisimonbolivar.edu.co

Recibido: 04 de agosto de 2020
Aceptado: 16 de octubre de 2020

SUMMARY

Introduction: *The quarantine measures adopted because of the COVID-19 pandemic have involved the design and implementation of health programs to mitigate the effects of the pandemic and to understand the mental health implications for the elderly, one of the most vulnerable population groups.* **Objective:** *To characterize the strategies and programs implemented by Latin American countries due to the COVID-19 pandemic, focused on the older population.* **Methods:** *Forty-five documents were reviewed including scientific articles, decrees, and guidelines issued by the Ministries of Health of 13 Latin American countries*

under the search criteria, COVID 19, health, and older adults. **Results:** *Strategies were implemented according to the stages and levels of incidence of the pandemic, the most vulnerable groups were protected in the case of the elderly aged 60 or 65. It allowed classifying the countries according to the objective of their health actions focused on prevention, promotion, rehabilitation, and recovery of the patient.* **Discussion:** *The health services have been reoriented by prioritizing the increase of health promotion and disease prevention through information, education, and communication strategies.* **Conclusions:** *The health emergency decreed by the countries did not prioritize strategies or policies against the emotional and mental aspects, and the subsequent affectations of social isolation that test the strategies and psychological resources of the new normality.*

Key words: *COVID-19, Strategies in health, elderly.*

INTRODUCTION

It is important to refer to the policies of the countries for the mental health care and quality of life of the elderly versus COVID 19 in Latin America since it is one of the most vulnerable populations due to the psychological-physical characteristics of this age. This virus infects people of all ages, however, the results indicate that the risks increase from 40 years old and the risk in older people is higher (1).

Huenchuan (2) states that risk factors in the elderly are related to health conditions such as cardiovascular disease, diabetes, and respiratory diseases. As the years pass the body changes and deteriorate, and according to the quality of life of the person, organs of the body age at a different rate; the degree of deterioration occurs according to cellular time (3). During this stage, a decrease in tissue volume and a differentiation in cell growth and volume are observed. There are also functional changes of the nervous system and reduction of nerve impulses, "immune defenses decrease by losing natural defense capacity, so infectious agents can attack more easily" (4). On a psychological level, loneliness as an emotion and the isolation experienced by most people are relevant when facing the virus (5).

WHO[1] estimates that between 2000 and 2050, the proportion of the world's inhabitants over the age of 60 will double from 11 % to 22 %. In absolute numbers, this age group will rise from 605 million to 2 billion for half a century. Therefore, in the face of the health emergency, Latin American countries designed strategies to mitigate contagion of the virus in this age group.

COVID 19 has created the need in countries, such as Spain, to establish new protocols and procedures according to the characteristics and demands of this type of patients, the challenge for nursing directions towards the pandemic has been to optimize the number of professionals by the number of patients, training professionals for patient care in COVID 19 and developing protocols in collaboration with other disciplines to promote patient health (6).

Another consequence of social isolation in older adults has to do with the additional negative impact on their health; the lack of sun exposure may result in vitamin D deficiency (7). The immune system can be affected by making it more vulnerable to infections and people with Parkinson's disease and dementia may have fallen because they have balance and mobility problems (8). The lack of physical exercise of these people living in overcrowded or small houses can lead them to a sedentary standard of living by increasing their body weight and by decreasing their physical and mental health. In addition, for older people living alone, the risk is imminent as staying 24 hours on the floor or more, since the fall is a significant risk factor for morbidity or death. According to the above, the global health organization must take steps during isolation to improve the quality of life of the elderly (9).

Risk factors detected in a hospital in Peru such as high blood pressure and obesity in older adults infected with COVID 19 can exacerbate symptoms of the disease and some aspects related to mental health present in this population, such as anxiety and depression (10).

In the case of healthy older adults, the burden of mental stress increases from the risk of contagion. This can also decrease in those living alone, but the lack of support networks increase feelings of loneliness due to the loss of bonding with other older adults because of the increase in deaths in this group of people (11).

Due to the above risk factors, restrictions

were implemented with the help of the public force of the various governments in all Latin American countries, then it was necessary to protect the more vulnerable age groups because of their immune system. Therefore, all policies and strategies were created to preserve the life and health of early childhood, adolescence, and the elderly through strategies of restriction, protection, containment, and other measures necessary to prevent the transmission and thereby delay or contain the impact and possible collapse of health services (12).

Therefore, health secretaries or health departments in Latin America, in response to the pandemic decreed by the World Health Organization, designed various "differentiated clinical management protocols, where patients with pre-existing diseases are prioritized, as well as children, adolescence, pregnant women and older adults with COVID-19 in health services networks" (13) to establish and standardize timely clinical management in patients with suspect or confirmed COVID-19. These health-level strategies are aimed at 3 of the principles of the Ottawa letters (14) creating environments that support health, and strengthening community action to help health, reorienting health services.

METHODS

The purpose of systematic review in quantitative research in this article is to use quantification to analyze the behavior of indicators by discovering patterns in public health strategies before COVID-19 and their implications in the older adult in Latin American countries. In this sense, Canto & Silva (15) says that the quantitative refers to a linear conception, also, the problem is quantified by the generation of numerical data or data that can be transformed into usable statistics and this is how the attitudes, opinions, behaviors and other variables defined in frequencies are analyzed.

Consistently, the descriptive nature of this paper aims to characterize health strategies, areas of action, the medical approach (16) present, as well as the risks, conditions of vulnerability, and exposure in the different areas, in which the older adult interrelates. For this article, 45 documents were reviewed between scientific articles, decrees, and guidelines issued by the ministries of health of 13 Latin American countries under the search criteria COVID 19, health, and older adult.

RESULTS

The coding of the search criteria resulted from the analysis to determine the frequency codes in which Health Promotion stands out within the medical approach (16). Four essential tasks of medicine are defined: health promotion, disease prevention, the recovery of the patient, and rehabilitation. The following is the result obtained:

Table 1

Frequency of documents reviewed by country

Country	Document	Quarter	Year
Mexico	3	II	2020
Colombia	5	I, II	2020
Venezuela	4	II	2020
Chile	6	I, II	2020
Honduras	3	I	2020
Costa Rica	2	I	2020
Bolivia	2	I, II	2020
Nicaragua	3	I	2020
Panama	3	II	2020
Salvador	2	I	2020
Uruguay	1	II	2020
Argentina	4	I, II	2020
Peru	7	I	2020

Source: Own elaboration.

As shown in Table 1, the Latin American countries that were analyzed generated measures through the ministries of health of each country. During the first and second quarters of the year, these measures were adjusted according to the behavior of the pandemic and the most vulnerable population groups. The countries analyzed were grouped according to the criteria of disclosure or issuance of the measures per quarter; there is a group in the first quarter of the year that generated strategies and maintain them, such as Peru, Salvador, Nicaragua, Costa Rica, and

Honduras.

The second group refers to countries that generated the first measure in the first quarter of the year, but which according to the social behavior and epidemiological behavior of the pandemic during the first quarter, adopted new measures, strategies, and health guidelines, such as Colombia, Chile, Bolivia, and Argentina.

Finally, the third group, which reunites countries such as Mexico, Venezuela, Uruguay, and Panama, generated their response strategies in the second quarter of the year. In this way, a chronological line could be established, in which a pattern of speed and relevance is indicated in what could be considered the preparation phase after the respective alerts in the health systems. It allows determining the response of the countries analyzed in terms of the installed capacity and the preparation of the health system to face the pandemic at the social, economic, and social levels.

Table 2

Frequency of essential health strategies by country

	Health promotion	Disease prevention	Recovery of the patient	Rehabilitation
Mexico	0	38	0	0
Colombia	46	18	0	0
Venezuela	0	10	30	0
Chile	15	30	25	0
Honduras	10	0	20	0
Costa Rica	0	21	0	0
Bolivia	0	20	0	0
Nicaragua	0	30	0	0
Panama	10	10	10	0
Salvador	10	10	0	0
Uruguay	1	0	0	0
Argentina	10	0	34	0
Peru	10	3	20	10

Source: Own elaboration.

Table 2, which presents essential health strategies by country, shows that in Latin America, Colombia generates health promotion followed by Chile and other countries such as Honduras Panama, Salvador, Argentina, and Peru. On the other hand, countries such as Mexico, Chile, and Nicaragua lead in responses that are directed in the prevention of the disease. Argentina, Venezuela, and Chile focus on the recovery of the patient. Only Peru includes documents addressing issues related to rehabilitation.

For the analysis of Table 3, the categories stated by García-Ruiz et al. (17) were taken as a reference, who argues that people should be the focus of policies and actions in the population approach. In the policies, guidelines issued by the health secretaries seek equal conditions and opportunities in health services in the face of the effects of COVID-19 for the health of each country, being able to recognize frequencies associated with gender identity, children, youth, older adult, and groups of indigenous populations.

Among the documents analyzed, the most frequent population is elderly, with an indicator of 405; followed by gender identity with an indicator of 147; thirdly, children and youth with an indicator of 131, indigenous with 12, being the least common in these documents.

Table 3

Frequency from the Population Approach implemented

Country	Childhood and Youth	Old	Gender	Indigenous
Mexico	12	37	10	0
Colombia	19	45	5	0
Venezuela	14	12	18	0
Chile	25	68	0	0
Honduras	0	35	17	0
Costa Rica	0	28	0	0
Bolivia	10	18	15	0
Nicaragua	0	16	18	12
Panama	0	26	15	0
Salvador	16	14	12	0
Uruguay	0	12	0	0
Argentina	35	45	0	0
Peru	0	49	36	0

Source: Own elaboration.

In regard to the population approach focused on the elderly (18), scores stand out in countries such as Chile with 68, Peru with 49, Colombia and Argentina with 45 each; their frequencies indicate the recognition of age as a universal process and the visible changes that occur not only in the physical aspect but in the biological component. Countries that prioritize the focus on child and youth care during the pandemic are Argentina with a score of 35, Chile with 25, and Colombia with 19, these indices allow to relate that health strategies and actions in these countries provide crucial recognition to the early stages of the life cycle in the human development.

Among the protocols of health care due to COVID-19, the indigenous population and health actions in relation to gender identity are recognized, with the following scores Panama 15, Peru 14, Bolivia 13 and Nicaragua 12, being the countries of Latin America that contemplate principles of attention towards diversity, generating equal opportunities to the attention, access, use and enjoyment of the services of society.

Table 4, which relates to Ottawa's principles, presents the frequency indicators that Latin American countries adopted due to the pandemic and the potential health-level impacts measured to reorient health services with an index of 257, which are consistent with the second most representative indicator which is creating health policies at a frequency of 172; followed by strengthening community actions with 98 and generating health-supporting environments with 97.

This allows us to observe that policies are not only about health, but they must respond dynamically to the biological, pandemic, and social processes that relate to the disease. For

Table 4

Frequency from the Ottawa principles that were prioritized due to COVID-19

Country Health Policy	Public that Support Health	Environments	Strengthen Community Action	Develop Personal Skills	Reorient Health Services
Mexico	11	28	16	0	0
Colombia	16	18	0	38	12
Venezuela	3	0	0	0	49
Chile	16	0	0	17	37
Honduras	10	15	17	0	16
Costa rica	11	0	18	0	19
Bolivia	15	0	0	19	0
Nicaragua	27	0	0	14	39
Panama	12	16	17	37	0
Salvador	7	0	0	0	29
Uruguay	9	0	19	0	0
Argentina	26	0	0	14	18
Peru	9	20	12	16	38
Totales	172	97	99	155	257

Source: Own elaboration.

this reason, Latin American countries established protocols to respond to COVID-19, where individuals, organizations, companies, and associations of a community have to adopt self-care measures.

Moreover, code frequencies indicate that in certain countries public policies are prioritized in response to COVID-19's subsequent health effects, such as the mental health effects of social isolation. According to the above and taking into account the scope of the principles in response to the behavior of the pandemic in each country, it is, therefore, possible to recognize that, at the level of public policies, Nicaragua stands out with 27, followed by Argentina with 26 and gets far distant from countries such as Venezuela and El Salvador. While developing personal skills as a measure of health promotion, it is observed that the initial strategies were radical, which involved restrictions on accessing the different means and modes in everyday life, which were getting more flexible and gradually these have been decreasing the involvement of less coercive mechanisms where the individual is more responsible for his/her conditions and latent risks in a context of autonomy and self-protection, such as the case of Colombia with an indicator of 38 and Panama with 37.

With regard to reorienting Health Services in Latin American countries, it is consistently consolidated that health services must reorient their activities to meet health promotion goals to face the pandemic, as in Venezuela, Nicaragua, and Peru where a high frequency of 49.39 and 38 are observed, respectively.

Table 5 shows the analysis of older adult-centered strategies in Latin America, the age to be considered an older adult is 60 years except for countries such as Costa Rica, Colombia, and Venezuela where the age is 65. It should be noted that the vast majority of countries adopt provisions, strategies, and measures to prevent the number of contagions in this age group, as well as in the number of children and adolescents from proliferating exponentially.

The frequency of strategies indicates the tendency of countries to implement communication cutting strategies with a score of 222; information strategies with 218, educational strategies with 147. This may be due to the prioritization of the use of technology platforms

Table 5

Frequency of strategies by country focused on the elderly

Country	Age	Information	Education	Communication
Mexico	60	3	6	1
Colombia	65	28	13	18
Venezuela	65	37	0	15
Chile	60	26	28	27
Honduras	60	13	18	13
Costa rica	65	0	0	28
Bolivia	60	14	0	19
Nicaragua	60	16	14	18
Panama	60	28	0	11
Salvador	60	13	0	16
Uruguay	60	0	16	0
Argentina	60	17	14	29
Peru	60	23	38	27
Total		218	147	222

Source: Own elaboration.

because of the access from the various devices at home. Therefore, countries seek to promote the ability to track, process, and understand basic self-care information and services to which they can access through electronic and mobile channels, seeking to make a decision consistent with social isolation policies; but these kinds of social controls exist thanks to the actions implemented in the framework of health policies that were grouped into 3: generation of routes of attention, creation of protocols and creation of documents. Concerning this, it is noted that the creation of protocols and care routes in Health (self-care, biosecurity, hygiene, teleconsultation) were prioritized in Latin countries with an indicator of 7; Peru with 6 and Mexico 4.

Table 6

Frequency of components and actions prioritized by country in response to COVID-19

Country	Actions		Component				
	Attention	Protocol	Documental	Physical	Social	Emotional	Mental
Mexico	4	4	4	2	9	1	1
Colombia	2	3	3	3	0	0	2
Venezuela	4	3	4	2	2	1	0
Chile	3	3	2	4	1	1	1
Honduras	0	2	2	2	1	0	1
Costa rica	1	2	3	1	2	0	0
Bolivia	1	2	2	6	7	4	4
Nicaragua	3	3	3	2	1	1	0
Panama	1	2	2	2	1	0	0
Salvador	2	2	2	2	2	0	0
Uruguay	0	0	1	1	1	0	0
Argentina	8	7	2	31	11	0	0
Peru	3	6	2	2	2	1	2
Total	32	39	32	60	40	9	11

Source: Own elaboration.

Table 6 shows the analysis of components that were prioritized at the physical, social, emotional, and mental level, establishing frequencies of the physical implications with a score of 60 and their biological consequences on health, followed by social aspects with a score of 40, which respond to the measures established in the protocols, decrees, and curfews.

DISCUSSION

In Latin American, the public health strategies implemented consider two major purposes: to maintain health guarantees and to seek the recovery and rehabilitation of the patient. The first aims to promote health to efficiently prevent the number of COVID-19 contagions and achieve control from an education and self-care approach. The second refers to situations where the strategies did not achieve their purpose and where the care was activated by contagion or suspicion of it. The idea is to prevent the development of increased mortality, since the behavior of the virus has greater complications if there are other pathologies such as diabetes, chronic kidney failure, asthma, hypertension, obesity, tuberculosis, liver disease, according to Li et al. (19) who mention that patients with previous metabolic and cardiovascular diseases may face an increased risk of developing severe condition and comorbidities, affecting the prognosis of COVID 19 (20).

The analysis of the documents allows us to visualize the set of actions, considered as responses of the state to face socially problematic situations. Approaches allow us to observe potentials or limitations of the territory that at the same time give characteristics to the different population groups, transforming and allowing them to generate living conditions to the processes of the integral development of people and communities (21). Similarly, the population provides characteristics on the territories and transforms them, making it necessary to become more aware of self-care by overcoming the physical burden, in response to the deterioration of many physical and mental processes that occur in the adult, the increased incidence and predisposition to the development of diseases that affect the quality of life not only of the individual but of his/her support network or caregivers. As referred by Bernuy Paz (22) most older adults do not receive organized social support.

In Latin American, Ottawa´s principle (23,24) is a reference in terms of the actions that countries should be organized in relation to health, since it points out 5 principles: establishing a healthy public policy, creating environments that support health, strengthening community action for health, developing personal skills and reorienting health services. Under this view, an analysis of the principles applied by Latin American countries in response to COVID-19 and the provision of health services under social confinement measures is established based on Garcia's contributions (25), which involve strengthening social governance systems that guarantee their population's universal access to health services, protection for the most vulnerable groups, as well as health promotion and education.

With regard to Ottawa´s principles, the results show an associated pattern in the reorientation of health services in some Latin American countries and others have a tendency to focus on personal skills and the ability of individuals to influence the factors that determine health; it also includes intervention on the environment to reinforce those factors that sustain healthy lifestyles to modify those factors that prevent them from being implemented (26). González (27) also identifies that policies in Latin America are focused on the control of the pandemic and should be updated for the next stages.

The reorientation of health services is important because it results in necessary changes that must be incorporated into the management of health services in which three critical components are identified to reorient actions towards a greater hierarchy of health promotion: nomination and registration of the population in charge, incentives, coordination of services and social sectors (28). The adoption of these measures invites to overcome the attitudinal barriers focused on prejudices or beliefs rooted in the professional practice community that result in a fragmented and reactive practice that has intensified due to the ineffective response of economic issues to address health situations and which translate into possible obstacles to action.

Prioritized components, in the face of measures

to prevent transmission when the number of cases is very high, are: applying drastic measures of quarantining at home; strengthening health care capacity in health systems, and increasing transmission prevention capacity in health services (29).

CONCLUSIONS

In accordance with the documents analyzed by the different Ministries of Health, they implemented medical assessment measures with trained and protected staff in the event of interaction with individuals with suspected or confirmed COVID-19, or who have been exposed to it. The measure requires mandatory quarantine in accordance with international health rules. These measures, while responding to suspected by the manifestation of visible signs and symptoms, are limited due to virus behavior for asymptomatic cases that can exponentially proliferate contagion.

However, in the face of the declared health emergency and related guidelines for social isolation measures, additional surveillance and control actions should be implemented, not only for the early detection of suspected cases but to address a population with differences in risk factors and protective factors, as well as cultural factors in the life cycle of individuals, when the increase in confirmed COVID-19 cases occurred.

Regarding health information, education, and communication strategies, there is a tendency to focus on personal skills and the ability of individuals to influence the factors that determine health, which also includes intervention on the environment to reinforce those factors that sustain healthy lifestyles to modify those factors that prevent them from being implemented (29).

It is evident that among the documents analyzed at the Latin American level, there is a less marked tendency to promote health actions in relation to gender identity and the focus on the indigenous population, this may be due to political and regulatory gaps in the face of covering these populations considered as minorities.

It is observed that Mexico is the country with the highest frequency indicators in relation to the creation of health-supporting environments such as lines of care, mental health risk questionnaires, violence care, disability, and psychiatric counseling for adults, which can be seen as a concern for the creation of recognized supportive environments, as well as the conduction of strategies or supportive measures that seek to facilitate the choice and understanding of individual and socially healthy behaviors. In this regard, actions are focused on the knowledge of the population, and its effects on the well-being and quality of life.

The main feature in countries such as Colombia and Mexico to face COVID-19 is the creation of health-supporting environments to reorient health services; for this reason, they established new practices in the administration and organization of health services. Thus, the role and responsibility of professionals in this area were resignified.

In response to social manifestations that can affect the mental health of the elderly in times of social isolation, it is considered to strengthen the action from self-care to health, develop personal and interpersonal, cognitive, and physical skills. In the same way, the design and creation of specialized telephone service pages and services were considered.

It is important to consider that the effect of any of the strategies for promoting healthy habits and living conditions in the face of any factor that may affect health, could have a greater impact on individuals as their resources are contextualized (cultural factors), cross-cutting (social and family roles) and respond to cognitive and mature characteristics (life cycle) that consolidate environments and support networks (family, school, work).

The measures that responded to the principle of opportunity, effectiveness, and efficiency of public administration systems in each country allowed to develop actions and measures at different levels, this thanks to the reorganization of processes that involved the decreeing State of National Emergency that seeks Civil Protection, Disaster Prevention, and Mitigation, to ensure the health and well-being of the entire population considering their risk factors and social vulnerability through the adoption of measures of health care, education, economy, transportation,

communication, among others.

However, the analysis shows a tendency by countries that indicate no strategies or policies aimed at emotional and mental aspects were prioritized in the face of the health emergency decreed, and the subsequent impacts of social isolation and the changes associated with the loss of job stability, loss of loved ones that test confrontation strategies and psychological resources.

Although efforts have been made to ensure health services comprehensively, there is no evidence of concrete and clear actions from a vast majority of countries such as Colombia, Venezuela, Honduras, and El Salvador, in topics such as emotional support networks to relatives of people who died because of COVID-19, patients and family members in quarantine or recovery, support for families of health personnel and possible homelessness conditions for older adults who do not have a support network. These aspects should be considered within the new strategies that indicate the beginning of gradual activities in what could be called the new normality.

REFERENCES

1. OMS, Organización Mundial de la Salud. Coronavirus desease 2019 (COVID-19). 2020. Disponible en: https://www.who.int/es/emergencies/diseases/novel-coronavirus-2019/advice-for-public/q-a-coronaviruses?
2. Huenchuan S. COVID-19: Recomendaciones generales para la atención a personas mayores desde una perspectiva de derechos humanos. Rev 1, Ciudad de México, Comisión Económica para América Latina y el Caribe (CEPAL), 2020.
3. Solórzano Muñoz AM. Disminución de las funciones cognitivas y la calidad de vida del adulto mayor en la Unidad de Atención Domiciliaria Vida Sonriente, Parroquia Zapotal. Bachelor's thesis, Babahoyo: UTB, 2020.
4. Jiménez M. Enfermería Geriátrica y Gerontológica. Granada: Aaltaban Ediciones; 2012:34-42.
5. Rodríguez JAP, Linares VR, González EM, Guadalupe LAO. Emociones negativas y su impacto en la salud mental y física. Suma Psicológica. 2009;16(2):85-112.
6. De Andrés-Gimeno B, Solís-Muñoz M, Revuelta-Zamorano M, Sánchez-Herrero H, Santano-Magariño A. Cuidados enfermeros en el paciente adulto ingresado en unidades de hospitalización por COVID-19. Enfermería Clínica. 2020. https://doi.org/ 10.1016/j.enfcli.2020.05.016
7. Jiang W, Chen E, Ding B, Xiao G, Wu D. Un estudio epidemiológico acerca de la deficiencia de vitamina D y sus factores de influencia. Med Clín. 2020;154(1):7-12.
8. Rodríguez Garnica JA, Hernández Martínez ID. Revisión bibliográfica de estudios referentes a la marcha y el equilibrio en el adulto mayor. 2020. Disponible en: https://repository.ucc.edu.co/bitstream/20.500.12494/18091/3/2020_revision_bibliografica_estudios.pdf
9. Pelicioni PHS, Señor SR. COVID-19 será severamente impacto mayor la gente vive, y en muchos más formas que tú ¡pensar! Braz J Phys El R. 2020. Disponible en: http://dx.doi.org/10.1016 / j.bjpt.2020.04.005
10. Acosta G, Escobar G, Bernaola G, Alfaro J, Taype W, Marcos C, Amado J. Caracterización De Pacientes Con COVID-19 Grave Atendidos En Un Hospital de Referencia nacional del Perú. Rev Perú Med Exp Salud. 2020;37(2).
11. Somarriva F, Sunkel R. Prevención y cuidados en salud mental para adultos mayores en cuarentena por COVID-19. Unidad de Psicogeriatria INGER Depto. Salud Mental Sede Oriente UCHILE. Sociedad de Neurología, Psiquiatría y Neurocirugía Colegio de Psicólogos de Chile. 2020 Disponible en: https://www.sonepsyn.cl/web/docs /PREVENCION_SALUD_MENTAL_ABUELOS.pdf
12. Castromonte Pajuelo YE. Determinantes de salud de los adultos del centro poblado de Uctuyacu, sector G, Catac-Huaraz. 2020. Disponible en: http://repositorio.uladech.edu.pe/handle/123456789/9617
13. Organización Mundial de la Salud. Prevención y control de infecciones en los centros de atención de larga estancia en el contexto de COVID-19: orientaciones provisionales. 2020.
14. Mittelmark MB. Cartas, declaraciones, conferencias mundiales: importancia práctica para los profesionales de la promoción de la salud "sobre el terreno". Promo Educati. 2005;12(1): 14-14.
15. Del Canto E, Silca Silva A. Metodología cuantitativa: Abordaje desde la complementariedad en ciencias sociales. 2013. Rev Ciencias Sociales. 2013; 141: 25-34. .Disponible en: https://revistas.ucr.ac.cr/index.php/sociales/article/viewFile/12479/ 11722
16. Sigerist HE. The University at the crossroad. Adresses and essays. New York: Henry Schauman; 1946.
17. García-Ruiz S, Ruiz-Varón E, Díaz-Hernández T, Rozo-Lesmes P, Espinosa-de Gutiérrez G. El enfoque poblacional: las personas como centro de las políticas. Rev Invest Segurid Social Salud. 2010;12:129-142.

18. García RZ, Prous AC, Querejeta JM. Tareas del desarrollo en la edad adulta. Psiquis. 2010;23(5):185-197.
19. Li B, Yang J, Zhao F, Zhi L, Wang X, Liu L, et al. Prevalencia e impacto de las enfermedades metabólicas cardiovasculares en COVID-19 en China. Investi Clín Cardiol Saltador. 2020. Disponible en: https://doi.org/10.1007/s00392-020-01626-9
20. Guo W, Li M, Dong Y, Zhou H, Zhang Z, Tian C, et al. La diabetes es un factor de riesgo para la progresión y el pronóstico de COVID-19. Metabol Res Revi. 2020. Disponible en: https://doi.org/10.1002/dmrr.3319
21. Secretaría Distrital de Salud, Dirección de Salud Pública, Equipo Técnico de Ciclo Vital. Hacia una perspectiva generacional para la promoción de la calidad de vida y salud. Bogotá. 2010.
22. Bernuy Paz BE. Determinantes de la salud en el adulto mayor. Pueblo joven Ramón Castilla–Chimbote. 2019.
23. OMS, SBESC, ACSP. La Charted' Ottawa pour la promotion de la santé. Ottawa, Canada: Organisation Mondiale de la Santé, Santé et Bien-être social Canada, Association Canadienne de Santé Publique. 1986.
24. Organización Mundial de la Salud. Carta de Ottawa para la promoción de la salud. Ottawa: Canadian Public Health Association. 1986.
25. García MJY, Monteagudo AMR. Reflexiones sobre la COVID 19, desde la perspectiva social. Humanidades Médicas. 2020;20(2).
26. Buck C. Después de Lalonde: Hacia la generación de salud. Bol Epidemiol OPS. 1984;10(6).
27. González MJ. Características iniciales de las políticas de control de la pandemia de COVID-19 en América Latina. Gac Méd Caracas. 2020;128(2):207-216.
28. De Lellis M. Estrategias de promoción y reorientación de los servicios de salud. Diagnosis: publicación científica de Fundación PROSAM. 2010;(7):33-42.
29. Muñoz E, Gutiérrez M, Guerrero R. Evaluación del impacto de una estrategia de información, educación y comunicación para la prevención de la violencia en Bogotá, Cali y Medellín, Santiago de Cali: Ministerio de la Protección Social, Universidad del Valle, Cisalva. 2004.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S312-S319
DOI: 10.47307/GMC.2020.128.s2.18

Financial management and satisfaction with life in colombians during confinement by COVID-19

Drs. Lorena Cudris-Torres[1], Giselle Olivella-López[2], Silvia E Cuenca-Calderón[3], Álvaro Barrios-Núñez[4], Nidia J Bonilla-Cruz[5], Viana Bustos-Arcón[6], Ana R Russo De Vivo[7]

SUMMARY

The health emergency generated by COVID-19 has led governments worldwide to take measures, in some departments, and-or states more rigorously than in others, to control morbidity and mortality through measures of protection. The acquisition of services and supplies at high costs, the closure of the productive sector, and the obligation of confinement in most sectors have negatively impacted the economy in the state, business, and personal finances, affecting the quality of life of the population. **Objective:** *To describe personal financial management and satisfaction with life during confinement by COVID-19 in Colombia.* **Method:** *A descriptive quantitative study was carried out, in which 293 Colombians over 18 years of age, from all regions of the country. The Financial Management instrument and the Life Satisfaction Scale were used. Data analysis was performed with SPSS version 23 statistical software, using descriptive statistics parameters such as absolute frequencies and percentage graphs.* **Results:** *66 % of the participants do not have additional income to the main occupation, 39 % have not paid their obligations promptly during confinement, 42 % consider that the economic situation has worsened compared to the previous year and state feel uncertain about financial commitments, 23 % of the sample stated that life circumstances are not right, expressing not feeling satisfied and 38 % require changing aspects of their lifestyle.* **Conclusion:** *Colombians experience satisfaction, conformity with what they have experienced in different aspects of life, despite the financial crisis generated by COVID-19.*

Key words: *Financial management, quality of life, COVID-19, Confinement.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.18

[1] ORCID: (0000-0002-3120-4757*
[2] ORCID: 0000-0002-4809-9092
[3] ORCID: 0000-0002-9749-9359
[4] ORCID: 0000-0003-4153-8950
[5] ORCID: 0000-0003-3375-4303
[6] ORCID: 0000-0003-3352-7733
[7] ORCID: 0000-0002-8667-7623

[1] *Fundación Universitaria del Área Andina, Programa de Psicología, Valledupar-Colombia- lcudris@areandina.edu.co*

[2] *Fundación Universitaria del Área Andina, Programa de Psicología, Valledupar-Colombia- golivella2@areandina.edu.co*

[3] *Fundación Universitaria del Área Andina, Programa de Psicología, Valledupar-Colombia- scuenca2@areandina.edu.co*

[4] *Clínica General del Norte, Barranquilla-Colombia alvarobarriosn@gmail.com*

[5] *Universidad Simón Bolívar, Facultad de Ciencias Jurídicas y Sociales, Barranquilla-Colombia n.bonilla01@unisimonbolivar.edu.co*

[6] *Universidad del Norte, Barranquilla-Colombia bustosv@uninorte.edu.co*

[7] Universidad del Norte, Barranquilla-Colombia arusso@uninorte.educo

Recibido: 23 de agosto de 2020
Aceptado: 16 de octubre de 2020

INTRODUCTION

Since December 2019, a universal, abrupt crisis began, the result of the pandemic caused by the new coronavirus, which affects humanity and impacts productivity as well as global and local demands, being a threat to health that puts social-economic stability at risk and politics globally. Colombia is not immune to this situation, as a result of the government measures taken to prevent the spread of the disease, which led to the temporary closure of some sectors such as the productive sector. Consequently, the unemployed with the June 2020 cut-off presented a national

rate of 19.8 %, increasing by 10.4 % points compared to the same month of the previous year (9.4 %) (1). Report on the labor market, taking the PILA Comprehensive Contribution Settlement Worksheet as a reference, shows that, in May 2020, 37.7 % of dependent labor relations presented a new contract suspension throughout the month, and on May 8, 3 % registered holiday news.

Faced with the crisis, the Colombian government has been implementing measures, among them, the Bank of the Republic initiated an expansive monetary policy by lowering the interest rate to 3.75 % to encourage investment, activate, boost and promote consumption that represents around 70 % of Gross domestic product (GDP) (2-3). Since the Presidency of the Republic, public spending has been increased (Expansive Fiscal Policy), providing subsidies to the low economic status people and in vulnerable conditions, in some cities, local governments have exonerated some public services. However, these policies have not been sufficient to cover the needs of this population and reduce the unemployment rate, which according to figures from the National Administrative Department of Statistics (DANE) increased in the first quarter of the year, which has led economics experts to qualify the situation as one of the most significant reductions of the last decade.

In addition to the above, the difficulties that the business sector has in accessing credit lines from both the first and second-tier banks; In March, Bancoldex allocated two credit lines for 600 000 million, one for the tourism-aviation sector and the other for all sectors except the primary sector (agriculture) (4). Government aid is not enough to cover the business and social demands generated by the health crisis, and there are several difficulties in obtaining them due to the requirements, according to a survey carried out by the National Federation of Traders (FENALCO), 55 % of companies between March and April, contacted financial entities requesting loans to obtain liquidity and to be able to maintain their human capital, stating that the interests, demands, and conditions of the banks were too high, creating direct obstacles for suc

The increase in public spending will generate in the future the use of austerity policies that will have repercussions on social investment. Thinking about fiscal measures to increase income, tax reform in this time and context are counterproductive, due to the economic recession in which Colombia finds itself. On the other hand, if the debt falls, the interest will be high in the medium term and will affect the country's investment projects (6-8).

Without ignoring that the "health emergency" measure decreed by the national government to cushion the effects of the crisis caused by COVID-19, added to the mandatory preventive isolation since March that the first cases were reported in Colombia, have tried to address the challenges at the level of health, social assistance and reactivating economic activities. However, all these measures have not been enough, and the period of confinement is increasingly extended in time, which ends up harming the quality of life of citizens that their finances have been affected. Therefore their well-being conditions decrease as they do not have sufficient financial resources to cover the commitments previously acquired and domestic expenses that may arise.

A very recent United Nations (UN) report issued in June 2020 on the economic crisis of COVID-19, exposes a discouraging outlook if social protection measures are not taken. Factors such as the closure of schools, the death of fathers and mothers, the reduction of remittances, the lack of work in general, and the increase in informal work will leave millions of children in the world exposed to exploitation, human trafficking, and forced labor (9).

The UN has warned that factors such as health, education, and quality of life (Q o L) have worsened inequality gaps due to the pandemic. According to UN estimates that 60 % of the school population in vulnerable conditions are not receiving education due to the closure of educational centers and places global unschooling at levels unprecedented since the eighties of the last century. This fact implies a setback at the level of human development, with developing countries such as Colombia being the ones most at risk, so these countries have fewer resources to manage the social and economic effects of the pandemic (10).

The preceding reveals essential needs to attend to reduce the equity gap, and these are the new

needs of the 21st century, internet access, which allows us to take advantage of the benefits of the-education, telemedicine, and working from home (10). The UN has proposed five priority steps to face the coronavirus crisis, and they are:

- Protect health systems and services.
- Improve social protection.
- Protect jobs, small and medium-sized enterprises, and workers in the informal sector.
- Apply macroeconomic policies that benefit all people.
- Promote peace, good governance, and trust to reinforce social cohesion.

Studies carried out by experts in economics, social development, health, and human development show how the impact of the economy at a global level generates changes in the quality of life and well-being of people, putting the poor and vulnerable population at greater risk. Independent workers and the production sector that employs millions of people; Therefore, the study carried out in the Colombian population aims to describe how personal financial management may or may not affect satisfaction with life during confinement due to COVID-19 in Colombia.

METHOD

A descriptive and cross-sectional quantitative research was carried out, in which 293 people over 18 years of age with an average age of 35 years participated, of which 199 were women (68 %) and 94 men (32 %), from the departments of Cesar, La Guajira, Magdalena, Atlantico, Bolivar, Cundinamarca and Risaralda, Colombia. A non-probabilistic sampling was carried out, the procedure for the detection of the participants was performed by sharing the scope of the study and sending the questionnaires employing email to managers, administrators, heads of human talent of companies in the sectors: mining, educational, commercial, industrial, agricultural, financial, arts, health, communications, energy, construction, forestry, transportation, with which from the Psychology program of the Andean Area University Foundation it has internship agreements or strategic relationship through the Institution headquarters and they were asked to share the information with their employees or officials so that they could answer the questionnaires voluntarily. The responses were collected during May 2020.

Inclusion criteria

People over 18 years of age, who had an average reading level, residing in Colombia.

Psychological tests and measurements were employed in this study

Personal Financial Management Instrument is a Likert-type scale designed and validated by the authors of the study that consists of 20 items and evaluates: expenses, obligation payments, types of products acquired during confinement, purchase modalities, use of financial relief offered by the state, request for bank loans, savings capacity, business diversification, financial goals, spending plan, investment, emotions generated by financial obligations. The total internal consistency of the instrument was 0.926; the scales showed Cronbach's alphas between 0.625 and 0.875. An exploratory factor analysis was performed using the Varimax rotation statistical technique and confirmatory factor analysis using the *AMOS* statistical *software*.

The Satisfaction with Life Scale (SWLS) is a brief instrument with five elements, on a 7-point Likert scale, from 1 as "strongly disagree" and 7 as "strongly agree", with scores between 5 and 35 and that assesses the general satisfaction that the individual has with his life, understanding that a higher score reflects greater satisfaction (11). The translated and adapted version in Spanish was used, classified with the following normative data: 31-35, very satisfied; 26-30, satisfied; 21-25, a little satisfied; 20, neutral; 15-19, a little dissatisfied; 10-14, dissatisfied, and 5-9, very dissatisfied (11-13).

The validation of SWLS in the Colombian context denotes a single factor that explains 62.3 % of the total accumulated variance, as well as a general Cronbach's alpha of 0.839, positive

correlations between all the items, and appropriate agreement between the elements and the score corrected total (11).

Data analysis

Once the information was obtained, the Google Docs Excel file was exported, organizing the data for subsequent statistical analysis, handling descriptive statistics such as percentage graphs through the use of the statistical software SPSS version 23.

Ethical aspects

Due to the sanitary measures taken in the country, the need arose to virtualize the instruments through the Google Docs tool and share the link through email, social networks, and WhatsApp, explaining the scope of the research, objectives, inclusion criteria, responsible researchers, data management and protection and an informed consent sign, clarifying the anonymity preservation of the information provided.

RESULTS

Characteristics of the participants

In the research, we found that 32 % are women and 68 % are men, in the sociodemographic stratum, 10 % corresponds to stratum 1; 23 % to 2; 34 % to 3; 16 % to 4; 8 % to stratum 5 and 9 % to stratum 6. The 11.90 % are student, 6 % housework, 2 % general operations, 23 % freelancer, 45.6 % employee, 10.50 % unemployed, 1 % to pensioner.

Personal financial management

The results indicate that 75 % of the participants have between 1 and 6 people under their economic responsibility; only 25 % do not have people under their charge. The majority of the participants (66 %) have only one source of income, while 33 % have income in addition to their primary occupation. 60 % of the sample state that their income is not sufficient to cover their expenses and those of the people under their responsibility, while 39 % consider that it is enough. Income is sufficient to cover your expenses and those of his dependents. It is noteworthy that for 60 % of the participants, expenses have increased during confinement, especially the price of the products they purchase for the family basket. At the same time, 47 % consider that expenses remain the same.

Payment of financial obligations and purchase of products during confinement

40 % of the sample stated that during the confinement due to COVID-19 they had not paid their obligations in a timely manner, 60 % did not express difficulty in this regard. It was found that 68 % of the participants during confinement have not been able to continue acquiring the products they consumed before the pandemic, while 32 % have been able to acquire them normally.

Purchase method during confinement

In Colombia, despite confinement, not so many virtual purchases are made; the most used means are homes and face-to-face purchases 40 %, virtual 18 %, and home 42 %. It would be important in another study to know the reasons that set the trend in this regard and, according to the results, propose strategies that help to encourage the Colombian population to use virtual channels and avoid crowds when buying.

Financial relief, investments, and savings during confinement

The health crisis has generated uncertainty in the Colombian population at the level of personal finances, the information provided by the participants shows this, which means that during confinement they refrain from spending more, making investments, and availing themselves of financial relief that has offered by banks such as freezing of fees and payments. A small percentage of people have made investments such as housing arrangement, gym adaptation, acquisition of products to sell, franchise, studio, and real estate.

Colombian financial situation during confinement

A considerable number of Colombians surveyed (42 %) consider that their financial situation is worse compared to previous years, only 9 % state that it has been better and with good medium-term prospects (Figure 1).

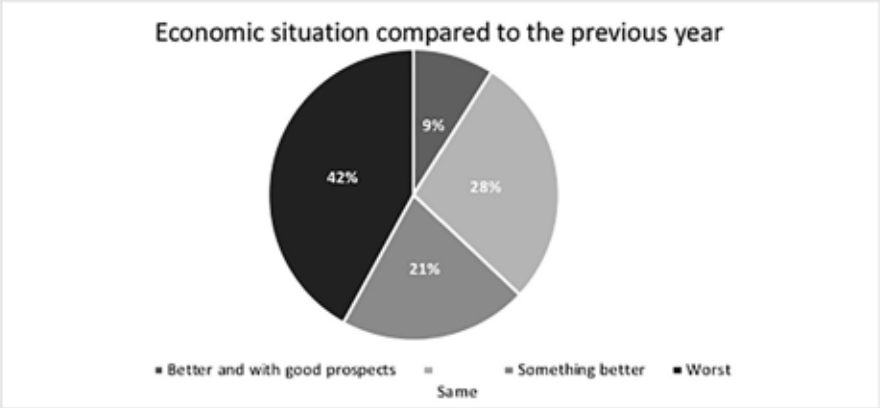

Figure 1. Colombian economic situation concerning the previous year of confinement by COVID-19. Source: Data set by Cudris et al. (18).

When inquiring about the emotion that participants feel when thinking about the financial commitments they have made, 50 % express that they feel uncertainty because they do not know how they will be able to pay them if the confinement lasts for a longer period and sadness since they feel that they will not they are relieved, while the other 50 % of those surveyed state that they feel joy and tranquility because they have under control the payment of commitments and others say they have no debts; therefore they do not feel any type of emotion (Figure 2).

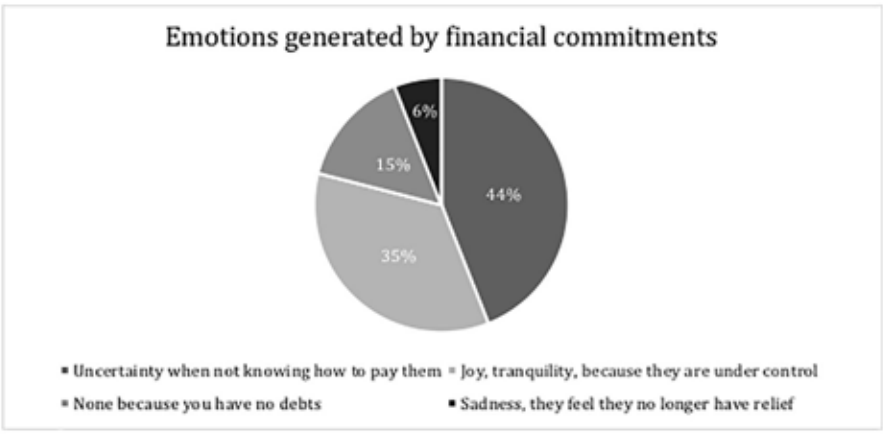

Figure 2. Emotions generated by acquired financial commitments.
Source: Source: Data set by Cudris et al. (18).

Satisfaction with life during confinement

The statistical data allow us to infer that, despite the economic crisis generated by the COVID-19 pandemic, most of the Colombians surveyed feel satisfied with life, perceive the circumstances that it offers them as well, and feel satisfied with what lived, they have achieved in life the things that they consider necessary and they feel content with most aspects of life that are as they wish.

Although the Colombians participating in the study have experienced feelings of uncertainty because they do not know how they will pay their financial commitments if their income continues to decline and they are unemployed in the context of the pandemic, their way of perceiving satisfaction with life has not changed (Figure 3).

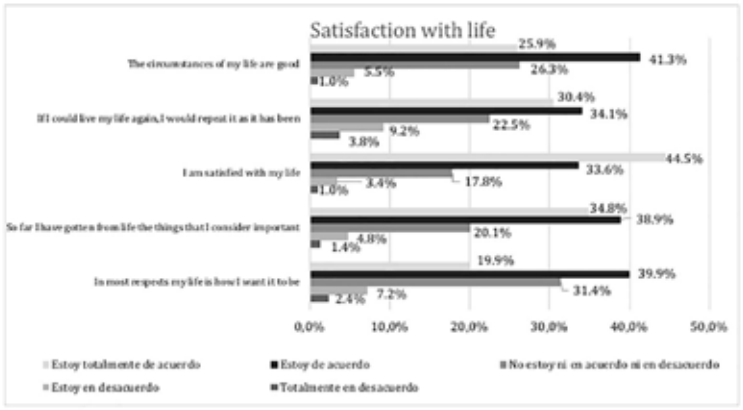

Figure 3. Satisfaction with life Colombians experiences during confinement due to COVID-19. Source: Data set by Cudris et al. (18).

DISCUSSION

The financial crisis generated by the new coronavirus pandemic has affected the economy worldwide and more so in developing countries such as Colombia, who will recover more difficultly from the impact it leaves, a situation that is reflected in the financial management of citizens (1-8), who state that products have increased during confinement, which has caused that they are not acquired in the same way as they were before the pandemic and that a high percentage of study participants they have not been able to pay their commitments on time; It is also important to highlight that 42 % of those surveyed report that their economic situation is worse compared to previous years.

FENALCO reported on the access barriers that the business sector and the common citizen in Colombia have to access loans since the requirements are many and they are not fully met (4,5), which could save this is related to the results found in the study since most of the interviewees did not request loans during confinement and a high percentage have had difficulty paying on time the commitments acquired before the pandemic.

The Colombian has shown discretion in financial management, although most of those interviewed have not been able to save, the truth is that they have not shown a tendency to get into debt and have tried to comply with their obligations, respecting the projections of their budgets. Note that they avoid making investments, which may be related to the feeling of uncertainty produced by the current situation that has spread in the country.

Although in several reports, the UN has shown a wide inequality gap at the human

development level occurring in the short term due to the pandemic, health, education, and social development sectors (9,10). This phenomenon would negatively impact people's quality of life, generating a setback in social investment, exposing millions of children to child labor, and an increase in human trafficking.

These reports issued by the UN coincides with the economic context of countries such as Colombia, Argentina, Mexico, the Dominican Republic, Nicaragua, and Venezuela, in which the most vulnerable groups, such as people working in the informal economy, will suffer the greatest impact of the economic recession. As a consequence, there will be an increase in informality and unemployment, a crisis in the health sector and social protection systems will be insufficient, among other aspects (21,22).

In Colombia the tourism sector has been dramatically affected, which has increased unemployment at a formal and informal level since thousands of families are economically dependent on this sector, similar cases are found in countries such as the Dominican Republic, Argentina, Italy, New Zealand, Puerto Rico to mention a few, where people's quality of life depends on these incomes (21,22).

However, Colombians, despite the economic crisis and the uncertainty generated by financial commitments that cannot pay on time, and the job instability of those who work in the productive sector or as self-employed, have a positive perception of satisfaction with life, the circumstances that surround it and the achievement of personal goals, which lead them to feel that most of the aspects that surround it are they wish (14-16).

CONCLUSIONS

The study carried out is the first in Colombia that analyses personal financial management and satisfaction with life, highlighting in the results that Colombians have the right coping strategies, an optimistic attitude, and a high capacity for resilience. Even though the financial management of the Colombian during the confinement by COVID-19 has been affected by the economic crisis derived from the health emergency, unemployment, increased prices of products in the market, temporary closures of some sectors among other measures taken to prevent the spread of disease.

The previous is interpreted positively since the economic crisis has not affected the satisfaction with life experienced by Colombians, who express that most of the aspects are as they would like, consider that life circumstances are good, perceive that until now they have achieved the things that are important and if they could live life again, most report that they would not change anything, that is, they feel comfortable and satisfied with who they are and have (17-20).

Another aspect to highlight in the personal financial management of the respondents is the planning and compliance with the projected monthly budgets, establishment of a purchasing plan, comparison of prices in the market to choose the most suitable product, leaving aside luxury expenses and expenses investments.

In future studies, it is convenient to delve into situations, facts, and events that motivate the Colombian to feel satisfied with life in the face of complex or critical situations in which different results would be expected.

REFERENCES

1. DANE. Información para todos. Large Integrated Household Survey (GEIH) Labor Market. 2020. Recovered from: https://www.dane.gov.co/index.php/estadisticas-por-tema/mercado-laboral/empleo-y-desempleo
2. Caballero C. The 2020 economic crisis. El Tiempo. 2020. Recovered from: https://www.eltiempo.com/economia/sectores/coronavirus-la-crisis-economica-de-2020-477658
3. Gómez Molina A, Molina Pérez LA. Incidents, causes and effects of the COVID-19 pandemic in the Colombian economy. Degree work. Catholic University of Colombia. Faculty of Economic and Administrative Sciences. Economics Program. Specialisation in Financial Administration. Bogota Colombia. 2020. Recovered from: https://repository.ucatolica.edu.co/handle/10983/24628
4. BANCOLDEX. Balance of support for companies affected by the impact of COVID- 19. 2020. Recovered from: https://www.bancoldex.com/pricación-home/bancoldex-responde-balance-del-

apoyo-las-empresas-afectadas- for-the-impact-of-covid-19-3629

5. FENALCO. Economic Bitácora de Junio de 2020. Recovered from: http://www.fenalco.com.co/bienvenidos-bit%C3 %A1cora-econ%C3 %B3mica-covid/bit%C3 %A1cora-econ%C3 %B3mica-June-2020-pdfdocument
6. Nieto D. How does the COVID-19 crisis affect the Colombian economy? University of the Forest. 2020. Recovered from: https://www.unbosque.edu.co/centro-informacion/noticias/como-afecta-la-crisis-del-covid-19-la-economia-colombiana
7. THE VANGUARD. How does the coronavirus affect the economy? 2020. Recovered from: https://www.lavanguardia.com/vida/junior-report/20200316/474199840484 /coronavirus-economia-mundial.html
8. Library of Congress of the Nation. International organisations. The COVID-19 Pandemic. 2020. Recovered from: https://bcn.gob.ar/la-biblioteca/publicaciones/ organismos-internacionales-1/la-pandemia-del-covid-19
9. UN. The coronavirus causes human development to regress for the first time since 1990. 2020. Recovered from: https://news.un.org/es/story/2020/05/1474712
10. UN. To mitigate the impact of the crisis resulting from the coronavirus, social protection must be strengthened. 2020. Recovered from: https://news.un.org/ es/story/2020/05/1474402
11. Vinaccia Alpi E, Parada N, Quiceno JM, Riveros Munévar F, Vera Maldonado LA. Life satisfaction scale (SWLS): analysis of validity, reliability and scales for university students in Bogotá. Psychogent. 2019; 22 (42): 1-20.
12. Pavot W, Diener E. The affective and cognitive contest of self-report measures of subjective well-being. Social Indicators Res. 1993;28(1):1-20.
13. Vázquez C, Duque A, Hervás G. Satisfaction with Life Scale in a Representative Sample of Spanish Adults: Validation and Normative Data. Spanish J Psychol. 2013;16(82):1-15.
14. Cruz J, Torres J. What does the subjective satisfaction of Colombians depend on?. Notebooks of Economy. 2006;45:131-154.
15. Díaz D, Stavraski M, Blanco A, Gandarillas B. The eudaimonic component of satisfaction with life and psychological well-being in Hispanic cultures. Psicothema. 2015;27(3):247-253.
16 Gómez V, Villegas C, Barrera F, Cruz J. Predictive factors of subjective well-being in a Colombian sample. Latin Am J Psychol. 2007;39(2):311-325.
17. Bahamón M, Alarcón Y, Cudris L, Trejos A, Campo L. Psychological welfare in colombian adolescents. Arch Ven Farm Ter. 2019;38(5):519-523.
18. Cudris-Torres L, Barrios-Núñez Á, Bonilla-Cruz NJ. Coronavirus: Emocional and social epidemic. Arch Ven Farm Ter. 2020;39(3):309-312.
19. Olivella-López G, Silvera-Torres L, Cudris-Torres L, Bahamón MJ, Medina-Pulido PL. Quality of life in young university. Arch Ven Farm Ter. 2020;39(3):391-395.
20. Silvera-Torres L, Olivella-López G, Cudris-Torres L, Bahamón MJ, Gil-Ángel G. Psychological wellness programs, strategies and protocols implemented in young university students. Arch Ven Farm Ter. 2020;39(3):322-325.
21. BBC. Coronavirus in Latin America: the countries that are best and worst prepared to face the economic crisis caused by the pandemic. 2020. Recovered from: https://www.bbc.com/mundo/noticias-america-latina-52397020
22. CEPAL. Tourism will be one of the most affected economic sectors in Latin America and the Caribbean due to COVID-19. 2020. Recovered from:https://www.cepal.org/es/noticias/turismo-sera-sectores-economicos-mas-afectados-america-latina-caribe-causa-covid-19

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S320-S335
DOI: 10.47307/GMC.2020.128.s2.19

Epidemiología del COVID-19 en Venezuela, a seis meses de la denuncia de los primeros casos en China

Drs. Carlos D'Suze G.[1], Mariano Fernández-Silano[2]

RESUMEN

Desde el mes de diciembre de 2019 el mundo conoce la noticia de una neumonía viral en un populosa ciudad de China, ya para el primer mes del 2020 se había reconocido el brote de COVID-19 una enfermedad viral producida por un coronavirus el SARS-CoV-2, un mes después era declarada pandemia global. El 13 de marzo de 2020 se declara oficialmente la presencia del COVID-19 en Venezuela. Esta investigación recoge el análisis de las características epidemiológicas principales de esta enfermedad en Venezuela, desglosando la información desde las variables tiempo, espacio y persona. Concluye el estudio con comentarios sobre cómo debe funcionar un programa de control de un brote epidemiológico.

SUMMARY

Since December 2019 the world has known about a viral pneumonia in a populous city in China, and by the first month of 2020 the outbreak of COVID-19 had been recognized, a viral disease produced by a coronavirus, SARS-CoV-2, a month later it was declared a global pandemic. On March 13, 2020, the presence of COVID-19 was officially declared in Venezuela. This investigation includes the analysis of the main epidemiological characteristics of this disease in Venezuela, breaking down the information from the variables of time, space, and person. It concludes the study with comments on how an epidemiological outbreak control program should work.

DOI: https://doi.org/10.47307/GMC.2020.128.s2.19

[1]ORCID: 0000-0003-4672-7275, Médico Epidemiólogo y Pediatra. Centro de Investigación en Salud Pública Dr. Jacinto Convit. Facultad de Medicina, Universidad Central de Venezuela.
[2]ORCID: 0000-0002-5233-8818, Médico Epidemiólogo. PhD. Escuela de Salud Pública, Facultad de Medicina, Universidad Central de Venezuela. Mariano Fernández, mferna@gmail.com

Recibido: 29 de julio de 2020
Aceptado: 16 de octubre de 2020

INTRODUCCIÓN

Durante el mes diciembre de 2019, la Comisión Municipal de Salud de Wuhan, en la República Popular de China, reportó 27 casos humanos con neumonía viral, 7 de ellos en condiciones críticas, como etiología se reportaba un nuevo patógeno humano, conocido provisionalmente como Coronavirus novel 2019 (2019-nCoV), y unas semanas después la patología fue nombrada oficialmente como Enfermedad por Coronavirus 2019 (COVID-19) y causada por el virus SARS-CoV-2 (1,2).

Para el día 31 del mismo mes, científicos y medios chinos reportaban la detección de casos confirmados por laboratorio de la nueva enfermedad por coronavirus, el COVID-19 (2).

El 3 de enero de 2020, el gobierno de la República Popular de China informó oficialmente a la Organización Mundial de la Salud (OMS) sobre la epidemia; el 10 de enero de 2020, investigadores de la Universidad de Fudan, Shanghai publicaron los datos de la secuenciación genética del coronavirus y determinaron que el virus es de la misma familia del coronavirus causante del Síndrome Respiratorio Agudo Grave (SARS o SARS-CoV-2, actualmente), responsable de brotes epidémicos durante los años

2002 y 2003 en China. Las secuencias completas del genoma del virus SARS-CoV-2, fueron compartidas con la OMS y con la comunidad científica mundial (3).

El 30 de enero de 2020, el Comité de Emergencias de la OMS llega a un consenso y declara que el brote constituye una Emergencia de Salud Pública de Importancia Internacional (ESPII); posteriormente, fueron reportados múltiples casos en distintos continentes, motivo por el cual la OMS modificó la denominación original de brote a Pandemia el 11 de marzo de 2020 (2,4,5).

El alcance y efecto final de esta pandemia no está claro en la actualidad, ya que la situación ha venido evolucionando rápidamente; hasta el 12 de julio de 2020 se han documentado 12 698 995 casos y 564 924 defunciones en 218 países o regiones, inicialmente en China y países vecinos, luego Europa y actualmente la región más activa es América con EE.UU y Brasil liderando los casos y muertes y el sureste asiático, donde la India lleva la batuta. Por otra parte, en muchos países se teme un segundo brote epidémico (Centro Europeo para la Prevención y el Control de Enfermedades, Actualización de la situación del COVID-19 en todo el mundo al 12 de julio de 2020) (6).

El control de brote inicialmente depende de la vigilancia activa de las distintas vías de entrada a los países (aérea, puertos marítimos, frontera terrestre), de la cuarentena de contactos estrechos y del aislamiento de casos sospechosos o confirmados. En este último punto, surgen aspectos relacionados con el cuidado sanitario, particularmente en lo que respecta al riesgo de transmisión viral al personal de salud y de estos a los otros pacientes o contactos (infección cruzada) (4).

Apuntar al fortalecimiento de los sistemas de salud, la vigilancia de enfermedades y la debida evaluación de casos sospechosos de COVID-19, realizando una detección y diagnóstico temprano, capacitación y equipamiento del personal de atención y servicios con aislamiento adecuados, son medidas indispensables para evitar y controlar la propagación del virus. Sin embargo, y como es de esperar, esto implica implementar en las instituciones gastos y adquisición de rubros adicionales al presupuesto, no previstos en 2019, que garanticen desde las compras, vestimenta de protección, gafas antisalpicaduras, más guantes, así como capacitaciones al personal de salud en todos los aspectos relacionados, incluso el uso apropiado de tapabocas y mascarillas (1).

El objetivo de esta investigación fue describir el perfil epidemiológico de los afectados por COVID-19 en Venezuela, durante los primeros cuatro meses de pandemia en el país.

Los estudios epidemiológicos descriptivos, persiguen detallar problemas de salud, en este caso la pandemia por CODIV-19, según las variables y su comportamiento desde el punto de vista del tiempo, espacio o lugar y las características de persona; permitiendo diferentes atributos de un evento epidemiológico: la identificación de una enfermedad, la frecuencia de su distribución en grupos de población específicos, los aspectos de los factores de riesgo, la determinación de los efectos y la población en riesgo y finalmente la formulación de hipótesis y pruebas necesarias para inferir causalidad (7).

En resumen, el estudio del presente brote epidemiológico permitirá explicar el comportamiento de la enfermedad durante los primeros cuatro meses en Venezuela y en sus dependencias federales, describir la historia natural y social de la enfermedad, conocerla distribución de la patología en determinado lugar o área y formular hipótesis con miras a aclarar mecanismos causales. Adicionalmente proveerá de una guía para la administración y planificación de servicios de salud y de las necesidades de atención médica durante el brote y planteará las bases para la investigación clínica, terapéutica y preventiva (8).

MÉTODOS

Tipo de estudio

Se realizó un estudio epidemiológico observacional, descriptivo y retrospectivo; basado en la caracterización epidemiológica del COVID-19.

Población y Muestra

El estudio se realizó con el total de los casos

y fallecidos por COVID-19 en Venezuela según la información oficial disponible en medios de comunicación y redes sociales. El período estudiado se definió a partir de la fecha de notificación del primer caso confirmado en Venezuela, reportado el 13/03/2020 y la fecha de finalización de esta investigación, cuatro meses después del reporte del primer caso, el 12 de julio de 2020. Todas las informaciones utilizadas fueron realizadas por la Comisión Presidencial COVID-19 (CP-COVID-19).

El estudio incluyó 9 465 casos confirmados y 89 defunciones por COVID-19, anunciadas en medios oficiales. La definición de casos confirmados para el momento del estudio era: toda persona con confirmación de laboratorio mediante RT-PCR (Reacción de Cadena de Polimerasa con paso previo de Transcripción Reversa, por sus siglas en inglés) de la enfermedad por COVID-19, independientemente de los signos y síntomas clínicos (9).

Recolección de la información

Los casos estudiados se registraron entre la undécima semana (13/03/2020) a la semana 29 (12/07/2020) del calendario epidemiológico de notificación de 2020, definido por el Ministerio del Poder Popular de la Salud (MPPS). Las cifras suministradas se basaron en datos secundarios de casos confirmados mediante prueba RT-PCR, de acuerdo a la definición de caso confirmado del propio ministerio. Los datos corresponden a la información oficial de la CP-COVID-19, de la Oficina de las Naciones Unidas sobre Asuntos Humanitarios (OCHA, Venezuela), así como portales de noticias de periodismo de investigación y ONG acreditadas (9,10).

Análisis Estadístico

La información incluida en el estudio se transcribió en una hoja de cálculo Excel®. Luego se le dio formato a los datos, se revisó, validó y corrigió. Posteriormente el análisis se realizó con el programa Stata 14 (Stata Corp). El nivel de significancia establecido fue de 0,05. Para verificar la normalidad de las variables cuantitativas se utilizó la prueba de Shapiro Wilk y para su descripción se usaron medidas de tendencia central y dispersión. Para el análisis gráfico se utilizaron gráficos de caja, histogramas y polígonos de frecuencia, cuando las variables se presentaron por grupos de una variable categórica. Se usaron tablas de distribución de frecuencias y gráficos de barras para la descripción de las variables cualitativas.

RESULTADOS

Los resultados del análisis de la información recabada con los procedimientos explicados en la sección anterior, se presentan estructurándolos según las variables de la caracterización epidemiológica básica, como son: tiempo, espacio y persona.

Tiempo

Los primeros casos de COVID-19 en Venezuela fueron reportados el 13 de marzo de 2020, en el que se notifican dos casos de la enfermedad, desde ese momento y durante estos cuatros primeros meses de desarrollo de la pandemia en Venezuela han sido reportados por la Comisión Presidencial de COVID-19 un total de 9 465 casos (Figura 1).

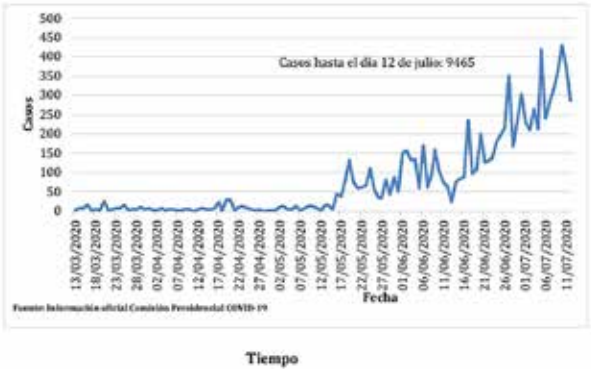

Figura 1. COVID-19. Reporte Diario de Casos. Venezuela. 2020.

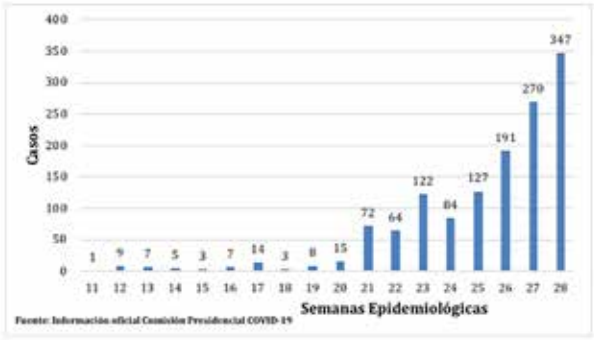

Figura 2. COVID-19. Reporte de Promedio Diario de Casos según Semana Epidemiológica. Venezuela, 2020.

La pandemia hasta este momento puede ser divida en varias etapas (Figuras 1, 2 y 3), una primera etapa que comprende los primeros 63 días, donde el número de casos presentó una variación entre 1 y 15 casos diarios, en las semanas epidemiológicas comprendidas entre la 13 y la 20. A partir del 16 de mayo de 2020, finalizando la semana 20 y comienzo de la semana 21, se observa la aparición de una segunda etapa con el reporte de un incremento paulatino y constante de los casos según el registro de la CP-COVID-19. El promedio diario de los casos por semana epidemiológica permaneció con tendencia al alza, en la semana 27 se registraron en promedio 270 casos y en la última semana de este estudio (28), pasó a 347 casos de promedio diario.

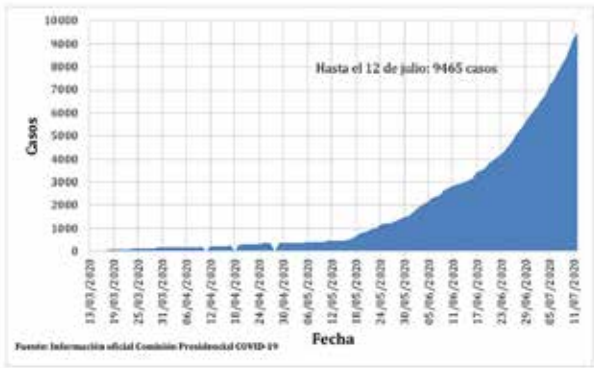

Figura 3. COVID-19. Frecuencia Acumulada. Venezuela, 2020.

La Figura 4 nos muestra la evolución de los casos según mes de ocurrencia. En el mes de marzo de 2020 se reportaron 143 casos, registrándose 190 casos en abril, 1 177 casos en mayo, la mayoría a partir de la segunda quincena. Durante el mes de junio se contabilizaron 4 322 casos y en los primeros 12 días del mes de julio, 3 633 casos. El 84,1 % de los casos han sido reportados entre los meses de junio y julio de 2020.

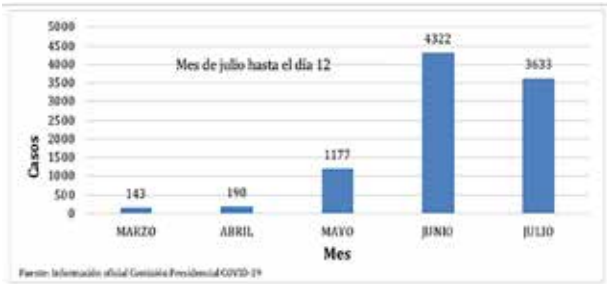

Figura 4. COVID-19. Casos según Mes de Ocurrencia. Venezuela, 2020.

El primer caso reportado fue el 13 de marzo de 2020, el caso 1 000 a los 71 días del primer caso, a los 83 días se reportó el caso 2 000 a doce días del caso 1 000. El caso 3 000 se reportó el día 94, a 11 días del caso 2 000. El caso 4 000 se registró el día 101 del inicio de la pandemia en Venezuela y a 7 días del caso 3 000. Del caso 4 000 en adelante se registró un incremento de 1 000 casos nuevos a 5,4, 4, 3,3 días para los casos 5 000, 6 000, 7 000, 8 000 y 9000. El registro de los primeros 4 000 casos tardó 101 días y los siguientes 5 000 casos, solamente 19 días (Cuadro 1).

Cuadro 1

COVID-19. Casos según clasificación por millares y tiempo transcurrido. Venezuela, 2020

1er Caso	13/3/2020	Días
Caso 1 000	71	71
Caso 2 000	83	12
Caso 3 000	94	11
Caso 4 000	101	7
Caso 5 000	106	5
Caso 6 000	110	4
Caso 7 000	114	4
Caso 8 000	117	3
Caso 9 000	120	3

Se han reportado 89 defunciones en estos primeros cuatro meses del inicio de la pandemia en Venezuela, reportándose la primera defunción el 26 de marzo de 2020. En el mes de marzo se reportaron 3 defunciones, en abril 7, solamente 4 defunciones en mayo, 37 en el mes de junio y 38 fallecidos en los primeros 12 días del mes de julio de 2020. El 84,2 % de las defunciones se concentran entre los meses de junio y los primeros 12 días del mes de julio. Las primeras 40 defunciones se registraron en los primeros 92 días del primer reporte de muerte y las siguiente 40 solamente en 9 días (Figuras 5 y 6, Cuadro 2).

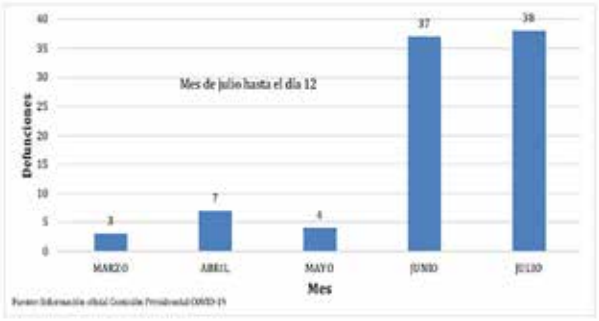

Figura 5. COVID-19. Defunciones según Mes de Ocurrencia. Venezuela, 2020.

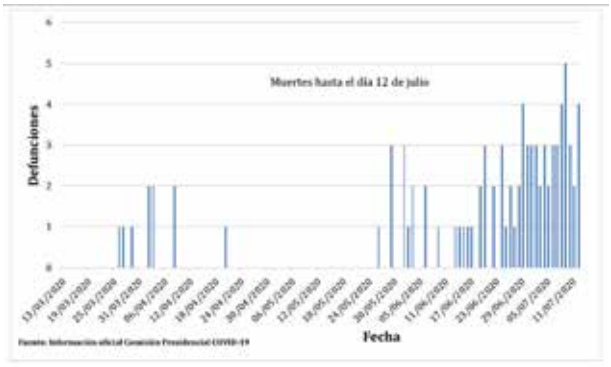

Figura 6. COVID-19. Reporte Diario de Muertes. Venezuela, 2020.

El mayor incremento se ha observado en las dos últimas semanas epidemiológicas, la 27 y 28, con 20 y 22 muertes, cuando se han reportado 3 y 4 defunciones diarias por COVID-19 (Figuras 7, 8, 9).

Cuadro 2

COVID-19. Defunciones por Decena, según Tiempo. Venezuela, 2020

Muerte 1	26/3/2020	Días
Muerte 10	25	25
Muerte 20	69	44
Muerte 30	85	16
Muerte 40	92	7
Muerte 50	96	4
Muerte 60	100	4
Muerte 70	103	3
Muerte 80	105	2

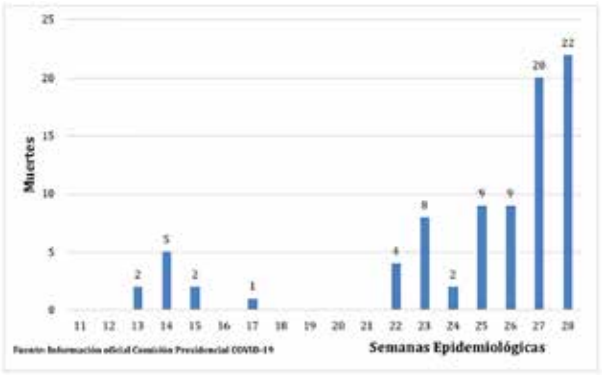

Figura 7. COVID-19. Muertes por Semana Epidemiológica. Venezuela, 2020.

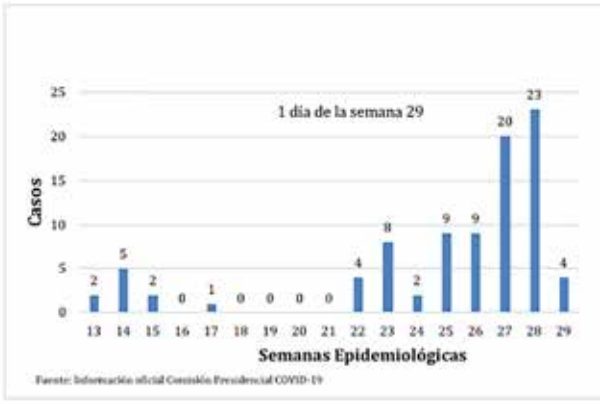

Figura 8. COVID-19. Muertes por Semana Epidemiológica. Venezuela, 2020.

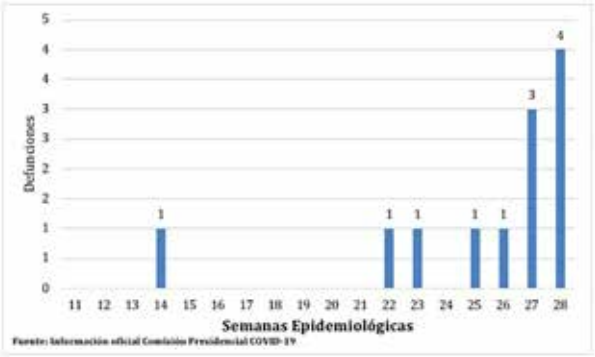

Figura 9. COVID-19. Promedio Diario de Muertes por Semana Epidemiológica. Venezuela, 2020.

La letalidad en la población enferma por COVID-19 fue elevada en los dos primeros meses (marzo, abril) 2,1 % y 3,7 % respectivamente, disminuyendo a un mínimo de 0,3 % en mayo para estabilizarse alrededor de 1,0 % en junio y julio de 2020. Coincidiendo con las primeras semanas epidemiológicas del registro de defunciones en las semanas 13, 14 y 15 (Cuadros 3 y 4).

Cuadro 3

COVID-19. Casos y Muertes según Mes y Letalidad. Venezuela, 2020

MES	MUERTES	CASOS	LETALIDAD
MARZO	3	143	2,1
ABRIL	7	190	3,7
MAYO	4	1 177	0,3
JUNIO	37	4 322	0,9
JULIO	38	3 633	1,0
TOTAL	89	9 465	0,9

Espacio

Para el momento de este estudio se han presentado casos de la enfermedad en todas las dependencias federales del país (Figura 10). Los seis estados con mayor cantidad de casos se caracterizan en su mayoría por ser fronterizos como son los casos de Zulia, Apure, Bolívar y Táchira, con las excepciones del Distrito Capital y el Estado Miranda.

Cuadro 4

COVID-19. Casos y Muertes según Semanas Epidemiológicas y Letalidad. Venezuela, 2020

SEMANA	MUERTES	CASOS	LETALIDAD
11	0	10	0,0
12	0	63	0,0
13	2	46	4,3
14	5	36	13,9
15	2	20	10,0
16	0	52	0,0
17	1	96	1,0
18	0	22	0,0
19	0	57	0,0
20	0	102	0,0
21	0	506	0,0
22	4	449	0,9
23	8	857	0,9
24	2	588	0,3
25	9	886	1,0
26	9	1 340	0,7
27	20	1 620	1,2
28	22	2 428	0,9
29*	4	287	1,4

Nota: *Semana 29, primer día.

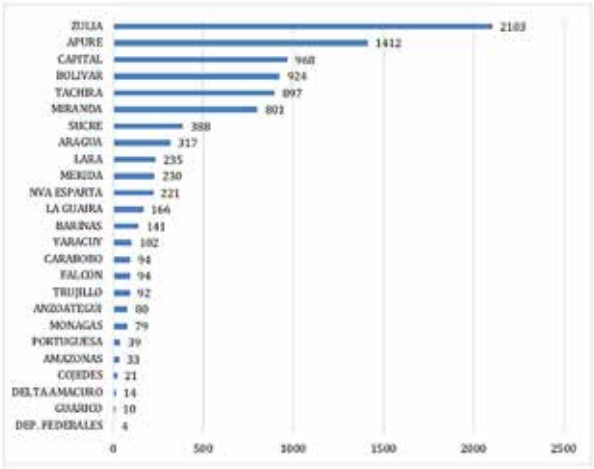

Figura 10. COVID-19. Casos Confirmados según Entidad Federal. Venezuela, 2020.

El Estado Zulia, primero de la lista con más de dos mil casos (2 103 casos), recibe por una parte una fuerte corriente migratoria procedente de la Goajira y de Colombia; también fue escenario

de un brote comunitario en el Mercado de las Pulgas, donde suponemos que derivaron los casos registrados posteriormente en los centros asistenciales de la zona. Por su parte, los estados Apure (1 412 casos) segundo en magnitud, así como Bolívar (924 casos), son entidades por las que retornan gran cantidad de venezolanos procedentes de Colombia, Ecuador, Perú y Brasil, algunos de ellos infectados.

El Distrito Capital ya reporta cerca de un millar de casos, muy probablemente de transmisión comunitaria debido a la llegada de pacientes enfermos tanto sintomáticos y asintomáticos a las diversas áreas populares de la ciudad de Caracas, Miranda (801 casos), fue uno de las primeras entidades en reportar casos, sobre todo a expensas de pacientes que regresaban de viajes del continente europeo.

La Figura 11 muestra como las zonas con mayor cantidad de casos corresponden a los estados fronterizos del país.

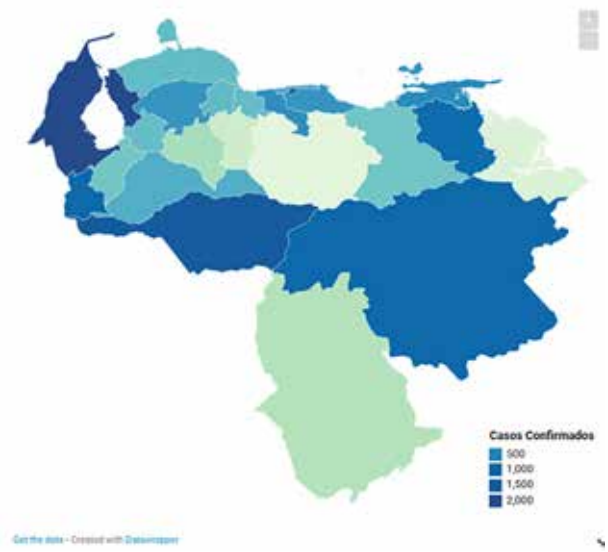

Figura 11. COVID-19. Casos Confirmados según Entidad Federal. Venezuela, 2020.

El Cuadro 6 muestra, como hasta el momento de realizar este estudio, solo el 70 % de las entidades federales habían registrado defunciones. Los estados Zulia (32 muertes), Distrito Capital (18 muertes) y Miranda (6 muertes), concentran más del 60 % de las defunciones del país. En cuanto a la tasa de mortalidad, la más alta la posee el Distrito Capital con 8 defunciones por cada millón de habitantes, seguido por Zulia con 7,33 muertes por millón de habitantes y los estados Trujillo (4,54) y Lara (3,42). El resto de las entidades se encuentran por debajo de la tasa nacional promedio, de 2,73 defunciones por cada millón de habitantes.

Cuadro 6

COVID-19. Muertes por Entidad Federal según Porcentaje y Tasa de Mortalidad por un Millón de Habitantes. Venezuela, 2020

ESTADOS	MUERTES	PORCENTAJE	MORTALIDAD
ZULIA	32	35,96	7,33
CAPITAL	18	20,22	8,61
MIRANDA	6	6,74	1,81
BOLIVAR	5	5,62	2,64
LARA	5	5,62	2,42
SUCRE	4	4,49	3,61
TRUJILLO	4	4,49	4,54
FALCON	3	3,37	2,74
TÁCHIRA	2	2,25	1,56
MÉRIDA	2	2,25	1,89
YARACUY	2	2,25	2,66
CARABOBO	2	2,25	0,78
ARAGUA	1	1,12	0,53
LA GUAIRA	1	1,12	2,62
ANZÁTEGUI	1	1,12	0,56
PORTUGUESA	1	1,12	0,93
VENEZUELA	89	100,00	2,73

En la Figura 12, podemos observa r y comparar la situación de la letalidad. El Estado Trujillo posee la letalidad más alta del país con un 4,35 %, seguida de Falcón (3,19 %) y Portuguesa (2,56 %). Es de hacer notar que estas cifras de letalidad están muy por encima de la media nacional, que se ubica en 0,94 %. Los valores de letalidad a nivel mundial tienen un comportamiento muy variable y parecen responder a la cantidad de casos que puedan identificarse, lo que está estrechamente relacionado a la cantidad de pruebas diagnósticas realizada.

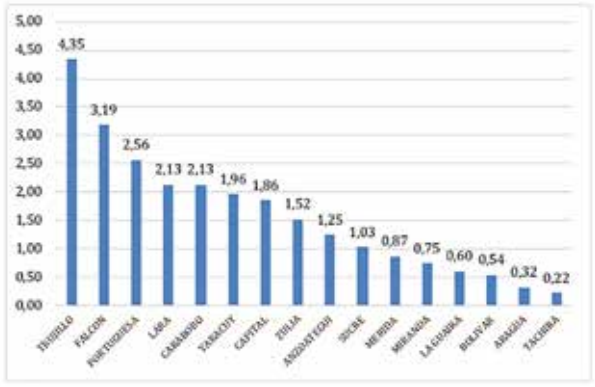

Figura 12. COVID-19. Letalidad según Entidad Federal. Venezuela, 2020.

Persona

La población más afectada por el COVID-19 en Venezuela durante los primeros cuatro meses de la pandemia corresponde a los grupos de edad entre 20 y 49 años con el 61,8 % de los casos. 3 de cada 5 casos son población adulta (Figura 13).

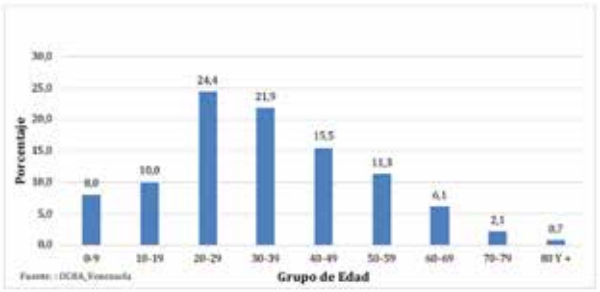

Figura 13. COVID-19. Distribución Porcentual por Grupo de Edad. Venezuela, 2020.

La Figura 14 muestra los grupos poblacionales con más riesgo de infectarse por el COVID-19 en estos primeros cuatro meses, estos son los de 20 a 29 años, manteniéndose elevada en los grupos de edad sucesivos y disminuyendo a partir del grupo de 60-69 años en adelante.

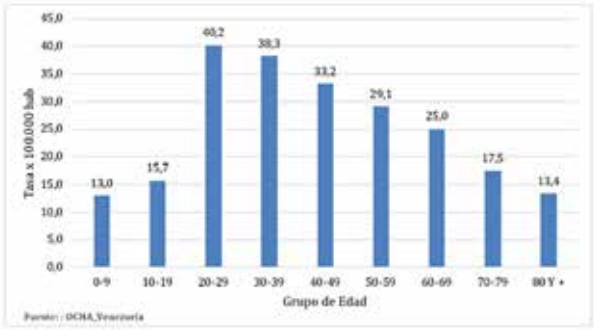

Figura 14. COVID-19. Tasa de Incidencia por Grupo de Edad. Venezuela, 2020.

El 58 % de los casos de COVID-19 se reportan en el sexo masculino y un 42 % en el sexo femenino (Figura 15).

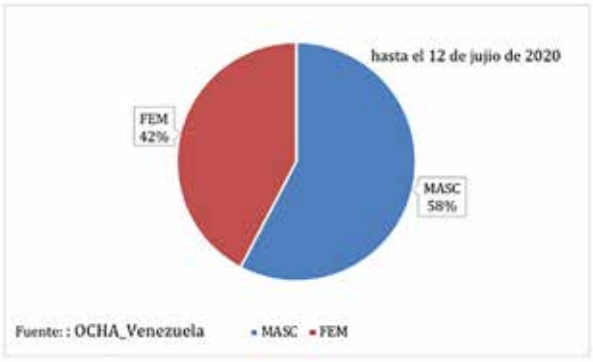

Figura 15. COVID-19. Casos según Sexo, Venezuela 2020.

Defunciones

Los datos de las defunciones por COVID-19 según edad, no siguen una distribución normal de acuerdo al test de Shapiro-Wilk para datos normales. Las medidas de Tendencia Central a utilizar serán la Mediana y Percentiles.

La mediana de edad de los 89 fallecidos por COVID-19 fue de 59 años, con un rango de 3 a 84 años (Cuadro 7, Figuras 16 y 17).

Cuadro 7

COVID-19. Casos según edad y percentiles. Venezuela, 2020

Percentil	Edad
5	41
10	47
25	54
50	59
75	68
90	79
95	83

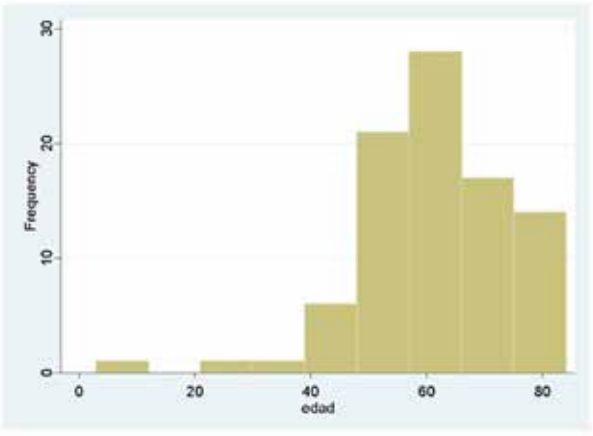

Figura 16. COVID-19. Histograma por Grupo de Edad. Venezuela, 2020.

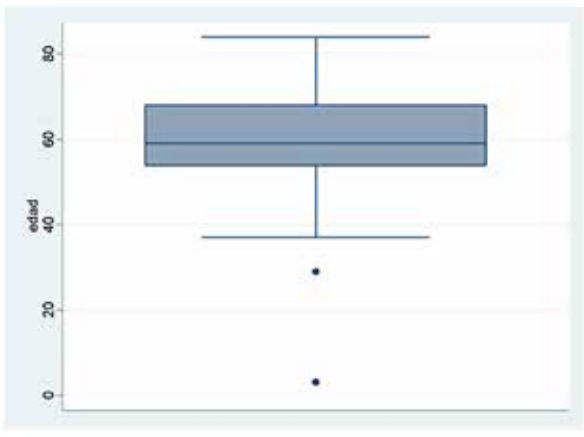

Figura 17. COVID-19. Gráfico de Caja de Casos según Edad. Venezuela, 2020.

Como puede observarse 7 de cada 10 fallecidos son de sexo masculino, el 71,9 % del total de defunciones. Las defunciones por grupo de edad a predominio del sexo masculino, con una mayor diferencia en el grupo de 50-59 años, representando el 87,1 %. Por cada paciente del sexo femenino fallecido mueren 7 hombres (Cuadro 8, Figuras 18, 19, 20).

Cuadro 8

COVID-19. Muertes por Grupo de Edad y Sexo. Venezuela, 2020

Grupo de Edad	Masculino	%	Femenino	%	Total
0-9	1	100,0	0	0,0	1
10-19	0	0,0	0	0,0	0
20-29	1	100,0	0	0,0	1
30-39	1	100,0	0	0,0	1
40-49	5	45,6	6	54,4	11
50-59	27	87,1	4	12,9	31
60-69	17	68,0	8	32,0	25
70-79	6	50,0	6	50,0	12
80-89	6	85,7	1	14,3	7
TOTAL	64	71,9	25	28,1	89

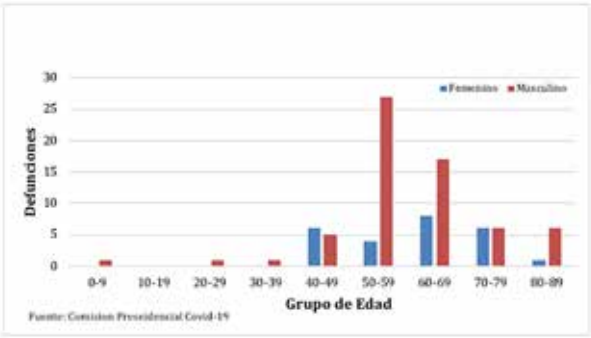

Figura 18. COVID-19. Mortalidad según Grupo de Edad y Sexo. Venezuela, 2020.

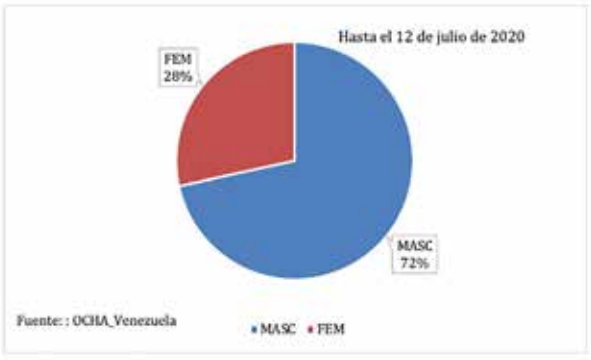

Figura 19. COVID-19. Muertes según Sexo, Venezuela 2020.

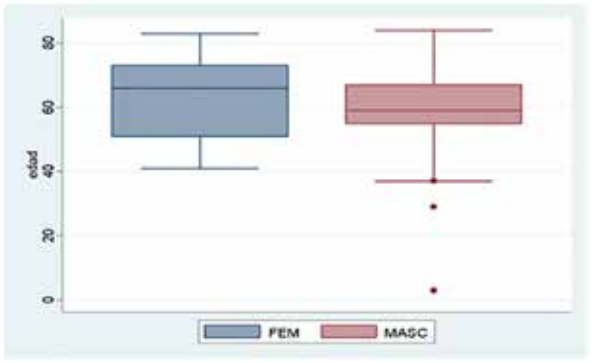

Figura 20. COVID-19. Gráfico de Caja de Casos según Edad y Sexo. Venezuela, 2020.

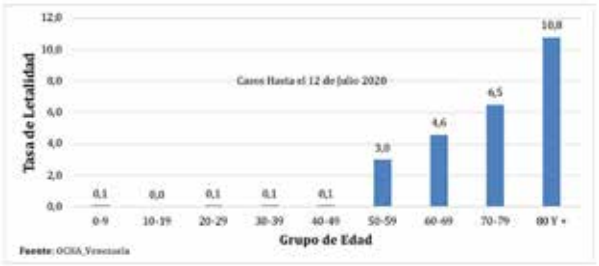

Figura 21. COVID-19. Letalidad según Grupo de Edad. Venezuela, 2020.

Cuadro 9

COVID-19. Casos y Muertes según Grupos de Edad y Letalidad. Venezuela, 2020

Característica	Casos N (%)	Muertes N (%)	Letalidad
Total	9 465(100,0)	89 (100,0)	0,94
Grupo de Edad			
0-9	757 (8,0)	1 (1,2)	0,13
10-19	947 (10,0)	0 (0,0)	0,00
20-29	2 309 (24,4)	1 (1,2)	0,04
30-39	2 073 (21,9)	1 (1,2)	0,05
40-49	1 467 (15,5)	11 (12,3)	0,75
50-59	1 070 (11,3)	31 (33,3)	2,90
60-69	577 (6,1)	25 (23,5)	4,33
70-79	199 (2,1)	12 (13,5)	6,03
80-89	66 (0,7)	7 (7,7)	10,60
Sexo			
Masculino	5 466 (57,4)	64 (71,6)	1,17
Femenino	3 999 (42,6)	25 (28,4)	0,63

La letalidad del COVID-19 (Figura 21 y Cuadro 9) por grupo de edad tiene un comportamiento ascendente a partir de los 50 años, desde 3,0 % pasando a 4,6 % en el grupo de 60-69 años, 6,5 % en el grupo de 70-79 años y más del 10 % de defunciones en el grupo de 80-89 años. 1 de cada 10 casos de este grupo de edad fallece, cuando en promedio para todos los casos es alrededor de 1 %.

DISCUSIÓN

La descripción epidemiológica del comportamiento del COVID-19 en el país, nos permitió caracterizar la duración, naturaleza de la enfermedad, período de incubación, el período probable de exposición con su rango o amplitud, la distribución espacial con sus tasas de ataque primaria y secundaria, y la distribución de acuerdo a las variables personales, clínicas y de exposición de los individuos, representando una excelente fuente de hipótesis que permiten tomar medidas temporales lógicas y diseñar estudios epidemiológicos analíticos y medidas de control del problema o evento de salud involucrado (8).

Al recopilar los datos de los pacientes, las actividades de búsqueda activa de casos proporcionan información importante en cuanto a las características epidemiológicas descriptivas del brote. El aislamiento de los pacientes (casos) evita que éstos se conviertan en fuentes de infección. Este aislamiento se debe cumplir durante el período máximo de transmisibilidad de la infección por COVID-19 (8).

El rastreo de contactos es el proceso de detectar, evaluar y decidir qué hacer con las personas que se han expuesto a la enfermedad a fin de evitar que la transmisión continúe. Cuando esta medida se aplica sistemáticamente, interrumpe la cadena de transmisión de una enfermedad infecciosa y, por lo tanto, representa un instrumento esencial de salud pública para controlar los brotes epidémicos infecciosos. El rastreo de contactos con relación con el COVID-19 implica localizar a las personas que puedan haberse expuesto a la enfermedad, colocarlas en cuarentena y seguirlas diariamente durante 14 días a partir del último momento de exposición (11).

El comportamiento epidemiológico del COVID-19 en los primeros cuatro meses luego de la notificación oficial del primer caso, muestra una característica particular en el país. Con una incidencia baja y muy poco incremento en los dos primeros meses, letalidad alta las tres primeras semanas, incrementándose lenta y paulatinamente tanto los casos, como las muertes a partir de la tercera semana de mayo. Tardanza de más de dos meses en iniciarse el ascenso de los casos, a diferencia de la rápida expansión de los casos y muertes en los países de Europa y luego en Norteamérica y resto de Latinoamérica (12-15).

Probablemente entre los factores que influyeron en este comportamiento epidemiológico se encuentran la disminución del tránsito aéreo internacional, que ha venido ocurriendo en los últimos años con el retiro de líneas aéreas en su itinerario por Venezuela, las medidas tomadas por el gobierno en cuanto a distanciamiento social con suspensión de actividades escolares a todos los niveles y restricciones estrictas de las actividades económicas y laborales, el uso obligatorio del tapabocas desde el inicio de los primeros casos, medidas de control social en la movilización en todos los sectores, asociado a la disminución del suministro de gasolina en las estaciones de servicio.

Otro factor que pudo haber estado influyendo en el número de casos fue el mecanismo de la búsqueda activa de los mismos y sus contactos, que dejó de ser un proceso meramente epidemiológico y de salud pública con protocolos bien precisos en la definición de casos, criterios de aislamiento y cuarentena, a ser una actividad de control social, así como a la poca capacidad inicial de las pruebas diagnósticas por parte del único laboratorio a nivel nacional autorizado para realizar los diagnósticos por PCR, sin todavía disponer de laboratorios regionales para su descentralización y apoyo. Las dificultades en el suministro de gasolina, más la suspensión del tránsito aéreo y terrestre hace muy difícil que muestras para el diagnóstico de COVID-19 de los lugares más lejanos del país pudiesen llegar oportunamente al laboratorio de referencia nacional (13).

Coincidiendo con el inicio del incremento de los casos y muertes por COVID-19 y la llegada de gasolina importada a las estaciones de servicio, el gobierno establece un sistema de flexibilización de las actividades comerciales y la movilización de personas y el transporte, alternando con períodos de "cuarentena estricta" por horas y sectores en semanas alternas, con poco o ningún basamento técnico-epidemiológico. De acuerdo a la OPS los indicadores enumerados a continuación son los que justifican un proceso de toma de decisiones relacionado con la disminución de las medidas de distanciamiento social a nivel comunitario:

1. Disminución continua, durante un período de al menos 14 días, de la incidencia de casos confirmados y probables, siempre que, durante ese período, los esquemas de vigilancia y muestreo permanezcan sin cambios, o la estrategia de muestreo se extienda a una mayor proporción de la población.
2. Aumento continuo, durante un período de al menos 14 días, de la proporción de casos confirmados y probables para quienes se realiza el rastreo de contactos.
3. Disminución continua, durante un período de al menos 14 días, de la proporción de casos confirmados y probables que no pudieron

vincularse a ninguna cadena de transmisión conocida. Esto equivale a un aumento continuo de la proporción de casos que se pueden vincular a una cadena de transmisión conocida.

4. Disminución continua, durante un período de al menos 14 días, del número de muertes entre casos confirmados y probables, siempre que, durante ese período, los esquemas de vigilancia y muestreo permanezcan sin cambios, o la estrategia de muestreo se extienda a una mayor proporción de la población.
5. Disminución continua, durante un período de 14 días como mínimo, del exceso de mortalidad atribuible a COVID-19.
6. Proporción de muestras obtenidas en el marco de la vigilancia centinela de ILI y positivas para SARS-CoV-2 en pruebas moleculares inferiores al 5 % durante un período de 14 días (16).

Las consecuencias fueron el incremento sostenido de los casos y muertes para pasar de menos de 10 casos semanales promedio hasta llegar a 347 casos promedio diario en la última semana de registro del estudio, el 84,0 % de los casos y de las muertes han ocurrido desde el inicio de la flexibilización indicada por el gobierno.

Los estados fronterizos, Zulia, Táchira, Apure y Bolívar, junto al Distrito Capital y Miranda, reportan el 73,4 % de los casos, probablemente por el ingreso de migrantes venezolanos procedentes de Brasil y Colombia principalmente y en menor cuantía de Ecuador y Perú, así como la cercanía al único laboratorio diagnóstico en Caracas de los casos procedentes del Distrito Capital y Miranda. Tres de cada cuatro casos proceden de estos estados y Distrito Capital.

Esta distribución espacial de los casos en el territorio nacional puede orientar a las autoridades de salud en que zonas ubicar los laboratorios regionales diagnósticos para COVID-19. Esto permitirá lograr una mejor cobertura en una red de laboratorio que permita el diagnóstico oportuno de los casos y además del seguimiento y tratamiento oportuno a los casos diagnosticados, así como el aislamiento de estos casos y la cuarentena de los contactos de los casos positivos. Estos laboratorios regionales estarían ubicados en los estados fronterizos de Zulia, Táchira, Bolívar y Apure, uno en la región oriental que cubra Sucre, Nueva Esparta, Anzoátegui y Monagas, uno en la región central para Aragua, Carabobo, Guárico y Cojedes, otro en la región centro occidental para los estados Lara, Yaracuy, Portuguesa, Trujillo y Barinas. El estado Falcón sería atendido por Zulia, Mérida en el laboratorio de Táchira, Amazonas en Apure y Delta Amacuro en Bolívar. Universidades de varias partes del país se han puesto a la disposición del gobierno para participar en esta red de laboratorio que mejoraría sustancialmente el diagnóstico, la vigilancia epidemiológica y la aplicación temprana y oportuna de las medidas de control.

Las distribuciones de frecuencia de factores demográficos, como edad y sexo, son importantes porque proveen más información acerca de exposiciones a epidemias en potencia y riesgo de enfermedades (8). Aquí resalta la distribución de los casos por edad, encontrándose que el grupo edad entre 20 y 49 años es la población más afectada y de mayor riesgo de enfermarse por COVID-19, 3 de cada 5 casos son de este grupo de edad. También se observó un predominio del sexo masculino con el 58 % de los casos, situación similar a estudio epidemiológico descriptivo realizado en Macapa, Brasil (17).

La mortalidad de COVID-19 durante este período tiene un comportamiento distinto a la morbilidad, el 96,4 % de las muertes son mayores de 40 años, 1 de cada 3 es del grupo de edad de 50-59 años y se va incrementando con la edad, tres veces la letalidad en el grupo de 50-59 años en comparación con la tasa de letalidad para todas las edades, cuatro veces de 60-69, seis veces de 70-79, hasta llegar a una letalidad de más del 10 % en el grupo de 80-89 años. La letalidad en el sexo masculino es el doble que la letalidad en el sexo femenino. Está descrito en la literatura que los pacientes mayores de 65 años, del género masculino tienen mayor riesgo de presentar casos fatales, así como la presencia de comorbilidad (diabetes, obesidad, enfermedades cardiovasculares, hipertensión y otras) es un factor de riesgo de presentar casos graves y críticos; de igual modo, se reporta que los menores de edad tienen menos probabilidades de ser infectados (18).

La transmisión de persona a persona ocurre más comúnmente durante la exposición cercana

a una persona infectada con el virus que causa COVID-19, principalmente a través de gotitas respiratorias producidas cuando la persona infectada habla, tose o estornuda. Las gotas pueden caer en la boca, la nariz o los ojos de las personas cercanas o posiblemente ser inhaladas a los pulmones de las personas cercanas. La transmisión también puede ocurrir a través del contacto con superficies contaminadas seguido de auto-entrega a los ojos, nariz o boca. Una carta publicada por dos expertos y avalada por otros 239 científicos en la que se insiste que la transmisión por gotas o por fómites no explica suficientemente todos los contagios, proponiendo un modelo de dispersión del virus en espacios cerrados, ha hecho que la Organización Mundial de la Salud modifique su posición inicial con relación a la importancia de este mecanismo de transmisión en la actual pandemia. Esto implica que, además, de extremar el uso de las mascarillas, de la distancia social y del lavado de manos y la higiene general, debemos prestar una atención adicional a los patrones de circulación del aire en interiores, con ventilación frecuente de estos espacios para asegurar la renovación del aire, mantenimiento riguroso de los filtros de aire acondicionado, así como, reducir al mínimo el aforo de personas en estos espacios cerrados (19,20).

Las infecciones asintomáticas y pre sintomáticas no reconocidas probablemente contribuyen a la transmisión en entornos de atención médica. El control de la fuente, que consiste en hacer que la persona infectada use una cubierta facial de tela o una máscara facial sobre su boca y nariz para contener sus secreciones respiratorias, podría ayudar a reducir el riesgo de transmisión del SARS CoV-2 tanto de personas sintomáticas como asintomáticas (21). Resulta esencial que los gobiernos vean a los médicos y trabajadores de la salud como personas humanas, con familias, con sueños y emociones. Dentro de la respuesta global, se debe garantizar la seguridad de los trabajadores de la salud. La provisión adecuada de Equipos de Protección Personal (EPP) es solo el primer paso; se deben considerar otras medidas prácticas, priorizar los recursos, provisión de alimentos, descanso y apoyo familiar y psicológico (22).

Las recomendaciones del Centro de Control de Enfermedades de EE.UU (23) en relación con el COVID-19 plantean tres líneas de acción para las instalaciones de salud, los pacientes sintomáticos y el personal de salud:

- Reducir el riesgo de las instalaciones. Cancelando los procedimientos electivos, use la telemedicina cuando sea posible, limite los puntos de entrada y administre a los visitantes, evalúe a todos los que ingresen a la instalación para detectar síntomas de COVID-19, implemente el control de fuente para todos los que ingresen a la instalación, independientemente de los síntomas.
- Aislar a los pacientes sintomáticos lo antes posible. Establezca áreas de triaje separadas y bien ventiladas, coloque a los pacientes con sospecha o confirmación de COVID-19 en habitaciones privadas con la puerta cerrada y con baños privados (como sea posible). Reserve AIIR para pacientes con COVID-19 sometidos a procedimientos de generación de aerosoles y para el cuidado de pacientes con patógenos transmitidos por vía aérea (por ejemplo, tuberculosis, sarampión, varicela).
- Proteger al personal sanitario. Enfatice la higiene de las manos, instale barreras para limitar el contacto con los pacientes en el triaje, agrupe a los pacientes con COVID-19, limite la cantidad de personal que atiende, priorice los respiradores para los procedimientos de generación de aerosoles.

Esta realidad es mucho más grave y preocupante en las instituciones de salud en Venezuela, con un 78 % de los hospitales con fallas en el servicio de agua, 63 % con fallas en el suministro eléctrico, fuga y migración de médicos sobre todo del área de emergencia y terapia intensiva, un 10 % a 20 % de las unidades de terapia intensiva cerradas y otro 10 % a 15 % funcionando intermitente, fallas en la dotación de insumos, materiales, equipos e instrumental médico necesario para una atención adecuada a los pacientes, lo que expresa una situación compleja de deterioro de los servicios de salud tal como lo revela la Encuesta Nacional de Hospitales de finales de 2019 (24).

CONCLUSIÓN

El COVID-19 cumple los criterios epidemiológicos de un importante problema de salud pública en cuanto a su magnitud y trascendencia, debiéndose enfocar todas las acciones hacia un programa de salud pública y epidemiología para minimizar su impacto en la salud comunitaria, así como en el desarrollo social y económico de los países.

Dada la imposibilidad de reducir a las personas susceptibles a través de estrategias de vacunación, así como la de la eliminación del agente infeccioso a través del tratamiento específico de los casos y de la quimioprofilaxis a los portadores y contactos. La reducción de la velocidad de la curva epidémica debe ocurrir a través de acciones como el aislamiento social y físico, además, de la construcción de políticas públicas destinadas a proteger a los trabajadores y ampliar la inversión en el sector de la salud como medidas urgentes y altamente necesarias (25).

Un programa de control para estos casos (26), debe contemplar:

- La creación de una Comisión de Prevención y Control de COVID-19, compuesto por un equipo técnico del más alto nivel, representativo de las distintas áreas de trabajo que tienen que ver con el control de esta enfermedad, coordinado por la Dirección de Epidemiología del Ministerio del Poder Popular para la Salud, por su experiencia y formación en el control de epidemias, así como por el Centro Nacional de Enlace para el Reglamento Sanitario Internacional, con la autoridad, responsabilidad y recursos suficientes para el desarrollo de todas las actividades de prevención y control.
- La Vigilancia Epidemiológica, considerada como el seguimiento, recolección sistemática, análisis e interpretación de datos sobre eventos de salud o condiciones relacionadas para ser utilizados en la planificación, implementación y evaluación de programas de salud pública, incluyendo como elemento básico la diseminación de dicha información a los que necesitan conocerla. Es fundamental para el conocimiento de la situación epidemiológica del COVID-19, así como establecer con mejor criterio las medidas de prevención y control y la evaluación constante de la aplicación de las mismas.
- El Diagnóstico de Laboratorio, pieza fundamental dentro de la Vigilancia Epidemiológica. El permite conocer el inicio de la pandemia, la tendencia de su comportamiento epidemiológico y la confirmación de la ausencia de la enfermedad. Una red eficiente de laboratorio que permita el diagnóstico temprano y el tratamiento oportuno de los casos, la aplicación adecuada de las medidas de aislamiento de los casos y cuarentena de los contactos y las medidas de distanciamiento social necesarias para disminuir su transmisión en la comunidad.
- La Investigación de Brotes, componente importante y desafiante de la epidemiología y la salud pública, ayudan a identificar la fuente de brotes en curso y prevenir los casos adicionales, aumenta nuestro conocimiento de la enfermedad, proveen adiestramiento epidemiológico y fomentan la cooperación entre las comunidades clínicas y de salud pública. La razón más imperiosa para investigar un brote de cualquier enfermedad que ha sido detectado es que la fuente de infección puede continuar presente; por lo que, al identificar la fuente de infección, podemos prevenir casos adicionales y los resultados de la investigación pueden conducir a recomendaciones o estrategias para la prevención de futuros brotes similares. Un plan de trabajo que pueda incluir: a) actividades de formación epidemiológica, b) una red de vigilancia epidemiológica para la detección temprana de los brotes, c) la organización del trabajo de campo mediante el establecimiento de una definición operacional de caso, la búsqueda activa de casos y los contactos, caracterización epidemiológica del brote en tiempo, lugar y persona, d) la generación de hipótesis y adopción de medidas de control inmediato, e) evaluación de las hipótesis aplicando métodos analíticos para la identificación de factores de riesgo, f) la ejecución de medidas de control específicos, g) la evaluación de las medidas de control y h) la preparación del informe técnico de investigación de campo (8).

- La Atención Médica, piedra angular para hacer que la letalidad por COVID-19 sea lo más baja posible, garantizando en función del nivel de complejidad y áreas afectadas, la organización de una red de atención médica que permita el adiestramiento al equipo de salud en la atención de los pacientes y de su protección adecuada para no convertirse en fuente de infección para sus compañeros de trabajo y familiares, apoyados por una buena red de laboratorios, insumos hospitalarios, agua y jabón en cantidad suficiente y equipos de protección personal en cantidad y calidad adecuadas.
- Medidas de Saneamiento Ambiental. Las condiciones de nuestros hospitales es preocupante, la última encuesta refiere que el déficit de agua y de insumos para el saneamiento es crítica, tanto en calidad como la frecuencia en el suministro. Es necesario garantizar los servicios e insumos en los establecimientos de salud.
- Educación para la Salud. Partiendo del principio de atención primaria, como es darle las herramientas a la comunidad para que participe en la solución de sus problemas de salud. La estrategia educativa permitirá una actitud adecuada y oportuna en primer lugar para prevenir enfermarse y luego las medidas necesarias para recibir un tratamiento oportuno y no ser una fuente de diseminación de la infección.

REFERENCIAS

1. Rodríguez-Morales AJ, Sánchez-Duque JA, Hernández Botero S, Pérez-Díaz CE, Villamil-Gómez WE, Méndez CA, et al. La COVID-19. Preparación y control de la enfermedad por coronavirus 2019 (COVID-19) en América Latina. Acta Med Peru. 2020;37(1):3.
2. Palacios Cruz E, Santos MA, Velázquez Cervantes M, León J. COVID-19, una emergencia de salud pública mundial. Rev Clin Esp. 2020. Disponible: https://doi.org/10.1016/j.rce.2020.03.001
3. Simón-Domínguez J, Simón-Domínguez N, Reyes-Núñez M. Cómo estimar la letalidad del COVID-19. Rev Mex Patol Clin Med Lab. 2020;67(1):4-8.
4. Figueroa L, Blanco P. Infección por coronavirus COVID-19 y los trabajadores de la salud: ¿Quién es quién en esta batalla? Rev Hosp Emilio Ferreyra. 2020;1(1):e15-e16.
5. European Centre for Disease Prevention and Control (ECDC). Situation update son COVID-19[. Disponible en: https://www.ecdc.europa.eu/en/covid-19/situation-updates
6. Simón Domínguez N, Reyes Núñez MA. Cómo estimar la letalidad del COVID-19. Rev Mex Patol Clin Med Lab. 2020;67(1):4-8.
7. Echezuría L, Fernández-Silano M, Rísquez A. Fundamentos de investigación epidemiológica y la metodología epidemiológica. En: Echezuría-Marval L, Fernández-Silano M, Rísquez-Parra A, Rodríguez-Morales A, editores. Temas de Epidemiología y Salud Pública. Capítulo 14. Primera Edición. Caracas: Ediciones de la Biblioteca, EBUC, Universidad Central de Venezuela; 2013.p.513-26.
8. D'Suze C, Fernández-Silano M, Márquez B. La Investigación de Brotes. En: Echezuría-Marval L, Fernández-Silano M, Rísquez-Parra A, Rodríguez-Morales A, editores. Temas de Epidemiología y Salud Pública. Capítulo 23. Caracas: Ediciones de la Biblioteca, EBUC, Universidad Central de Venezuela; 2013.p.513-526.
9. Ministerio del Poder Popular para la Salud de la República Bolivariana de Venezuela. Guía para el manejo y tratamiento de contactos y pacientes con COVID-19. Comité Terapéutico COVID-19**.** Disponible en: http://www.mpps.gob.ve/index.php/sistemas/descargas
10. Oficina de la ONU para la coordinación de asuntos humanitarios (OCHA) Venezuela: Informe de situación, abril, mayo 2020. Disponible en: https://reports.unocha.org/es/country/venezuela-bolivarian-republic-of
11. Organización Mundial de la Salud (OMS). El rastreo de contactos en el marco de la COVID-19. Orientaciones provisionales. Disponible en: https://apps.who.int/iris/bitstream/handle/ 10665/332083/WHO-2019-nCoV-Contact_Tracing-2020.1-spa.pdf
12. Centro Europeo para el Control y la Prevención de Enfermedades (ECDC).Actualización de Situación de COVID-19. Disponible en:https://www.ecdc.europa.eu/en/covid-19/situation-updates
13. Blog de la Patria. COVID-19. Estadísticas de Venezuela. Disponible en: https://covid19.patria.org.ve/
14. The Johns Hopkins Coronavirus Resource Center (CRC). COVID-19 Dashboard. Disponible en: https://coronavirus.jhu.edu/map.html
15. Organización Panamericana de la Salud (OPS). Brote por Enfermedad por Coronavirus, COVID-19. Disponible en: https://www.paho.org/es/temas/coronavirus/brote-enfermedad-por-coronavirus-covid-19)

16. OPS/OMS. Consideraciones sobre ajustes de las medidas de distanciamiento social y las medidas relacionadas con los viajes en el contexto de la pandemia por COVID-19, 24 de abril 2020. Disponible en: https://iris.paho.org/bitstream/handle/10665.2/52406/OPSPHECPICOVID-19200027_spa.pdf?sequence=1&isAllowed=y
17. Silva A, Cunha A, Alves G, Corona R, Dias Gellis De Mattos C, Nassiri R, et al. Perfil epidemiológico e determinante social do COVID-19 em Macapá, Amapá, Amazônia, Brasil. Revista Científica Multidisciplinar Núcleo do Conhecimento. Ano 05, Ed. 04, Vol. 04, pp. 05-27. Abril de 2020. ISSN: 2448-0959. Disponible en: https://www.nucleodoconhecimento.com.br/saude/covid-19-em-macapa
18. Rothan HA, Byrareddy SN. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. J Autoimmun. 2020;109:102433.
19. Morawska L, Milton D. Es hora de abordar la transmisión aérea de COVID-19. *Enfermedades infecciosas clínicas,* ciaa939. Disponible en: https://doi.org/10.1093/cid/ciaa939
20. Lewis D. Coronavirus in the air. Nature. 2020; 583. Disponible en: https://media.nature. com/original/magazine-assets/d41586-020-02058-1/d41586-020-02058-1.pdf
21. Centers for Disease Control and Prevention 2020. Coronavirus Disease 2019 (COVID-19). Disponible en: https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html
22. De La Cruz-Vargas J. Protegiendo al Personal de la Salud en la Pandemia COVID-19. Universidad Ricardo Palma. Rev Fac Med Hum. 2019. Disponible en: http://168.121.49.88/ index.php/RFMH/article/view/2913
23. Centers for Disease Control and Prevention. 2020. Interim Infection Prevention and Control Recommendations For Patients With Suspected Or Confirmed Coronavirus Disease 2019 (COVID-19) In Healthcare Settings. Disponible en: https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-controlrecommendations.html
24. Encuesta Nacional de Hospitales.com. 2020. Disponible en: https://www. Encuesta nacionaldehospitales.com/2019
25. Rafael RMR, Neto M, Carvalho MMB, David HMSL, Acioli S, Faria MGA. Epidemiología, políticas públicas e COVID-19. Disponible en: http://dx.doi.org/10.12957/reuerj.2020.49570
26. D'Suze C. Consideraciones sobre la entrada del Cólera a Venezuela, Ministerio de Sanidad y Asistencia Social, División de Enfermedades Transmisibles, Caracas, Abril, 1991.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S336-S349
DOI: 10.47307/GMC.2020.128.s2.20

Educational technology and academic performance in students of public educational institutions during confinement by COVID-19

Drs. Marisol Cudris-Moreno[1], Lorena Cudris-Torres[2], Viana Bustos-Arcón[3], Giselle Olivella-López[4], Pedro L Medina-Pulido[5], Herman A Moreno-Londoño[6]

SUMMARY

Introduction: *The articulation between education and technologies is of great relevance to the changes in society. At the global level, various nations and their educational systems converge towards a cutting-edge technological proposal, so that technology is coupled in a pedagogical role within the teaching and learning process.* **Objective:** *Relate the use of educational technologies with an academic performance before and during confinement by COVID-19 in the subject of mathematics in elementary school students in the Colombian Caribbean Region.* **Methods:** *The sample consisted of 80 students, to whom the educational technologies questionnaire used during confinement was applied and the information on academic performance was provided by the registration and control office. The data analysis was carried out by applying descriptive statistics, the data before and during confinement was analyzed applying Student's T-test, and to establish the relationships between the variables, use of educational technologies, and academic performance, the Pearson correlation analysis was performed.* **Results:** *A moderate positive significant correlation was found between the assessment that the participants assign to technology and academic performance during confinement.* **Conclusions:** *Moderate and slight negative statistically significant correlations were found between student academic performance and the hours of use, as well as the tools for learning mathematics.*

Key words: *Educational technologies, academic performance, lockdown, COVID-19, students.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.20

[1]ORCID: 0000-0002-8307-9564
[2]ORCID: 0000-0002-3120-4757
[3]ORCID: 0000-0003-3352-7733
[4]ORCID: 0000-0002-4809-9092
[5]ORCID: 0000-0002-5192-193X
[6]ORCID: 0000-0003-1516-107X

[1]*Universidad Cuauhtémoc, Aguascalientes-México- marysol_m2@hotmail.com*
[2]*Fundación Universitaria del Área Andina, Valledupar-Colombia- lcudris@areandina.edu.co*
[3]*Universidad San Buenaventura, Seccional Cartagena - viana.bustos@usbctg.edu.co*
[4]*Fundación Universitaria del Área Andina, Valledupar-Colombia- golivella2@areandina.edu.co*
[5]*Universidad Popular del Cesar, Valledupar-Colombia- pedroluismedina@unicesar.edu.co*
[6] *Universidad del Sinú, Cartagena-Colombia- herman.alonso27@yahoo.es*

*Correspondencia: Lorena Cudris Torres, *Programa de Psicología, Fundación Universitaria del Área Andina. Transversal 22 Bis No 4-105 Sector Callejas*.lcudris@areandina.edu.co

Recibido: 15 de agosto de 2020
Aceptado: 16 de octubre de 2020

RESUMEN

Introducción: *La articulación entre educación y tecnologías es de gran relevancia para los cambios en la sociedad. A nivel global, diversas naciones y sus sistemas educativos convergen hacia una propuesta tecnológica de vanguardia, de modo que la tecnología se acople en un rol pedagógico dentro del proceso de enseñanza y aprendizaje.* **Objetivo:** *Relacionar el uso de tecnologías educativas con un desempeño académico antes y durante el confinamiento por COVID-19 en la asignatura de Matemática en estudiantes de primaria de la Región Caribe Colombiana.* **Métodos:** *La muestra estuvo conformada por 80 estudiantes, a quienes se les aplicó el cuestionario de tecnologías*

educativas utilizado durante el confinamiento y la información sobre desempeño académico fue proporcionada por la oficina de registro y control. El análisis de los datos se realizó aplicando estadística descriptiva, los datos antes y durante el confinamiento se analizaron aplicando la prueba t de Student, y para establecer las relaciones entre las variables, uso de tecnologías educativas y rendimiento académico, se realizó el análisis de correlación de Pearson. **Resultados:** *Se encontró una correlación positiva significativa moderada entre la evaluación que los participantes asignan a la tecnología y el desempeño académico durante el confinamiento.* **Conclusiones:** *Se encontraron correlaciones estadísticamente significativas negativas moderadas y leves entre el rendimiento académico de los estudiantes y las horas de uso, así como las herramientas para el aprendizaje de las matemáticas.*

Palabras clave: *Tecnologías educativas, desempeño académico, cierre de emergencia, COVID-19, estudiantes.*

INTRODUCTION

Education has been subject to great changes in human society, which have led it to require a rethinking of methodological and strategic issues; this is how academic performance has been the object of analysis by various studies, in which educational technology is one of the main variables analyzed in this context.

When talking about technology as an educational strategy, it is important to review its incidence in the adolescent population, where technology-based hobbies are recurring and can be interpreted as an adverse aspect of the learning process. Carried out a study, the objective of which was to find out the impact of technologies on the academic performance of adolescents, which would allow judgments to be made about the different myths of technologies as classroom distractors. Using the HEGECO Instrument as a data collector, they found that nine out of ten students between the ages of 12 and 18 searched the Internet, viewed and / or shared audio and video files, consulted on wikis, and used instant messaging applications. The authors infer that the implementation of technology to mediate educational action favors academic performance (1).

Studied the impact of digital resources and the development of competence: analysis and synthesis, to identify educational action on these reading comprehension skills, and determine positive and negative aspects within them (2). Tools such as ED puzzle, Kahoot, and Educaplay, with which the authors managed to apply activities where, through a satisfaction survey validated by the UEM quality unit, they found greater satisfaction with the learning and teachers employed in the experimental group. Furthermore, indicating that the use of interactive online materials intervened favorably in the analysis and synthesis competences, bearing in mind that the study was carried out on an experimental group with the same initial level in said competences, finally showing an increase in this competence in the students, with respect to the initial level.

These results are verified statistically as shown by the research carried out by the authors (3) in which the role of ICT in academic performance was examined under an application with structural models, where through a statistical model determined the positive effects of ICT on performance, here the instrument that allowed the analysis of the data obtained was the structural equation model (SEM), through which they managed to conclude that there was a direct relationship between the use of ICT in the classroom and academic performance, in which there was an indirect effect that was not statistically significant, as is the case of the variable use of ICT outside the classroom. According to the estimator's test, the indirect effect - on academic performance - that this variable exerts through its incidence on teachers' performance is null (3).

On the other hand, (4) studied the perception that students have about the use of technological tools in their academic training process and how these affect academic performance. The results show that students with high and normal academic performance took ICT as a tool to improve and organize their academic process, plan tasks, carry out teamwork, and looking for support information. In conclusion, the authors establish that the positive perception of ICT in the learning process of students is related to obtaining excellent grades, the variable of which must be taken into account in all research of this type.

Investigated with high school students participating in digital programs, the objective of which was to study the effectiveness of digital programs with academic performance (5). The authors used online questionnaires developed in Google Drive to collect information, resulting in improvements in student academic performance through the implementation of digital programs; On the other hand, it was evident that the programs are an effective teaching tool. The study also allowed identifying the benefits and limitations that the use of digital classrooms brings in the teaching and learning process, mainly considering a better disposition of the students, favoring collaborative work, a greater understanding of the subjects, increased attention to student, and dynamism in-class activities.

For his part, studied the effects of the use of teaching strategies and educational resources mediated by information and communication technologies, selected through the diagnostic evaluation of the apprentice, on academic performance and motivation, this research It was carried out in Colombian contexts, and the participants were apprentices of the technologist's program of the CTPI center of the National Learning Service SENA, Regional Cauca, they used a quasi-experimental design, the findings indicate that approximately half of the participants have digital equipment in their homes and 60 % have an intelligent mobile device, and the vast majority of students use these tools for queries, navigation, and topics of interest; As a final result, improved performance was found in the Blended Learning modality, motivation of the experimental group, mainly because educational resources and various forms of audiovisual and multimedia content were developed (6).

In their study on academic performance and the use of information technologies in university students of the Faculty of Health Sciences (7), chose to divide the group of students belonging to the It shows, in two, applying google tools in one, and not in the other; also using as a data collection instrument the software statistical package for the social sciences (SPSS) in its version 22.0; When analyzing the results, they found that when comparing the scores of the two groups, the hypothesis was confirmed since the higher performance was observed in the group that used Google's virtual technological tools; Thus, the authors concluded that the use of ICT in the teaching of Medical Sciences promotes high academic performance in students. There are various works focused on the use of technologies at the service of education, some of them are those carried out by (1,2,8-12), works in which the variables related to the application of technology devices at the service of learning, the use of different strategies to enhance academic skills, the interaction with learning and the mechanisms of use of the teacher in front of the development of the classes; this diversification has allowed many adolescents to discover new forms of appropriation of knowledge, interaction with the environment, and approach to technology, making appropriate use of it.

Likewise, investigated the effects of an educational program based on the use of ICT on academic performance and student motivation in the subject of secondary education technology (13). After using a quasi-experimental method, pretest-posttest design with a control group, through questionnaires, it was concluded that initial university training could be significantly improved through a very practical subject, for example:

"A new Master of Secondary Education, in which students will be taught to create multimedia teaching materials for use with ICT in the classroom. This would bring ICT closer to future teachers, who would no longer see them as alien to their work and full of complexity. Their specific uses were analyzed in the field and the advantages that they imply in the performance and motivation of the students would be seen, which could contribute to the improvement of the current and future educational system" (13).

Continuing with the aspects that influence academic performance versus educational technology, it is necessary to mention the research work of (14), who in their study on ICT as tools in the teaching-learning process to optimize performance academic; they analyzed the behavior and reactions of teachers regarding technology and why some do not implement ICT. In this case, questionnaires aimed at both teachers and students were implemented, thus resulting in 77 % of teachers considering that ICT can fulfill a pedagogical function under good direction and planning, indicating that they agree that this help

to improve the classroom environment, with more interactivity, preventing the student from getting tired easily. The authors conclude that teacher training is necessary for the different educational centers, regarding new learning models, so as not to fall into the stagnation of education; these tools strengthen the teaching-learning process and help improve the professional level of the students.

Establishes that several factors are related to the academic performance of the adolescent in school performance, school activities, and the development of their learning (15). They have conducted focused research on the use of technologies and their application in education, and in general describe that the use and impact of information and communication technologies (ICT) allow achieving a cultural acceleration in the spaces in which the subject interacts, allowing improving the processes establishing a quality and equity (16-19).

The study carried out by (20), in which they verified the increase in the academic performance of the students through the implementation of information and communication technologies; efficacy was found in the use of a blog in science education; For data collection, they used to pretest and posttest and a questionnaire to inquire about the usefulness of the blog. The analysis of the results showed little significant differences in both groups for the results of the pretest, and on the contrary, it showed very significant differences for the posttest study, thus indicating the results that the experimental group that had worked on the blog presented higher scores in the posttest than the control group.

Developed a risk identification posture in the use of education-based technologies (7,21-22), describes the impact of ICT in education, recognizing the value of devices that are appropriate in the classroom, achieving positive results in school performance, learning, and adaptation (23). Are some of the authors who in their research describe how the use of mobile phones and applications can be used in favor of academic performance, achieving development of skills in reading, mathematics, social and more basic sciences, physical activity through the implementation of ICT in teaching (13,24-29). Strategies that are confirmed by (5-6,30-32) finding that the academic performance of participating high school students in the use of virtual classrooms is favored.

It is important to mention that, although the majority of the investigations register positive results of the implementation of educational technology compared to academic performance, it is of utmost importance to analyze the variables used in each investigation, since in the educational field it is still necessary to consolidate many aspects related to whit the implementation of technology in education, especially in teaching and training methods for this type of teaching, since the students are mostly digital natives and the teaching function must maintain its guiding and facilitating profile.

The above shows the possibilities offered by using educational technologies in the teaching and learning process and how these tools have become the first option to continue with the educational processes remotely and virtually in the teaching and learning process in the different educational levels due to the COVID-19 pandemic.

It should be noted that, for the Colombian case, the student population that is enrolled in Public Educational Institutions are mostly from strata 1 and 2 and reside in vulnerable sectors and others in dispersed rural areas (33), which that makes it difficult for them to have technological equipment and connectivity to receive classes remotely or virtually and represents the main barrier to access to this study option that has been proposed during the pandemic to prevent the spread of the coronavirus.

METHOD

A correlational quantitative approach was used because it aims to examine or show the relationship between variable or variable results. Salkind (1998 as cited in Bernal, 2010) states that one of the important points regarding correlational research is to examine relationships between variables or their results, but at no time does he explain that one is the cause of the other. In other words, the correlation examines associations, but not causal relationships, where a change in one factor directly influences a change in another.

Participants

The project activities were carried out with students from the fifth grade of the Andrés Escobar Escobar Educational Institution (IEANEE), distributed as follows 5A with 30 students, 5B with 30 students, and 5C with 40 students, for a total of 100 students, of which 60 % of students are female and 40 % male, aged between 9 and 12 years. The total sample selected was 80 fifth grade students.

The selection of sampling oriented from the sampling frame (finite) and quantitative research that determines the group according to characters from the probabilistic type formula, corroborated under the statistical program Decision Analyst STATS 2.0, application procedure, and reliability level of the sample of 95 %.

The sample was calculated using the following formula:

$$n = \frac{NxZa^2xpxq}{d^2x(N-1) + 2_a^2xpxq}$$

Instruments

To identify the educational technologies used by IEANEE fifth-grade students, the authors developed a questionnaire on google, which included informed consent and consent for parents to authorize student participation in the study, and the latter confirmed the intention to participate. The questionnaire collects the following information:

Sociodemographic characteristics of the students such as sex, age, socioeconomic status.

- Access to connectivity or internet service.
- Use of educational technologies. The level of use of technologies such as YouTube, search engines (google academic), blogs, Classroom, Zoom, Hangouts Meet, Whatsapp will be evaluated.
- Frequency of use, hours a day.
- Use of technologies to support mathematical learning.

Personal assessment of technologies to support the academic process during confinement by COVID-19.

The questions used were of the multiple-choice type, with a single answer, which allows the data to be collected and organized accurately to be statistically assessed in their respective analysis and observation, bearing in mind that the research was relational with a quantitative approach.

To measure the academic performance, the marks of the mathematics area corresponding to the first and second academic period of the year 2020 were requested from the IEAEE registration and control area of the students under study.

Process

The directors of the Educational Institution (EI) under study were contacted to present the project and its scope, request permits to carry out the research. Subsequently, parents were contacted through telephone calls, with the information provided by the registration and control areas of EI, parental permits were requested for their children to participate in the study and sign the informed consent and finally, the informed consent of the students was requested to participate in the research. Once this procedure was completed, the instruments were applied virtually, after explanation in a group way through a virtual meeting through zoom. Once the information was obtained, it was organized in Excel tables and the descriptive and inferential statistical analysis was developed.

Data analysis

The data analysis was performed by applying descriptive statisticians, measures of central tendency, variability (analysis of frequency, percentage, standard deviation and mean), subsequently to establish significant statistical differences between the means of the measurements before confinement and During the confinement, the student T-test was applied to a sample and finally, the Pearson correlation coefficient statistician was applied to establish the statistical relationships between the variables: use of educational technologies and academic performance.

Ethical aspects

In the present investigation, the appropriate handling of the information was taken into account to take care of the ethical considerations of this type of study. Among the ethical aspects under consideration are: study endorsed by the ethics committee of the Cuauhtémoc University of Mexico, informed consent and assent, by directors of the institution, parents and research participants, the principle of autonomy with voluntary and anonymous participation, highlighting the confidentiality of the information provided.

RESULTS

Sociodemographic characteristics of the participants

Table 1

Age of the participants

	Age	Frequency	Percentage	Valid Percentage
Valid	8	8	10.0	12.5
	9	32	40.0	50.0
	10	34	42.5	53.1
	11	2	2.5	3.1
	12	0	0.0	0.0
	13	4	5.0	6.3
	Total	80	100.0	100.0

Source: Analysis obtained through descriptive statistics.

Tables 2 and 3, descriptively show the ages of the participants, showing the minimum and maximum ranges, for which we have 8 years as the minimum age and 13 years as the maximum age, we observe the mean which is 10 and the deviation with a value of 2,121. The table specifically shows the frequency of each of the ages found in the participants; obtaining the highest frequency at the age of 10 years. These data helped determine the dominant age group among the sample participants. The data found is presented graphically below.

The sample, corresponding to 80 participants, was applied to the instrument and it was obtained that 50 % corresponds to the female sex and another 50 % to the male sex, being a total of 40 female students and 40 male students.

Regarding the socioeconomic stratum, the data found is shown in table number 4; it is evident that the most frequent stratum is 1, in which 70 students of the sample belong, which represents 87.5 % of the total of the participants, as well as a total of 8 students belonging to stratum 2 corresponding to 10 %, and 2 students for 2.5 % respectively.

Regarding the specific variables of inquiry for this study, different aspects related to the access and use of the Internet by the investigated students were assessed, in this sense, most of the participants reported having access a few times.

Table 2

Age (mean and standard deviation)

Descriptive statistics

	N	Minimum	Maximum	Mean	Typical deviation
Age	80	8	13	10.00	2 121
N Valid (according to list)	80				

Source: Analysis obtained through descriptive statistics.

Table 3

Sex

Sex		Frequency	Percentage	Valid Percentage
Valid	Female	40	50.0	50.0
	Male	40	50.0	50.0
	Total	80	100.0	100.0

Source: Analysis obtained through descriptive statistics.

Table 4

Socioeconomic stratum of the participants

	Socioeconomic stratum	Frequency	Percentage	Valid Percentage
Valid	1	70	87.5	218.8
	2	8	10.0	25.0
	3	2	2.5	6.3
	4	0	0.0	0.0
	5	0	0.0	0.0
	6	0	0.0	0.0
	Total	80	100.0	100.0

Source: Analysis obtained through descriptive statistics.

Table 5

Internet access

Internet Access	Frequency	Percentage
Never	22	27.5
Rarely	40	50.0
Frequently	18	22.5
Permanently	0	0.0
Total	80	100

Source: Analysis obtained through descriptive statistics.

Table 6

Internet use

Internet use	Frequency	Percentage
Online Games	0	0
Social networks and communication	16	20.0
Entertainment. Movies	10	12.5
Academic Search	43	53.75
Academic videos	11	13.75
Total	80	100.00

Source: Analysis obtained through descriptive statistics.

Once the use of the network was investigated, the results indicate that 53.75 % of the participants use the internet to carry out academic searches, while 20 % express their use to enter social networks (Table 6).

Regarding the most widely used technological tools, a significant number of the sample reported that they frequently use YouTube with 41.25 % and search engines such as Google with 31.25 % (Table 7).

Table 7

Technological tools used

Technological tools used	Frequency	Percentage
YouTube	33	41.25
Search engines (GOOGLE)	25	31.25
Blogs	0	0
Zoom	13	16.25
Hangouts Meet	0	0
WhatsApp	9	11.25
Others	0	0
Total	80	100

Source: Analysis obtained through descriptive statistics.

Regarding the frequency of use of the technological tools that the participants reported using, it was found that 66.2 % reported using them every day and a lower percentage, although significant 22.5 % expressed using them between 2 and 3 days per week (Table 8).

Table 8

Frequency of use of technological tools

Frequency use	Frequency	Percentage
Everyday	53	66.25
Between 4 and 5 days a week	9	11.25
2 - 3 days a week	18	22.5
Once a week	0	0
Total	80	100.00

Source: Analysis obtained through descriptive statistics.

Another aspect evaluated is related to the perception that the participants have about the use of technological tools to support mathematical learning, to which 36.2 % reported using technological tools to support their learning processes in the area of mathematics, although another important percentage expressed doing it a few times, a question that shows heterogeneity between its use in the generic group of investigated students (Table 10).

Regarding the use of technological tools by students, they stated that they use them between 1 and 2 hours with 30 %, and between 3 and 4 hours a day in 28.75 %, and another group of participants who expressed use them more than 5 hours a day with 21.25 % (Table 9).

Table 9

Hours of use of technological tools

Hours of use of technological tools	Frequency	Percentage
More than 5 hours a day	17	21.25
Between 3 and 4 hours a day	23	28.75
Between 1 and 2 hours	24	30
Less than 1 hour	16	20
Total	80	100

Source: Analysis obtained through descriptive statistics.

Table 10

Use of technological tools to support the learning of mathematics

Use of technological tools to support the learning of mathematics	Frequency	Percentage
Yes, many times	29	36.25
Yes, frequently	19	23.75
Yes, rarely	27	33.75
Never	5	6.25
Total	80	100.00

Source: Analysis obtained through descriptive statistics.

Regarding the assessment that the participants made on educational technologies as a help and support in mathematical learning, most of them were rated above seven, showing the value they give to these tools as a support for their learning processes (Table 11).

Table 11

Assessment of educational technology and mathematical learning

Assessment of educational technologies as aid and support in mathematical learning	**Frequency**	**Percentage**
1	0	0.00
2	0	0.00
3	0	0.00
4	0	0.00
5	1	1.25
6	0	0.00
7	8	10.00
8	20	25.00
9	16	20.00
10	35	43.75
Total	80	100.00

Source: Analysis obtained through descriptive statistics.

During the current school year, the scores obtained by the participants in the area of mathematics were taken before the mandatory period of confinement that demanded of the schools the compulsory closure of their academic activities in their face-to-face version. When analyzing the academic performance of the students, it is identified that the majority obtained low and basic scores (Table 12).

Table 12

Academic performance in the area of mathematics before confinement

Performance Academic	**Frequency**	**Percentage**
0-30 Very low	0	0
30-64 Low	34	42.5
65-79 Basic	37	46.25
80-90 High	7	8.75
91- 100 Superior	2	2.5
Total	80	100.00

Source: Analysis obtained through descriptive statistics.

During the compulsory confinement and social distancing measures taken by the national government, the institutions resumed school activities in a distance, remote and virtual mode, substantially modifying school dynamics as they had been experienced by all educational actors. The scores indicate a substantial change in academic performance since most of them went up to a basic level and a higher percentage of students were found who scored higher than the data collected before the confinement period (Table 13).

Table 13

During confinement

Academic Performance	Frequency	Percentage
0-30 Very Low	0	0
30-64 Low	12	15.0
65-79 Basic	50	62.5
80-90 High	14	17.5
91- 100 Superior	4	5.0
Total	80	100.0

Source: Analysis obtained through descriptive statistics

The analysis of descriptive statistics on academic performance in the area of mathematics shows a significant increase in the mean of the scores obtained by the participants before and during confinement (Table 14).

Table 14

The difference in means of academic performance before and during confinement

	N	Mean	Standard Deviation	Mean Standard Error
Before confinement	80	64.08	13 263	1 483
During confinement	80	71.33	10 494	1 173

Source: Analysis obtained from the Student t test.

To establish statistical comparisons to determine the differences found in the scores and means referring to the academic performance of the participants was significant, a student T-test was applied to a sample, which showed that the level of bilateral significance was 0.001 is that is, less than 0.05, so it is assumed that the differences found between the scores obtained by the same group at different times are statistically significant (Table 15).

Table 15

The student t-test for a sample

	Proof value = 0					
	T	Gl	Bilateral sig.	Mean difference	95 % confidence interval of the difference	
					Lower	Higher
Before confinement	43 209	79	0.0001	64 075	61.12	67.03
During confinement	60 793	79	0.0001	71 325	68.99	73.66

Source: Analysis obtained from the T student test.

Finally, a correlation analysis was performed between the use of technologies and the academic performance of the students, which showed a moderate positive significant correlation between the assessment that the participants assigned to the technology and the academic performance during the confinement. On the other hand, moderate and slight negative statistically significant correlations were found between students' academic performance and hours of use, as well as tools for learning mathematics. Given the above, it is worth considering that the greater the number of hours, the lower the scores, which can be analyzed in relation to another of the questions asked in the questionnaire and which showed that a significant percentage dedicated these hours to browsing social networks (Table 16).

Table 16

Correlation between variables

			Hours of use	Mathematical tools assessment	Technology
Academic performance confinement	before	Pearson Correlation	-0.247*	-0.148	0.175
		Sig.	0.027	0.189	0.12
Academic performance confinement	during	Pearson Correlation	**-0.311****	**-0.430****	**0.420****
		Sig.	0.005	0	0
		N	80	80	80

*P<0.05 level (bilateral); **P<0.01 (bilateral)

Source: Analysis obtained from the Student t-test.

DISCUSSION

The current challenges to which society is confronted are undeniable, and in the case of study, education. This implies transforming the habitual frameworks of the teaching-learning processes, without disfavoring the proposed objectives, and at the same time favoring the development of academic competencies. The results evidenced in the study warn the following:

First, they point out the potential use of technology-mediated learning, that is, how digital resources facilitate the teaching-learning relationship as alternative means to the usual framework of face-to-face teaching, that is, that in an openly digital generation, Digital resources can enhance student learning and the acquisition of academic knowledge and skills. This, taking into account the achievements obtained in academic performance, which went from 64.08 % (pretest) to 71.33 % (posttest) in the general study population. This change is also evident in the quality of the performance, since, in the pretest, 42.5 % were in low performance, and in the posttest, the low performance obtained only 15 %. In other words, 27.5 % of the students with low performance increased their performance, with respect to their performance, and the use of digital technologies and resources.

Likewise, the basic performance, during the pretest had 46.25 %, while in the posttest it was found 62.5 %, that is, an increase of 16.25 % in the quality of the general performance thanks to the use of digital technologies and resources. Similarly, high performance during the pretest obtained 8.75 %, while 17.5 % was found in the post-test evaluation, that is, an increase of

100 % in this category, thanks to the use of digital technologies and resources.

This suggests that the frequent use of digital technologies and resources favors teaching-learning and enhances academic performance. This is noted, thanks to the fact that the quality of performance, in general, went from being low-basic 88.75 % in the pre-test, to being high-80 % in the posttest. Thus, the low performance was the one that decreased the most, while high performance was the most evident, with an increase of 100 % compared to the pretest. In this sense, the conclusions of (1-3,34,35) are confirmed.

Secondly, it stands out, the student's willingness to learn through technological resources, that is, because 88.75 % of the participants consider the importance of educational technologies as aid and support in learning, rating their value among 8 and 10. Likewise, 88.75 % report the use of technology for academic processes such as academic searches (31.25 %), academic videos / YouTube (41.25 %), or zoom (16.25 %). Thus, 60 % of the participants report they used technological tools to support learning. In other words, the teaching-learning relationship is enhanced when learning is mediated through digital resources, while it can be inferred that student participation in their learning process since it self-manages their digital resources.

Thirdly, the time and quality of the use of digital media suggest that the potential of the digital resource lies in its usefulness, not in its quantity, although 66.2 % stated that they use digital media every day, their daily use. It ranges from 1 to 4 hours 58.75 %. That is, "daily" is not synonymous with "all day", but its use is related to the quality of the search and the effectiveness of the use, that is, to the specific search in relation to academic processes as suggested in 88.75 % about its use, indicated above. Furthermore, since internet access, according to the participants, is 50 % a few times, and 22.5 % frequently, it is valid to argue that such condition is related to the quality of the use of technologies, that is, how much the more limited the access, the more specific is the academic search.

The above, then, confirms the findings of (4-7,13-14,20), about the means, resources, motivation, and academic performance from the use of technologies, in short, it is established that the technological means in middle education can enhance academic performance based on student participation, search quality, and time spent on resources.

Author contributions

MC-M. Carried out the theoretical framework, the methodology; **LC-T** performed the statistical analysis and presented the results; **GO-L** and **PM-P** did the data collection; **VB-A** wrote the discussion.

Funds

An article resulting from research carried out by the Fundación Universitaria del Área Andina - Valledupar and the InstituciónEducativa Andrés Escobar Escobar.

Conflict of interest

The authors declare that they have no conflict of interest within the manuscript.

REFERENCES

1. García S, Cantón I. Use of technologies and academic performance in adolescent students. Communicate. Sci Educommun. 2019;27:123-135.
2. Garrido M, Gómez G, Márquez M, Lagar L, Garrido S. Impact of digital resources on learning and development of analysis and synthesis competence. Educ Med. 2018;20:74-78.
3. Chasco C, Pumarada M, Contreras J. Role of ICT in academic performance: An application with models of structural equations. Appl Economics. 2017;16:76-94.
4. García A, Tejedor FJ. Students' perception of the value of ICT in their learning strategies and their relationship with performance. Education XXI. 2017;20:137-159.
5. Loza J Salinas V, Glasserman L. Academic performance of high school students who participate in the digital classroom program. Edmetic, Magazine of Media Education and ICT. 2017;6:60-80.
6. Pino S. Effects of the use of didactic teaching strategies and educational resources mediated by ICT

technologies, selected in the light of the diagnostic evaluation of the apprentice, on the academic performance and motivation of apprentices of technologist-level programs at the CTPI center of the Sena Regional Cauca. 2017. (Undergraduate work / undergraduate thesis).

7. González K, Tovilla C, Juárez I, López M. Use of information technology in academic performance based on a Mexican population of medical students. Higher Medical Education. 2017;31:1-10
8. García A, Muñoz V. Educational technology: Characteristics and evolution of a discipline. Pedagogical Education Magazine. 2010;14:67-87.
9. Cortés O, Pinto A, Atrio I. E-portfolio as a constructionist tool for active learning in educational technology. Lasallian Res Magazine. 2015;12:36-44.
10. Forero F. Interaction of students and teachers with ICT in rural schools in Valledupar. 2015. Master's thesis, Tecnológico de Monterey, EGE, Graduate School of Education.
11. Espinoza C. Learning strategies implemented by sixth-grade students from the use of computers and the Internet in a 2: 1 model, to support curricular learning processes in science and social studies. Education. 2015;39:124-138.
12. Flórez M, Aguilar A, Hernandez Y, Salazar J, Pinillos J, Pérez C. Knowledge society, ICT and its influence on education. Spaces Magazine. 2017;38:39.
13. Huertas A, Pantoja A. Effects of an educational program based on the use of tic on the academic performance and motivation of students in the subject of technology in secondary education. Education XXI. 2016;19:229-250.
14. Pacheco F, Villacís C, Álvarez P. ICT as tools in the teaching-learning process to optimize academic performance. UPSE Pedag Sci Innov Magazine. 2016;3:15-16.
15. Álvarez A, Suárez N, Tuero E, Núñez JC, Valle A, Regueiro B. Family involvement, adolescent self-concept and academic performance. Eur J Invest Health Psych Educ. 2015;5:35-48.
16. Palma-Gómez A, Herrero R, Baños R, et al. Eficacia de un programa en línea autoaplicado para promover la resiliencia y las habilidades de afrontamiento en estudiantes universitarios en cuatro países de habla hispana: protocolo de estudio para un ensayo controlado aleatorizado. BMC Psychiatry. 2020;20:148.
17. Amorós L. Impact of the use of new technologies in socio-educational processes. CINEMATIC as experience. RELATEC, Latin Am J Educ Technol. 2016;15:123-140.
18. Angulo J, Vales J, Oswaldo C, García R. Theories that support educational technology. 2015.
19. Brito R, Diaz P. Digital technology, learning and education; practices and perceptions of children under 8 years and their parents. Essays, Magazines of the Faculty of Education of Albacete. 2016;31:23-40.
20. Rojano S, López M, López G. Development of information and communication technologies to reinforce the teaching and learning processes in science in the degree of teacher in early childhood education at the University of Malaga. Chem Educat. 2016;27:226-232.
21. Gómez D. Technology-based educational innovation. Science, Technology and Health. 2016;2:102-106.
22. Alfaro González M, Vázquez Fernández M, Fierro Urturi A, Herrero Bregón B, Muñoz Moreno MF, Rodríguez Molinero L. Uso y riesgos de las tecnologías de la información y comunicación en adolescentes de 13-18 años. Grupo de Educación Para La Salud de la AEPAP. MEDES, Medicine in Spanish. Acta Pediát Española. 2015;73(6):e126-e135.
23. Hernandez R. Impact of ICT in education: Challenges and Perspectives. Purposes and Representations. 2017;5:325-347.
24. Herrera B, Aquilea G, BuenAbab M. The use of mobile phones, applications and their academic performance in DES DACI students. Iberoame Magazine Educat Res Develop. 2015;12:1-18.
25. Hung E. Towards the promotion of ICT in the educational sector in Colombia. 2015.
26. Islas C. The implication of the TIC in the education: Scopes, Limitations and Prospective. Iberoam Magazin Educat Res Develop, RIDE. 2017;8:1-16.
27. López K, López J. Mathematics education and technologies used to teach mathematics. Educational research and innovation electronics. 2018:56-62.
28. Puig G, Llamas F, Potolés A. Relationship between information and communication technologies with academic performance and the practice of physical activity in primary education. Innovation and multimedia teaching. 2015;32:1-10.
29. Ruiz F. Tic in early childhood education: a training proposal in the didactic subject of mathematics based on the use of technology. DIM Magazine. Didactics, innovation and Multimedia. 2016;33:1-18.
30. Cochrane T, Antonczak L. Implementing a Mobile Social Media Framework for Designing Creative Pedagogies. Soc Sci. 2014;3:359-377.
31. Sunkel G. Information and communication technologies (ICT) in education in Latin America. An exploration of indicators. Social politics. Santiago de Chile: United Nations CEPAL. 2016.

32. Pacheco F, Villacís C, Álvarez P. ICT as tools in the teaching-learning process to optimize academic performance. UPSE, Pedag Sci Innov Magazine. 2016;3:15-16.
33. Stornelli N. El atraso tecnológico que mostró el coronavirus. El Tiempo. 2020:14-15.
34. Pisarenko V. Teaching a Foreign Language Using Videos. Soc Sci. 2017;6:125.
35. Gualdrón-Ortiz DP, Cudris-Torres L, Barrios–Núñez Á, Olivella-López G, Bermúdez-Cuello JC, Gutiérrez-García RA. El ava como estrategia didáctica en la enseñanza del pensamiento lógico - matemáticas. Arch Ven Farmacol Ter. 2020;39(3):257-262.

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S350-S358
DOI: 10.47307/GMC.2020.128.s2.21

Cultura de paz en la pandemia por SARS-COV-2: confinamiento, tics y las redes sociales

Jesús David Navarro Rodríguez[1a], Oscar Medina-Ortiz[1,3], Cleiver Andrade Fossi[2], Maricarmen Chacín González[4], Valmore Bermúdez[1]

RESUMEN

Súbitamente nuestro planeta ha quedado atrapado en una pandemia que todo el mundo esperaba pero para la cual casi nadie estaba preparado. Esto ha desencadenado una crisis mundial sin precedentes y ha dejado casi 25 millones de casos y un millón de fallecidos, sin mostrar signos de disminución. La incertidumbre y el aislamiento de la pandemia han provocado un temor y una ansiedad generalizados, en particular, en los países con sistemas de salud inadecuados que no tomaron en serio este brote. A pesar de este panorama sombrío, los desastres naturales han dado lugar —en algunas ocasiones— a una disminución de los conflictos internos en algunos países, ya que muchas veces las facciones en lucha se ven obligadas (por extrema necesidad) a trabajar juntas, o al menos, a descender el grado de conflictividad para centrarse en la preservación o la reconstrucción de sus localidades. Hay indicios de que algunos gobiernos tratan de aliviar las tensiones políticas a la sombra de la COVID-19.

Las redes sociales y la internet han sido las grandes protagonistas durante la pandemia por COVID-19. En los últimos años estas herramientas han proporcionado un "mapa en tiempo real" de lo que acontece en cualquier parte del mundo. El presente artículo pretende ofrecer una perspectiva psicológica en torno a la crisis causada por la pandemia y de la necesidad de un cambio en las interpretaciones localistas hacia la unión y la solidaridad mirándonos como una cultura o aldea global. Igualmente se analiza el posible papel de la internet y las redes sociales en la construcción de esta nueva forma de ver nuestra civilización.

Palabras clave: *COVID-19, SARS-CoV-2, cultura de paz, resiliencia, pandemia.*

SUMMARY

Suddenly, our planet has been caught in a pandemic that everyone expected but for which no one was prepared. This situation has triggered an unprecedented global crisis, leaving nearly 25 million cases and one million deaths with no sign of abating. The uncertainty and isolation have led to widespread fear and anxiety, particularly in countries with inadequate health systems

DOI: https://doi.org/10.47307/GMC.2020.128.s2.21

[1]Universidad Simón Bolívar, Facultad de Ciencias Jurídicas y Sociales, Cúcuta, Colombia.
[2]Universidad Simón Bolívar, Facultad de Ingenierías, Cúcuta, Colombia
[3]Universidad de Los Andes, Facultad de Medicina, San Cristóbal, Venezuela
[4]Universidad Simón Bolívar, Facultad de Ciencias de la Salud, Barranquilla, Colombia
[a]Joven investigador. Programa Jóvenes Investigadores e Innovadores. Sistema Nacional de Ciencia, Tecnología e Innovación -SNCTI. Colombia.
[1a] e-mail: J_navarro2unisimon.edu.co Orcid: https://orcid.org/0000-0002-9036-6262
[1,3]e-mail: o.medina@unisimonbolivar.edu.co Orcid: https://orcid.org/0000-0002-2472-1238
[2]e-mail: c.andrade@unisimonbolivar.edu.co; Orcid: https://orcid.org/0000-0002-1984-8453
[4]e-mail: m.chacin@unisimonbolivar.edu.co; Orcid: https://orcid.org/0000-0002-5208-9401
[1] e-mail: v.bermudez@unisimonbolivar.edu.co; Orcid: https://orcid.org/0000-0003-1880-8887
Correspondencia: Valmore Bermúdez Pirela. Universidad Simón Bolívar, Av 3 No. 13-34 La Playa. Cúcuta, Norte de Santander, Colombia. correo electrónico: v.bermudez@unisimonbolivar.edu.co

Recibido: 21 de agosto de 2020
Aceptado: 16 de octubre de 2020

that did not take this outbreak seriously. Despite this bleak picture, natural disasters havedecreasedinternal conflicts in some countries, as warring factions are often forced (out of extreme necessity) to work together, or at least to lower the level of conflict to focus on the preservation or reconstruction of their localities. There are indications that some governments are trying to ease political tensions in the shadow of the COVID-19. Social networks and the Internet have been great protagonists during the COVID-19 pandemic. In recent years these tools have provided a "real-time map" of what is happening in any part of the world, however, as well as allowing the distribution of valid information that contributes to the prevention and containment of the disease and contagion, it can also be used to issue false information, which ends up spreading concern and anxiety, even faster than the virus itself. This article aims to offer a psychological perspective on the crisis caused by the pandemic and the need for a change in localist interpretations towards unity and solidarity by looking at us as a global culture or village. It also analyzes the possible role of the Internet and social networks in the construction of this new way of seeing our civilization.

Key words: *COVID-19, SARS-CoV-2, peace culture, resilience, pandemic.*

INTRODUCCIÓN

Súbitamente el planeta ha quedado atrapado en una pandemia que todo el mundo esperaba pero para la cual casi nadie estaba preparado. Esto ha desencadenado una crisis mundial sin precedentes y ha dejado casi 800 000 fallecidos y 23 000 000 de casos para el momento de escribir estas líneas (1). La pandemia no muestra signos de disminuir y las evaluaciones más recientes proyectan decenas de miles de muertes más antes de que desaparezca. La incertidumbre y el aislamiento de la pandemia han provocado un temor y una ansiedad generalizados, en particular entre los países con sistemas de atención de la salud inadecuados que no tomaron en serio este brote, especialmente, al momento de su inicio en la ciudad de Wuhan, China, a principios de diciembre de 2019 (2). De hecho, la magnitud y velocidad de la propagación de la infección es tal que ya el 13 de marzo de 2020, la OMS declaró al continente europeo como el centro de la pandemia (3). Durante la primera ola de esta epidemia, algunos países de Europa y EE.UU. informaron un número desproporcionado de infectados y muertos, particularmente, en España e Italia las cuales superaron a las observadas en China. En este momento, la carga más grande recae sobre Norteamérica y América Latina, particularmente en países como Brasil, Chile, Ecuador y Perú donde la epidemia se ha expresado con un enorme potencial destructivo (4).

La enfermedad por Coronavirus del 2019 (COVID-19) es una enfermedad altamente contagiosa causada por un coronavirus (SARS-CoV-2) que produce una enfermedad respiratoria aguda que puede cursar hacia una forma severa en el 10% de los casos y que se propaga de forma directa de humano a humano o a través de fómites (2). La pandemia de COVID-19 representa eventos muy complejos, en su origen, su propagación, sus efectos y sus consecuencias a nivel médico, social, político, económico, religioso y cultural. De esto se desprende que los efectos de esta crisis escapan a cualquier campo del conocimiento humano, pues no se trata solo de un virus que infecta a personas a nivel global, sino que esta característica de ubicuidad produce múltiples variaciones provenientes de cada cultura en el planeta (5,6). De hecho, dentro de un mundo con grandes desequilibrios y conflictos vemos que la actual pandemia está causando estragos en los estados frágiles, poniendo a prueba los sistemas nacionales e internacionales de salud y de gestión de crisis. Sus consecuencias son especialmente graves para quienes se ven atrapados en medio de un conflicto, especialmente si la evolución de la pandemia llegase a interrumpir los canales de ayuda humanitaria (7-9).

A pesar de este panorama sombrío, los desastres naturales han dado lugar —en algunas ocasiones— a una disminución de los conflictos internos en algunos países, ya que muchas veces las partes rivales se ven obligados (por extrema necesidad) a trabajar juntas, o al menos, a descender el grado de conflictividad para centrarse en la preservación o la reconstrucción de sus localidades. Hay indicios de que algunos gobiernos tratan de aliviar las tensiones políticas a la sombra de la COVID-19; por ejemplo, los Emiratos Árabes Unidos (EAU) y Kuwait han ofrecido asistencia humanitaria a Irán (10), o en el caso de Venezuela, hemos observado los primero pasos hacia una posible alianza parcial entre el gobierno *de facto* y la oposición para permitir la gestión y el ingreso de ayuda humanitaria (11).

Si bien es probable que la pandemia empeore algunas crisis a nivel internacional, también puede crear ventanas para mejorar otras.

¿Estamos en capacidad de actuar como una sociedad planetaria?

Si asumimos que la pandemia de COVID-19 se extenderá por lo menos durante los próximos 8 a 12 meses es probable que la enfermedad se siga extendiendo hacia los países pobres y hacia aquellos afectados por conflictos bélicos (12-16). De hecho, la COVID-19 ha afectado fuertemente a los Estados Unidos de Norteamérica (EUA), China, Corea del Sur, España e Italia a pesar que estos países tenían una buena cantidad de recursos para gestionar el problema por lo que es de prever que países con menos recursos enfrentarán una grave crisis de salud al incrementarse el número de casos (17-19). Este escenario implica la necesidad de una investigación científica rigurosa en cada entorno de forma que las instituciones de atención médica, los gobiernos, la ONU, la OMS y otras organizaciones internacionales modifiquen, perfeccionen o re-adapten sus estrategias para ser más exitosos en el manejo de la pandemia, pues estas se controlan sólo cuando las personas aceptan comportarse de una manera muy específica (20). Por ejemplo, si las personas por diversos motivos se niegan a practicar medidas preventivas y de protección, la pandemia empeorará. Por esto, la psicodinámica social, política y grupal también es estratégica pues podría ayudar al pretender conocer cómo reaccionan y cooperan la comunidad y el gobierno, especialmente en un entorno signado por conflictos armados.

Si miramos hacia atrás, en los últimos diez siglos de nuestra historia las causas más importantes de sufrimiento humano han sido las enfermedades infectocontagiosas y la violencia (en sus más variadas expresiones). Por lo tanto, el desafío que tenemos en este siglo implica una profundización del diálogo como una sociedad planetaria que prime los intereses de nuestra supervivencia a largo plazo como especie y ponga a la disposición de todos algunos avances tecnológicos básicos que permitan un fuerte desarrollo de la salud pública global en lo concerniente a las enfermedades prevenibles por vacunas, saneamiento ambiental, acceso a agua potable y alimentos de calidad y la resolución de conflictos sin violencia (21-22). Si la base para la salud mental de un pueblo radica en la existencia de relaciones humanizadoras y del reconocimiento de la humanidad y libertad personal del individuo, este es un momento clave para tomar conciencia de la necesidad de este proceso y a futuro, será posible entonces la construcción de una sociedad mejor y más justa (21-24).

El mensaje crucial es que debemos reexaminar nuestra comprensión básica de cómo la sociedad humana y el mundo global operan desde el enfoque científico multidisciplinario y transdisciplinario. Las ciencias de la conducta podrían ayudar a avanzar en la construcción de una sociedad compasiva y una civilización empática que sería más eficaz para prevenir y superar las epidemias y otras amenazas globales para la humanidad. La supervivencia de la humanidad dependerá de cómo nos relacionemos a nivel familiar, estatal y mundial. La promoción de la salud mental global está relacionada con la promoción del yo humanista y la civilización empática, así como la promoción de la salud mental pública está relacionada con la promoción de la sociedad compasiva. Probablemente no sea posible crear un mundo perfecto, pero no hay límite para mejorarlo si utilizamos el conocimiento científico integrador transdisciplinario y creamos mentes humanistas globales.

Una mejor comunicación: **Una lección que aprender de esta pandemia**

Estos tiempos de incertidumbre, desinformación y manipulación que han asaltado a las redes sociales y a los medios en general, lleva a plantearnos la necesidad de construir un enfoque cooperativo, integrador, transdisciplinario y global. Es probable que esta crisis sacuda la geopolítica y cambie la forma en que usamos la tecnología y finalmente, nos obligue a redefinir nuestras prioridades para poder prepararnos adecuadamente contra nuevas crisis. El miedo causado por la gravedad de la enfermedad, el encierro por una estricta cuarentena, el toque de queda, los castigos, la desconfianza hacia los funcionarios que han manejado mal la situación y las redes sociales desbordantes con desinformación han afectado la salud mental individual y colectiva. Es por esto, que una lucha

exitosa contra las pandemias futuras debe incluir un mejor estudio sobre los aspectos psiquiátricos y psicológicos en entornos pandémicos desde la perspectiva de la salud mental pública y de las formas en las que el ser humano se comunica en entornos con alcance global. En una crisis como esta las personas son propensas a descubrir potenciales de resiliencia ocultos de altruismo, empatía, confianza, amistad y ayuda mutua (25).

Las diferentes culturas tienen características y mecanismos propios que determinan cuánto pueden resistir los efectos negativos (26). Las sociedades resilientes, como las familias resilientes, dependen de la capacidad de sus miembros para crear y mantener buenas relaciones basadas en la dignidad humana, el respeto, la cooperación y la empatía (27). La psicología muestra que la empatía actúa como un cemento social que aumenta la cohesión y la cooperación entre los individuos, las comunidades y las sociedades. Debido a la pandemia de COVID-19, muchas personas tienen miedo, ansiedad, pánico, enojo, incertidumbre, depresión y falta de confianza en su liderazgo nacional (28). Sin embargo, frente al lado oscuro del egoísmo, el individualismo y la desunión todos hemos sido testigos de las imágenes de solidaridad, altruismo, empatía de los trabajadores de la salud que han demostrado un compromiso y sacrificio increíble con sus pacientes, a veces en condiciones apocalípticas y poniendo en peligro sus vidas (29,30). Son alentadores los ejemplos de solidaridad internacional, con el intercambio de recursos, información y experiencia de países más avanzados en la epidemia, o con mejores resultados en el control de la propagación (4). En una pandemia, los mejores enfoques y medidas son aquellos que protegen a todos los miembros de la población y promueven la resiliencia colectiva y la antifragilidad. Ahora es el momento adecuado para ver una oportunidad para elevarse y hacer del mundo un lugar mejor para avanzar y comenzar a promover relaciones basadas en la educación, la confianza, la consideración, la empatía y el buen liderazgo. El concepto de seguridad sanitaria mundial representa una nueva determinación de, o en nombre de, la sociedad humana para protegerse del impacto en la salud y la interrupción social causada por brotes de enfermedades infecciosas (31).

Para vencer una epidemia, las personas deben confiar en los expertos científicos, los ciudadanos deben confiar en las autoridades públicas y los países deben confiar entre sí. Sin solidaridad global, empatía, confianza, cooperación y unidad, la humanidad será víctima de pandemias como COVID-19, e incluso peores. Estamos acostumbrados a pensar en la salud pública en términos nacionales, pero ahora está bastante claro que debemos pensar juntos en términos de salud global y salud mental global. Ahora enfrentamos dos opciones para el futuro: El primero es la vigilancia totalitaria con castigos severos, y el otro es la solidaridad global basada en la sociedad compasiva y la civilización empática, que en este momento parece un sueño: educar, cultivar y empoderar a las personas hacia un espíritu humanista.

¿Qué podemos aprender de la crisis de COVID-19 para lograr un futuro mejor?

La COVID-19 es una lección cruel pero crucial para el futuro de la humanidad que nos recuerda la conciencia de los humanos como parte de la Tierra. Ahora tenemos la oportunidad de crear una nueva narrativa para hacer que el mundo y la vida sean sostenibles y valiosos. La COVID-19 nos muestra que sólo los esfuerzos colectivos nacionales, internacionales y globales pueden convertir los juegos de suma cero en juegos de suma positiva. La ciencia y la tecnología son un esfuerzo colectivo y esta pandemia ha revivido el sueño aún utópico sobre la ciencia abierta, donde los datos de investigación se comparten libremente a través de Internet (32-34). Este sueño solo se puede lograr dentro de una sociedad y civilización global empática que permitan que las instituciones y las reglas de regulación puedan cambiarse. El falso dilema entre los dos sistemas morales relacionados con la autocracia y la democracia ha permitido la aparición o de un sistema moral que obliga de obedecer a las autoridades y que enfatiza los deberes sobre los derechos o de otro que pone los derechos antes que los deberes (35). En realidad, la respuesta debe presentar un enfoque en el que los derechos, asociados con los deberes (dentro de la sociedad global y una civilización empática), unidos a la política, la ciencia, las religiones y las personas trabajen de forma mancomunada

pues todos tienen el deber moral de respetar la vida y protegerse a sí mismos, a los vecinos y a la comunidad.

El confinamiento y el miedo como amenaza a la cultura de paz ¿Qué podemos hacer?

El concepto de una cultura de paz surge del estudio de cómo las diferentes sociedades desarrollan una diversidad de arreglos culturales para resolver el problema de cómo las personas pueden vivir unas con otras y hacer frente a los desafíos ambientales. El preámbulo de la constitución de la UNESCO plantea que una paz basada exclusivamente en los arreglos políticos y económicos de los gobiernos no sería una paz que pudiera asegurar el apoyo unánime, duradero y seguro de los pueblos del mundo, y que, por lo tanto, la paz debe fundarse sobre la solidaridad intelectual y moral de la humanidad (36).

Muchos autores han trabajado intensamente sobre el tema de resolución de conflictos por vías no violentas introduciendo el concepto del desarrollo de una cultura de paz mediante la educación (37). Las definiciones —en términos de seguridad nacional— reflejan esencialmente el aspecto bélico de las culturas, mientras que las definiciones más amplias de seguridad humana reflejan la conciencia de la interdependencia, que es una de las característica más llamativas de las culturas de paz. De hecho, en su alcance más amplio, el concepto de seguridad humana refleja una idea de paz que implica la ausencia de violencia (38). En este caso, la violencia se concibe como cualquier influencia que impide que los humanos desarrollen su potencial; este enfoque intenta proporcionar una perspectiva desafiante para lograr un mundo más humano y una paz positiva que caracteriza un aspecto crucial de una cultura de paz. Dado que el concepto de seguridad humana tiene la ventaja de estar delimitado a una necesidad humana común, así como un aspecto pragmático atractivo al sentido común podría considerarse más útil para caracterizar el objetivo de aquellos que desean promover la mejora humana.

La ventaja del concepto de una cultura de paz es que llama la atención sobre el hecho de que la seguridad requiere más que un estado benigno y que depende casi obligatoriamente de la forma de cómo las personas se relacionan entre sí, y proporciona una visión del "cómo" deberían ser estas relaciones. Por lo tanto, parece importante desarrollar ambos conceptos y relacionarlos sistemáticamente entre sí, y aunque la seguridad dentro de un estado-nación podría lograrse temporalmente sin una cultura de paz, pareciera que la seguridad humana general depende de la presencia de una cultura de paz, donde el rechazo de la violencia es abordado directamente por la base educativa y está implícito en la promoción de los derechos humanos y la igualdad de género. Puede observarse entonces cómo desde este enfoque se pueden abordar las causas profundas de los conflictos, las bases del desarrollo sostenible, la solidaridad tolerante y la seguridad internacional, mediante el diálogo y la negociación desde la educación, la comunicación abierta y la participación democrática.

¿Pueden las redes sociales ayudar a mantener una cultura de paz en tiempos de COVID-19?

Las redes sociales y el internet han sido los grandes protagonistas durante la pandemia por COVID-19. En los últimos años estas herramientas han proporcionado un "mapa en tiempo real" de lo que acontece en cualquier parte del mundo (39), sin embargo, así como pueden permitir la distribución de información válida que contribuya en la prevención y contención de la enfermedad y los contagios, también puede ser utilizado para emitir información falsa, que termina diseminando la preocupación y la ansiedad, aún más rápido que el mismo virus (40). Pero no solo eso, el uso dado a las redes sociales ha podido generar un sentimiento de racismo y estigma en diferentes aspectos, por ejemplo, desde el inicio de esta pandemia de COVID-19 han jugado un papel integral en la génesis del sentimiento anti-chino en todo el mundo (41). La teoría de la conspiración, los titulares despectivos sobre los hábitos alimentarios, los comentarios prejuiciosos sobre las normas socioculturales chinas publicados en las redes sociales y los medios de comunicación que han llevado a la discriminación, el aislamiento de toda una nación y el estallido del racismo, son solo algunas de las consecuencias del uso inadecuado de estas, contrario a lo que deberíamos considerar como una cultura de paz (42). La estigmatización por

el temor al contagio no tardó mucho tiempo en generalizarse, hasta llegar al personal de salud, quienes laboran para atender a los pacientes que sufren esta enfermedad, de manera que los médicos y enfermeras han llegado a ser discriminados y hasta agredidos en medio de su frustración, por familiares de pacientes fallecidos (43). Todo esto lleva a pensar, sin lugar a dudas, que el uso de las redes sociales está mal orientado. De manera que si pueden ser utilizadas para generar estigma, racismo y odio, también lo pueden ser para exaltar la solidaridad, generosidad, comprensión, tranquilidad o paz entre los ciudadanos. No es inusual encontrar mensajes solicitando medicinas para pacientes enfermos de COVID-19 o también, grupos de personas poniéndose de acuerdo para ayudar al personal de salud con sus almuerzos o equipos de bioseguridad, facilitando así su desempeño.

Los organismos de salud de cada uno de los países promueven los métodos de prevención contra la infección a través de sus páginas en internet, pero no ocurre lo mismo, o por lo menos no con la misma intensidad, con la difusión de los mensajes de ayuda entre los ciudadanos. Recientemente el secretario general adjunto del Departamento de Operaciones de Paz de la ONU, Jean-Pierre Lacroix declaró a través de sus páginas Web que las operaciones de mantenimiento de la paz deben continuar con su trabajo esencial y mantener la capacidad operativa, de modo que se pueda cumplir con los mandatos de salvar vidas, promover la resolución de conflictos y ayudar a proteger a las poblaciones a las que sirven (44). También solicitaron un alto al fuego mundial inmediato de todos los conflictos**,** facilitar el acceso humanitario y dedicar sus esfuerzos a la prevención y mitigación de la diseminación del COVID-19. En su mensaje, valiéndose de la tecnología deja claro que las incursiones militares podrían trasladar el virus de un lugar a otro, siendo perjudicial para los dos bandos y el resto del planeta.

Sin embargo, muchos países o sociedades sometidas a violencia son justamente aquellas en las que el acceso a las nuevas tecnologías se encuentra limitada, ya sea, por una precariedad económica entre los usuarios o porque los servicios de energía eléctrica y de internet no funcionan adecuadamente, para ellos, las reuniones presenciales eran la mayor fortaleza, y ahora con las medidas de distanciamiento social sugeridas por la OMS, los encuentros entre sus miembros han disminuido hasta el punto de perder el impulso y la continuidad alcanzada anteriormente a través del esfuerzo en conjunto. No se puede permitir por lo tanto, en beneficio de la paz, que mucho esfuerzo ha costado, la pérdida de las metas alcanzadas y es indispensable la colaboración de las naciones con mayor poder económico y ONGs, para obtener servicios accesibles de tecnologías de última generación que permitan mantener activo el deseo de trabajo de las instituciones promotoras de paz, sobre todo al tomar en consideración que la situación de pandemia y de aislamiento social no se resolverá en un futuro cercano.

Por otro lado, se debe tomar en consideración que la paz no consiste únicamente en la ausencia de violencia. Para 1974, la UNESCO declara en su resolución 11.1 (45) lo siguiente:

"La paz no puede consistir únicamente en la ausencia de conflictos armados, sino que entraña principalmente un proceso de progreso, de justicia y de respeto mutuo entre los pueblos, destinado a garantizar la edificación de una sociedad internacional en la que cada cual pueda encontrar su verdadero lugar y gozar de la parte de los recursos intelectuales y materiales del mundo que le corresponde y que, la paz fundada en la injusticia y la violación de los derechos humanos no puede ser duradera y conduce inevitablemente a la violencia".

Esto implica que la paz debe construirse en la cultura y en la estructura y no sólo en la "mente humana". No basta reconstruir solo la paz después de un conflicto bélico, sino que deben buscarse alternativas para transformar las estructuras y las raíces de las mismas que se encuentran en la propia cultura (46).

Se considere apropiado o no, la información hoy en día se transmite de manera vertiginosa a través de las redes sociales más que por ningún otro medio. Se podría construir una analogía con los comentarios que en el siglo pasado viajaban de boca en boca, pero ahora lo hacen prácticamente en tiempo real y, aun cuando la primera impresión pareciera ser una apología a la desgracia y a la violencia, es justo también reconocer que son redes sociales por la paz, en las que los usuarios muestran diariamente su

sensibilidad y preocupaciones ante los hechos violentos. Casi de inmediato, tras cualquier catástrofe o forma de violencia, estas redes sociales acogen la reacción de la ciudadanía. Son canales de rechazo automático ante la barbarie, donde también surgen iniciativas de colaboración y cooperación más allá de las fronteras. Estas redes generan contenidos y relaciones que actúan en una dirección más bien positiva, y la mayoría de las veces casi sin que se note. No se puede estar contra ellas y más bien, se debe aprovechar su fuerza de difusión para convertirlas en aliados en la promoción de la cultura de la paz, por lo que la principal tarea se basa en la orientación en su forma de verles y del contenido, para que los usuarios puedan discernir con propiedad entre el material correcto y el falso.

Las redes sociales proporcionan una sensación de proximidad real entre los usuarios, esto quiere decir que generan una atención a eventos que de otra manera parecerían lejanos e impersonales. De ahí que esa aportación por la paz sea indiscutible. Nada de lo humano es ajeno y gracias a las redes sociales ningún humano puede ser ajeno. Es una herramienta cuyo potencial de conexión y vinculación es enorme si se le imagina en favor de la paz, la justicia, la igualdad, la sostenibilidad, la educación, la solidaridad y la dignidad de las personas. Ante cada hecho de violencia los usuarios desarrollan una campaña de solidaridad que mantiene la atención en favor de la paz y empatía con las víctimas, inundando las redes con mensajes optimistas y llenos de esperanza. De esta manera se establecen hilos de opiniones siempre en rechazo a la violencia y, aparecen personajes que toman la bandera de promover la paz, ganando seguidores a diario (47).

Las organizaciones encargadas de velar por la paz deben aprovechar que la estructura tecnológica está presente, que cada día parecen brotar nuevas redes sociales y, que hay quienes ya han tomado el liderazgo en la promoción de la paz y la lucha contra la violencia con un gran número de personas que les siguen, para generar sitios Web en los diferentes portales de internet, que les permita acompañar a todos en el camino constante de mantener la paz, realizar encuentros virtuales, educar a la ciudadanía, acompañar a las víctimas, pero sobre todo, intentar que estas redes se encuentren al alcance de la mayor cantidad posible de usuarios, no solo para esta época de pandemia, sino para un trabajo perdurable que pueda seguir siendo un punto de apoyo, una vez que se retorne a la normalidad social.

REFERENCIAS

1. Worldometer. Coronavirus Cases. Worldometer. 2020:1-22. Available from: https://www.worldometers.info/coronavirus/?
2. Zhang L, Shen FM, Chen F, Lin Z. Origin and Evolution of the 2019 Novel Coronavirus. Clin Infect Dis. 2020;71(15):882-883.
3. World Health Organization. Timeline: WHO's COVID-19 response. 2020. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline/#event-71
4. The Lancet Editorial: COVID-19: learning from experience. 2020; 395(10229):P1011 DOI: https://doi.org/10.1016/S0140-6736(20)30686-3
5. Farzanegan MR, Feizi M, Gholipour HF. Globalization and Outbreak of COVID-19: An Empirical Analysis. 2020. Available from: https://papers.ssrn.com/abstract=3618839
6. Reich O, Shalev G, Kalvari T. Modeling COVID-19 on a network: super-spreaders, testing and containment. MedRxiv. 2020; Available from: http://medrxiv.org/content/early/2020/05 /05/2020.04.30.20081828.abstract
7. Nott D. The COVID-19 response for vulnerable people in places affected by conflict and humanitarian crises. The Lancet. Lancet Publishing Group; 2020; 395:1532-1533.
8. Baloch Z, Ma Z, Ji Y, Ghanbari M, Pan Q, Aljabr W. Unique challenges to control the spread of COVID-19 in the Middle East. J Infect Public Health. 2020.
9. Benziman Y. "Winning" the "battle" and "beating" the COVID-19 "enemy": Leaders' use of war frames to define the pandemic. Peace Confl. 2020;26(3):247–256.
10. AL-monitor. Coronavirus spurs regional humanitarian outreach to Iran, 2020. Available from: https://www.al-monitor.com/pulse/originals/2020/03/coronavirus-spur-humanitarian-outreach-iran.html
11. Reuters. Venezuela government, opposition begin secret talks amid coronavirus pandemic, sources say. NBC news latinamerica. 2020. Available from: https://www.nbcnews.com/news/latino/ venezuela-government-opposition-begin-secret-talks-amid-coronavirus-pandemic-sources-n1188941
12. López L, Rodó X. The end of social confinement and COVID-19 re-emergence risk. Nat Hum Behav.

2020;4(7):746-755.

13. Kolata G. How Pandemics End - The New York Times. New York Times [Internet]. 2020 May 14 [cited 2020 Nov 28]; Available from: https://www.nytimes.com/2020/05/10/health/coronavirus-plague-pandemic-history.html
14. Guest JL, del Rio C, Sanchez T. The three steps needed to end the COVID-19 Pandemic: Bold Public Health Leadership, Rapid Innovations, and Courageous Political Will. JMIR Public Heal Surveill. 2020;6(2):e19043.
15. Denworth L. How the COVID-19 pandemic could end. Scientific American. 2020. Available from: https://www.scientificamerican.com/article/how-the-covid-19-pandemic-could-end1/
16. Scudellari M. How the pandemic might play out in 2021 and beyond. Nature. NLM. 2020;584:22-25.
17. Ceylan Z. Estimation of COVID-19 prevalence in Italy, Spain, and France. Sci Total Environ. 2020;729:138817.
18. Srivastava N, Baxi P, Ratho RK, Saxena SK. Global trends in epidemiology of coronavirus disease 2019 (COVID-19). In: Coronavirus Disease 2019 (COVID-19). Nature Publishing Group; 2020 p. 9–21. Available from: /pmc/articles/PMC7189403/?report=abstract
19. Schuchat A. Public Health Response to the Initiation and Spread of Pandemic COVID-19 in the United States, February 24–April 21, 2020. MMWR Morb Mortal Wkly Rep. 2020;69(18):551-336.
20. World Health Organization. How is WHO responding to COVID-19? 2020. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/who-response-in-countries
21. Morens DM, Folkers GK, Fauci AS. The challenge of emerging and re-emerging infectious diseases. Nature. Nature Publishing Group. 2004;430:242-249.
22. Letendre K, Fincher CL, Thornhill R. Does infectious disease cause global variation in the frequency of intrastate armed conflict and civil war? Biol Rev. 2010;85(3):no-no.
23. Hays JN. Epidemics and Pandemics: Their Impacts on Human History. In 2005. p. 513. Available from: https://books.google.com/books?hl=en&lr=&id=GyE8Qt-kS1kC&oi=fnd&pg=PR5&dq=as+key+events+in+human+history&ots=4X1q0ga7kd&sig=5nqWIM96ZYz3c5kDERhRbQh35Eo#v=onepage&q=wars and infections as key events in human history&f=false
24. Buschbacher RM. Plagues & Poxes: The Impact of Human History on Epidemic Disease. In: American Journal of Physical Medicine & Rehabilitation. 2006; 955. Available from: https://books.google.com/books?hl=en&lr=&id=6VfSCgAAQBAJ&oi=fnd&pg=PR3&dq=wars+and+infections+as+key+events+in+human+history&ots=F5WKv9847t&sig=BR4fRNgWRxSIHpux-g8Hd8K4O2M#v=onepage&q=wars and infections as key events in human history&f=false
25. Jakovljevic M, Bjedov S, Jaksic N, Jakovljevic I. Covid-19 pandemia and public and global mental health from the perspective of global health security. Psychiatria Danubina. Medicinska Naklada Zagreb. 2020;32 6-14.
26. Kleinberg B, van der Vegt I, Mozes M. Measuring Emotions in the COVID-19 Real World Worry Dataset. 2020, Available from: http://arxiv.org/abs/2004.04225
27. Torales J, O'Higgins M, Castaldelli-Maia JM, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. Internat J Soc Psych. 2020;66:317-320.
28. Porcelli P. Fear, anxiety and health-related consequences after the COVID-19 epidemic. Clin Neuropsy. 2020;17(2):103-111.
29. Smith S, Woo Baidal J, Wilner PJ, Ienuso J. The Heroes and Heroines: Supporting the Front Line in New York City During Covid-19. 2020;
30. Bauchner H, Easley TJ. Health Care Heroes of the COVID-19 Pandemic. JAMA – J Amer Med Assoc. 2020;323:2021.
31. World Health Organization. WHO | WHO global water, sanitation and hygiene annual report 2018. WHO. 2019; Available from: http://www.who.int/water_sanitation_health/publications/global-water-sanitation-and-hygiene-annual-report-2018/en/
32. Li C, Chen LJ, Chen X, Zhang M, Pang CP, Chen H. Retrospective analysis of the possibility of predicting the COVID-19 outbreak from Internet searches and social media data, China, 2020. Eurosurveillance. 2020;25(10):2000199.
33. Alexander D, Karger E. Do stay-at-home orders cause people to stay at home? Effects of stay-at-home orders on consumer behavior. 2020; Available from: https://www. chicagofed.org/~/media/publications/working-papers/2020/wp2020-12-pdf.pdf
34. Singh RP, Javaid M, Haleem A, Suman R. Internet of things (IoT) applications to fight against COVID-19 pandemic. Diabetes Metab Syndr Clin Res Rev. 2020;14(4):521-524.
35. Macaes B. The Dawn of Eurasia_ On the Trail of the New World Order. 2018; 247. Available from: ;https://www.amazon.com/Dawn-Eurasia-Trail-World-Order-ebook/dp/B074Q6W7FB /ref=sr_1_1?ie=UTF8&qid=1503351053&sr=8-1&keywords=dawn+of+eurasia/marginalrevol-20
36. UNESCO. Manual of the General Conference, 2002 edition - UNESCO Biblioteca Digital. Manual of the General Conference, 2002 edition. 2002; Available from: https://unesdoc.unesco.org/ark:/48223/pf0000125590

37. Mac Gregor PF. 1986. Cultura de Paz. Lima: Ministerio de Educación/Editorial Universo.

38. Galtung J. Violence, Peace, and Peace Research. J Peace Res. 1969;6:167-191.

39 Zarocostas J. How to fight an infodemic. Lancet. 2020;395:676.

40. Shimizu K. 2019-nCoV, fake news, and racism. Lancet. 2020;395:685-686.

41. Chung RY, Li MM. Anti-Chinese sentiment during the 2019-nCoV outbreak. Lancet. 2020;395:686-687.

42. Malta M, Rimoin AW, Strathdee SA. The coronavirus 2019-nCoV epidemic: is hindsight 20/20? E Clini Med. 2020;20:100289.

43.https://www.portafolio.co/tendencias/noticias-coronavirus-en-colombia-discriminan-a-personal-medico-por-coronavirus-539597

44. 1. Nations U. La pandemia del coronavirus no frena a las fuerzas de mantenimiento de la paz de la ONU | Noticias ONU. Available from: https://news.un.org/es/story/2020/04/1472372

45. Unesco. Declaración sobre los Principios Fundamentales relativos a la Contribución de los Medios de Comunicación de Masas al Fortalecimiento de la Paz y la Comprensión Internacional, a la Promoción de los Derechos Humanos y a la Lucha contra el Racismo, el Aparth. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura. 1978; Available from: https://unesdoc.unesco.org/ark:/48223/pf0000183664

46. Las redes sociales. un compromiso de la investigación y la educación en la construcción de la paz del siglo XXI, Iris Terán L, Comunidad y Salud Año 2011; 9(2).

47. Fernández JJ. Twitter y Facebook, redes sociales por la paz. Entreparentesis.org. 2017; Disponible en: http://entreparentesis.org/twitter-y-facebook-redes-sociales-por-la-paz/

ARTÍCULO ORIGINAL

Gac Méd Caracas 2020;128(Supl 2):S359-S364
DOI: 10.47307/GMC.2020.128.s2.22

Características del bienestar psicológico en jóvenes universitarios en el marco aislamiento preventivo por COVID-19

Drs. Luis Carlos Ruiz Domínguez[1], Lida Blanco-González[2], Franlet Araque-Castellanos[3], Beatriz-Milagros Mendoza-Rincón[4], Vivian Vanessa Arenas-Villamizar[5]

RESUMEN

El bienestar psicológico se caracteriza por generar un fuerte sentido de vida y un proceso de autoevaluación. Para evaluarlo se utiliza el test de Bienestar Psicológico Carol Ryff, el cual fue digitalizado para ser enviado a estudiantes universitarios, controlando el número de respuestas por test como el control en su contenido, hecho desde un enfoque cuantitativo, con un diseño no experimental y alcance correlacional, encontrando en bienestar psicológico (BP) 71,9 % (527) de los participantes tiene BP Alto, 25,4 % (186 estudiantes) en moderado, 1,6 % (12 estudiantes) baja y alta correspondiente al 1,1 % (8 estudiantes). Los resultados indican que las relaciones entre bienestar psicológico, semestre académico y sexo son bajas o muy bajas y no tienen ni ejercen influencia alguna sobre los demás en el contexto de aislamiento y pandemia dada por el COVID-19.

Palabras clave: *Bienestar psicológico, virus, universitario, adulto joven.*

SUMMARY

Psychological well-being is characterized by generating a strong sense of life and a self-evaluation process. To evaluate it the Carol Ryff psychological well-being test is used, which was digitized to be sent to university students, controlling the number of responses per test such as the control in its content, done from a quantitative approach, with a non-experimental design and correlational scope. The findings show psychological well-being (BP) 71.9 % (527) of the participants have High BP, 25.4 % (186 students) in moderate, 1.6 % (12 students) low and high corresponding to 1.1 % (8 students). The results indicate that the relationships between psychological well-being, academic semester and sex are low or very low and do not have or exert any influence on the others in the context isolation and pandemic given by COVI D-19.

Key words: *Psychological well-being, virus, university student, young adult.*

DOI: https://doi.org/10.47307/GMC.2020.128.s2.22

[1]Magíster en Neuropsicología y Educación
Universidad Simón Bolívar Sede Cúcuta
Correspondencia: Luis-Carlos Ruiz-Domínguez, Calle 12 0-17, Apartamento 504 Edificio LUCAM, Cúcuta, Norte de Santander, Colombia. Correo: l.ruiz@unisimonbolivar.edu.co
[1]https://orcid.org/0000-0002-1362-7924; correo:l.ruiz@unisimonbolivar.edu.co
[2] https://orcid.org/0000-0002-0653-6629; correo: l.blanco@unisimonbolivar.edu.co
[3]https://orcid.org/0000-0002-2382-3777; correo: f.araque@unisimonbolivar.edu.co
[4]https://orcid.org/0000-0003-0450-0267; correo: b.mendoza@unisimonbolivar.edu.co
[5]https://orcid.org/0000-0003-0295-4302; correo: v.arenas@unisimonbolivar.edu.co
[1,2,3,4,5]Universidad Simón Bolívar, Facultad de Ciencias Jurídicas y Sociales, Cúcuta – Colombia.

Recibido: 08 de agosto de 2020
Aceptado: 27 de noviembre de 2020

INTRODUCCIÓN

El bienestar psicológico al ser definido por Ryff y Keyes (1995), es un esfuerzo para que el ser humano se perfeccione y cumpla con su potencial, lo cual tiene que ver con tener un propósito de vida

ayudando a darle significado (1), por tal razón el proceso de introspección (2), siendo este, un examen cuidadoso y crítico de sí mismo, puede referirse a la propia personalidad, la propia mente, los propios actos y contenidos psíquicos, como los pensamientos y las emociones, es esencial en dicho proceso de búsqueda de significado de la propia vida; considerando que en la actualidad el ritmo de vida, costumbres y procesos de socialización han cambiado debido a la aparición del virus SARS-CoV-2 o nuevo coronavirus, COVID-19.

Debido a que el bienestar psicológico está conformado por seis dimensiones, como son autoaceptación, dominio del entorno, relaciones positivas, crecimiento personal, autonomía y propósito de vida, estas podrían ser influenciadas por el aislamiento preventivo, principalmente aquellas que implican la relación con aspectos externos de los cuales ya no se tiene un contacto directo o dominio sobre ellos; teniendo como principal objetivo correlacionar el bienestar psicológico en estudiantes universitarios y algunas variables sociodemográficas como lo son, sexo y semestre académico.

Se conoce que varios tipos de coronavirus causan infecciones respiratorias, desde el resfriado común hasta enfermedades graves como el síndrome respiratorio de Oriente Medio (MERS) y el síndrome respiratorio agudo severo (SRAS). El coronavirus que se conoce desde finales del año 2019 causa la enfermedad por coronavirus COVID-19 (3). Considerando esto, las diferentes disciplinas profesionales en salud, humanidades, ciencias sociales, económicas, políticas y se encuentran interesadas en conocer los efectos de este virus, no únicamente en la fisiología del ser humano, sino en su entorno social, así como en su salud mental. Por ello se realizó la evaluación en la Universidad Simón Bolívar en la sede Cúcuta, particularmente en su programa académico profesional de psicología, a sus estudiantes, destacando el uso de instrumentos técnicos, en este caso el Test de bienestar psicológico de Carol Ryff validado para Colombia en adultos jóvenes (4), así como otras características poblacionales, en el marco del aislamiento preventivo obligatorio instituido por el estado colombiano para prevenir el contagio en la población general.

Por tal motivo conocer las afectaciones de la población en estas circunstancias históricas y de salud permiten reflexionar sobre los proceso mentales y otros que generen algún tipo de alteración en el bienestar psicológico; ya que como se ha indicado, existe un grado de complejidad en el proceso de adaptación y permanencia de los jóvenes universitarios al ámbito académico prevaleciendo aspectos asociados a autoestima, auto concepto, inteligencia emocional, la dinámica familiar y el bienestar psicológico, con una relación directa entre estos factores mientras las dificultades de adaptación van aumentando (5).

MÉTODO

Se analizaron los datos adquiridos en el proceso de valoración desde una perspectiva de tipo cuantitativo, que se caracteriza por la recolección y análisis de datos numéricos desde una perspectiva estadística (6). De igual manera se indica un diseño no experimental, debido a que no se tiene control de las variables y un alcance de tipo correlacional, permitiendo relacionar variables que permitan determinar la dependencia o influencia de variables entre sí.

Población y muestra

La población estaba constituida por 808 estudiantes, 155 hombres y 578 mujeres del programa de psicóloga de la Universidad Simón Bolívar de la Sede de la ciudad de Cúcuta en Colombia, de los cuales 733 han respondido al instrumento de Carol Ryff, considerando este proceso como un censo (7), es decir, la relación exhaustiva de todas las unidades poblacionales.

Instrumentos

Se aplicó el test de Bienestar Psicológico de Carol Ryff (4), constituido por 39 ítems, en el estudio psicométrico realizado por Pineda, Castro y Chaparro (8). Se encontró en un análisis factorial confirmatorio (AFC), índices de ajuste similares tanto con seis dimensiones (X2 = 1 649,40; gl = 362; P = 0,001; CFI = 0,95; AGFI

= 0,95; RMSEA = 0,066; IC90 %, 0,062 – 0,069; SRMR = 0,077) y en omega de McDonald valores entre 0,60 y 0,84, siendo una escala tipo Likert con 6 opciones de respuesta. El instrumento hace una clasificación de los resultados en 4 rangos, siento 0 a 116 bajo, de 117 a 141 moderado, 141 a 175 alto y mayor a 176 elevado. Este instrumento se digitalizó y se compartió en medio digital controlando su uso, al igual que el número de respuestas y el acceso a este por los estudiantes.

Se realizó el análisis estadístico con el software SPSS edición 26, realizando dicho análisis usando un análisis descriptivo, correlacionando con datos de las variables cuantitativas, con el índice de correlación de Pearson, es una prueba estadística para analizar la relación entre variables medidas en un nivel por intervalos o de razón (6).

RESULTADOS

Los estudiantes participantes se clasifican del semestre 1 al 10 de la Universidad Simón Bolívar sede Cúcuta, actualmente 9 semestres, el semestre 10 hace referencia a los estudiantes de reingreso de último semestre, debido al cambio su plan de estudios, en dicho caso se clasifica la participación de los 733 participantes como se observa en el Cuadro 1, indicando que la mayor participación se da entre estudiantes del Semestre 1 con un 19,6 % (144 estudiantes), seguido del Semestre 3 con un 15,7 % (115 estudiantes) y del Semestre 7 con 12,8 % (94 estudiantes) de estudiantes, el menor número de participación se presenta en el Semestre 10 con un 2 % (15 estudiantes), posiblemente debido al proceso de reingreso académico siendo pocos estudiantes.

Cuadro 1

Clasificación por semestre académico de estudiantes universitarios

		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	Semestre 1	144	19,6	19,6	19,6
	Semestre 2	46	6,3	6,3	25,9
	Semestre 3	115	15,7	15,7	41,6
	Semestre 4	55	7,5	7,5	49,1
	Semestre 5	59	8,0	8,0	57,2
	Semestre 6	76	10,4	10,4	67,5
	Semestre 7	94	12,8	12,8	80,4
	Semestre 8	63	8,6	8,6	88,9
	Semestre 9	66	9,0	9,0	98,0
	Semestre 10	15	2,0	2,0	100,0
	Total	733	99,9	100,0	
Perdidos	Sistema	1	0,1		
Total		734	100,0		

Considerando los resultados encontrados puede señalarse que según las 733 respuestas y la clasificación dada por el instrumentó Test de bienestar psicológico (BP) un 71,9 % (527) de los participantes tiene un BP alto, 25,4 % (186 estudiantes) en moderado, 1,6 % (12 estudiantes) en bajo y un BP elevado correspondiente a 1,1 % (8 estudiantes) (Cuadro 2).

De igual manera, los resultados de la relación entre el bienestar psicológico, semestre del estudiante y sexo del estudiante, evidencia que el BP tiene una correlación muy baja con el semestre en curso del estudiante y la variable sexo con 0,043 y 0,042, respectivamente. Además, de la variable sexo con el semestre en curso presenta características similares, indicando una correlación muy baja inversamente proporcional de -0,014 (Cuadro 3).

Cuadro 2

Resultados del bienestar psicológico en población universitaria

		Frecuencia	Porcentaje	Porcentaje válido	Porcentaje acumulado
Válido	0-116	12	1,6	1,6	1,6
	117-140	186	25,3	25,4	27,0
	141-175	527	71,8	71,9	98,9
	176-200	8	1,1	1,1	100,0
	Total	733	99,9	100,0	
Perdidos	Sistema	1	0,1		
Total		734	100,0		

Cuadro 3

Correlación entre bienestar psicológico, semestre del estudiante y sexo

		Bienestar psicológico	Semestre del estudiante	Hombre o mujer
Bienestar Psicológico	Correlación de Pearson	1	0,043	0,042
	Sig. (bilateral)		0,247	0,257
	N	733	733	733
Semestre del estudiante	Correlación de Pearson	0,043	1	-0,014
	Sig. (bilateral)	0,247		0,701
	N	733	733	733
Hombre o mujer	Correlación de Pearson	0,042	-0,014	1
	Sig. (bilateral)	0,257	0,701	
	N	733	733	733

Cabe resaltar que la correlación entre las variables sexo, semestre académico y bienestar psicológico no evidencian algún tipo de influencia significativa entre ellas, como se ha indicado, una correlación muy baja, no dependiendo las unas de las otras evidenciando.

DISCUSIÓN

Como han indicado Ozamis y col. (9), el bienestar psicológico es clave para afrontar el COVID-19 y prevenir enfermedades mentales, esto involucra que las personas deben prepararse desde el punto de vista psicológico y percibir seguridad ante las posibles situaciones adversas que todavía tienen que vivir. Los resultados indican que pese a la situación sanitaria de emergencia que ha desencadenado la aparición del COVID-19 en el mundo, la población universitaria ha contado con un BP alto de 71,9 % (527 estudiantes), evidenciando que a pesar de tal suceso, la mayoría de los estudiantes han podido sobrellevar tal suceso. El Instituto Internacional de la UNESCO para la Educación Superior en América Latina y el Caribe (IESALC) (10), indica que el confinamiento tendrá efectos en el desequilibrio socioemocional que dejarán huella, en particular, en aquellos estudiantes con problemáticas preexistentes en este dominio. Sin

embargo, nuestros resultados siguieren que en esta población posiblemente las consecuencias no sean tan alarmantes a mediano plazo, esto debido a su capacidad para adaptarse y fortalecer su bienestar psicológico en la medida en la que se centran en su propósito de vida. Esta hipótesis requiere, sin embargo, investigación adicional para su confirmación.

Por otro lado, existe una relación baja entre las variables de 0,042, 0,043 y -0,014, lo que indica la independencia de dichas variables y baja influencia entre sí. Sin embargo, una mayor duración de la cuarentena se asocia específicamente con una peor salud mental, síntomas de estrés postraumático, conductas de evitación e ira (11), considerando el período ya prologado ya que el estado de emergencia sanitaria se inicia en Colombia el 17 de marzo de 2020, con el decreto 417 (12) en la que se declara el estado de pandemia.

La variable sexo tiene la relación menos significativa con el valor de -0,014 con el bienestar psicológico, indicando que tanto a hombres como mujeres se afectan de manera similar. Aun cuando los datos desglosados por sexo para COVID-19 muestran un número igual de casos entre hombres y mujeres, parece haber diferencias de sexo en la mortalidad y vulnerabilidad a la enfermedad. "La evidencia emergente sugiere que mueren más hombres que mujeres, posiblemente debido a inmunología basada en el sexo" (13). Actualmente no existe evidencia clara acerca de diferencias por identidad de género desde una perspectiva de tipo social. La pandemia ha agudizado las desigualdades ya existentes y ha evidenciado las deficiencias de los sistemas social, político y económico entre hombres y mujeres (14).

Por otro lado, los estudiantes están expuestos a padecer de "depresión universitaria" (15), y aunque no es un diagnóstico concreto o al cual se pueda remitir a un manual diagnóstico psiquiátrico, la transición emocional hacia la vida universitaria puede ser un desafío para los jóvenes adultos. En la actualidad, hay más estudiantes universitarios con depresión que en el pasado (15).

Es de resaltar que las mujeres mantienen sus puntuaciones (16) a lo largo del ciclo vital al evaluar bienestar psicológico, siendo los hombres quienes obtienen mayores puntuaciones en todas las etapas, a excepción de la juventud, siendo particular que en la población en la cual se evalúa BP, la variable sexo no implica una correlación significativa entre estas variables, siendo aparentemente atípico, al igual que el fenómeno de aislamiento preventivo por COVID-19. Además, al estudiar el instrumento de Carol Riff en la población colombiana (4) se identifica que este realiza una discriminación con respecto al sexo con resultados significativos y puntuaciones más altas para mujeres, indicando que inclusive en el caso colombiano la variable sexo implican resultados típicos entre hombres y mujeres en un modo de vida no restringido, aspecto que en aislamiento restringido existen limitantes en interacción social, laboral, educativo, y por supuesto cierre parcial o total de algunos sectores económicos.

CONCLUSIÓN

El bienestar psicológico tiene una correlación baja con las características asociadas al semestre académico, por lo cual puede indicarse que el proceso formativo no es un factor significativo en aislamiento preventivo por COVID-19 que interfiera con él. La variable sexo presenta una correlación baja, inversamente proporcional al bienestar psicológico, aunque desde el punto de vista fisiológico o epidemiológico se indica que un mayor número de hombres fallecen en comparación que las mujeres.

Los estudiantes universitarios participantes puntúan con un BP alto en un 71,9 % siendo un total de (527), para lo cual puede señalarse que al estar estos estudiantes universitarios en aislamiento o confinamiento pueden existir otros factores, posiblemente de tipo social, que generen mayor influencia sobre otros aspectos de su salud mental o fisiológicos, por tal motivo debe realizarse procesos de valoración asociados a otros aspectos de salud mental.

Únicamente un 1,1 % (8 estudiantes) de los estudiantes tiene un BP alto, pudiendo indicar que el estado de aislamiento no ha afectado al bienestar psicológico, debido a que en situaciones similares de aislamiento o confinamiento las personas tienden a desarrollar síntomas similares

al estrés postraumático y depresión, haciendo que el bienestar psicológico disminuya.

Los resultados no normativos entre hombres y mujeres sugieren que el proceso de aislamiento preventivo es un factor a considerar en la interpretación de resultados con respecto al bienestar psicológico, puesto que otros estudios indican que existen resultados característicos en hombres y mujeres antes del proceso de aislamiento preventivo.

Los estudiantes al tener un BP alto en su mayoría con un 71,9 % pudiese implicar un proceso de introspección y autoevaluación que les permitiría afrontar posiblemente de una manera más adaptativa los cambios con respecto al aislamiento preventivo, así como un sentido de vida encaminado a dicha adaptación.

REFERENCIAS

1. Ruiz Domínguez LC, González Blanco L. Bienestar psicológico y medios de intervención cognitiva en el adulto mayor Resumen Psychological well-being and means of cognitive intervention in the elderly. Arch Venez Farmacol Terap. 2019;38(2610-7988):596-599.
2. Jusino ÁRV. La autoestima como competencia humana y la introspección como método de para su enseñanza y desarrollo. 2018;9. Available from: https://ofdpinternacional.com/wp-content/uploads/2018/09/Autoestima-como-competencia-y-la-introspecci_n-como-su-m_todo-de-ense_anza.pdf?
3. Organización mundial de la salud. Preguntas y respuestas sobre la enfermedad por coronavirus (COVID-19). OMS. 2020:1. Available: https://www.who.int/es/ emergencies/diseases/novel-coronavirus-2019/advice-for-public/q-a-coronaviruses
4. Alejandro C, Roa P, Castro Muñoz JA, Alexander R, Clavijo C. Estudio psicométrico de las Escalas de Bienestar Psicológico de Ryff en adultos jóvenes colombianos. Pensamiento Psicológico. 2018;16(1):45-55.
5. Carranza R, Hernández R, Alhuay J. Bienestar psicológico y rendimiento académico en estudiantes de pregrado de psicología. Rev Intern Invest Cien Soc. 2017;13(2):133-146.
6. Hernández Sampieri R, Fernández Collado C, Baptista Lucio Pilar. Metodología de la investigación. 6ª edición. Rocha Martínez MI, editor. Mexico: McGRAW-HILL;
7. López-Roldán P, Fachelli S. Metodología de la investigación social cuantitativa. Barcelona: Dipòsit Digital de Documents; 2017:10. Available: https://ddd.uab.cat/pub/ caplli/2017/185163/metinvsoccua_cap2-4a2017.pdf
8. Pineda CA, Castro JA, Chaparro RA. Estudio psicométrico de las Escalas de Bienestar Psicológico de Ryff en adultos jóvenes colombianos. Pensamiento Psicológico. 2018;16(1):45-55.
9. Ozamiz Etxebarria N, Dosil Santamaria M, Picaza Gorrochategue M, Idoiaga Mondragon N. Niveles de estrés, ansiedad y depresión en la primera fase del brote del COVID-19 en una muestra recogida en el norte de España. Cad Saúde Pública 2020;36. Available: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2020000405013
10. IESALC. COVID-19 y educación superior: De los efectos inmediatos al día después. UNESCO; 2020. Available: http://www.iesalc.unesco.org/wp-content/uploads/2020/04/COVID-19.pdf
11. Piña-Ferrer L. El COVID 19: Impacto psicológico en los seres humanos. Rev Arbitrada Interdisc Cien Salud y Vida. 2020;4(7):188.
12. Presidencia de la República de Colombia. Por el cual se declara un Estado de Emergencia Económica, Social y Ecológica en todo el territorio Nacional. Colombia; 2020:1. Available: https://dapre.presidencia.gov.co/normativa/ normativa/decreto 417 del 17 de marzo de 2020.pdf
13. ¿Afecta por igual el Covid-19 a hombres y mujeres? - Gaceta Médica. Available: https://gacetamedica.com/investigacion/afecta-por-igual-el-covid-19-a-hombres-y-mujeres/
14. COVID-19: Las naciones del G7 deben hacer efectiva la igualdad de género para que el futuro de las mujeres en el trabajo sea mejor. Available: http://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_744813/lang--es/index.htm
15. Depresión universitaria: qué deben saber los padres - Mayo Clinic 2020. Available: https://www.mayoclinic.org/es-es/healthy-lifestyle/tween-and-teen-health/in-depth/college-depression/art-20048327
16. Mayordomo T, Sales A, Satorres E, Meléndez JC. Bienestar psicológico en función de la etapa de vida, el sexo y su interacción. Pensamiento Psicológico. 2016;14(2):101-112.