

Public Health and Health Sector Crisis Leadership During Pandemics: A Review of the Medical and Business Literature

Medical Care Research and Review
1–12

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DOI: 10.1177/10775587211039201

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Abstract

The global scale and unpredictable nature of the current COVID-19 pandemic have put a significant burden on health care and public health leaders, for whom preparedness plans and evidence-based guidelines have proven insufficient to guide actions. This article presents a review of empirical articles on the topics of “crisis leadership” and “pandemic” across medical and business databases between 2003 (since SARS) and—December 2020 and has identified 35 articles for detailed analyses. We use the articles’ evidence on leadership behaviors and skills that have been key to pandemic responses to characterize the types of leadership competencies commonly exhibited in a pandemic context. Task-oriented competencies, including preparing and planning, establishing collaborations, and conducting crisis communication, received the most attention. However, people-oriented and adaptive-oriented competencies were as fundamental in overcoming the structural, political, and cultural contexts unique to pandemics.

Keywords

crisis leadership, COVID-19, Coronavirus, pandemic, public health preparedness

Introduction

The current COVID-19 crisis has had an unprecedented global impact: it has destabilized political regimes, depressed economic markets, and led to massive casualty rates (Barrios & Hochberg, 2020; Caballero-Anthony et al., 2020; Fernandes, 2020; Marmot & Allen, 2020; W. Shih, 2020; West et al., 2020). The pandemic has also necessitated transnational cooperation, population-level behavioral change, and disruptive innovations to develop vaccines and control infection rates. Leaders who have successfully handled crises and emergency management events in the past are finding themselves repeatedly in uncharted territory when called on to lead during this current crisis (Hertelendy, 2020). For example, the leadership and policy failures of the current pandemic are expected to add \$125 to \$200 billion in incremental costs to annual health care expenditures in the United States alone (Coe et al., 2020). The current dynamic and global nature of the pandemic, structural chaos, media attention, and misinformation endemic to the crisis calls for a special set of leadership competencies to rapidly evolve pandemic response strategies to prevent, mitigate, and recover from the crisis and return to normalcy (Harter, 2020; Hatami et al., 2020).

There is an increasing focus on crisis leadership in the health care and public health sectors because of the daunting set of challenges the current pandemic has presented. In news media and internet outlets, an overwhelming number of opinions and social media posts discuss how leaders should respond. Recommendations have included advice to “always lead in the same way, crisis or not” (Kraaijenbrink, 2020), calls for leaders to maintain “deliberate calm”

This article, submitted to *Medical Care Research and Review* on December 13, 2020, was revised and accepted for publication on July 15, 2021.

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(D'Auria & De Smet, 2020), and assertions that women are better leaders during a crisis (Zenger & Folkman, 2020). Indeed, popular media reports a broad array of discussions about the competencies required to lead successfully during a crisis, and it can be helpful to consider the evidence for these competencies and the potential links to past crisis leadership research.

Past research has addressed the need for integrated models of leadership for crisis situations (Kurz & Carter Haddock, 1989) and has identified specific crisis management and emergency management competencies (Boin et al., 2013). The crisis and emergency management literature primarily focus on overseeing planning and executing predefined tasks and processes in response to crises (Klann, 2003; Mitroff et al., 1987). This focus has led to a narrow emphasis in the crisis leadership research on oversight functions. Crisis leadership, broadly defined by Klann (2003), also involves addressing human aspects of crisis in ways that account for the dynamic nature of the crisis and its context—the needs, emotions, and behaviors of people implementing strategies to address, prevent, mitigate, and recover from crises. The current pandemic crisis has raised the important question of which crisis leadership competencies are needed by public health and health system leaders to implement public health measures, mitigate the spread of the pandemic, and address the pandemic's health and economic consequences (Armstrong et al., 2021).

New Contributions

Our study makes three new contributions to the discussion of crisis leadership. First, to our knowledge, no review of crisis leadership competencies exists, and research on leadership during pandemics is nascent. Scoping reviews are widely used in health care and management literature to collate disparate information from various sources and types of literature (Arksey & O'Malley, 2005; Munn et al., 2018). To address the gap in information about comprehensive competencies needed for crisis leadership, we use a scoping review methodology to map the competencies that public health and health sector leaders commonly exhibit during pandemics.

Second, these scoping review results contribute to the literature on crisis leadership and to leadership theory in general. Behavioral leadership theories have emphasized the bilateral nature of task- and people-oriented leadership competencies (Stogdill, 1948; Yukl, 2013). In contrast, contingency leadership theories have been focused on adaptive competencies (Heifetz & Linsky, 2017). Derived from the empirical findings reviewed in this study, our framework for crisis leadership during a pandemic suggests that crisis leadership encompasses not just competencies in motivating people and enabling task completion, but also in adaptive capabilities that encompass the ability to have a systems perspective while addressing local issues. To our

knowledge, no research exists that explicates crisis leadership as a threefold interaction between task, people, and adaptive competencies, effectively combining behavioral and contingency leadership theories, and connecting the interaction of competencies with contextual factors.

Third, our study has systematically reviewed the literature to identify how competencies are used within health care, public health sector organizations, and academic institutions to address the context of pandemics. Given the unique characteristics of pandemics that we have noted in the introduction, these findings provide a preliminary evidence base of the experience of these leaders in the current pandemic that can be used to inform how training programs and curriculum prepare leaders for future pandemics.

Conceptual Model

This review is focused on crisis leadership during pandemics. A pandemic is an epidemic that transcends geographical boundaries and affects large numbers of people (Last, 1993). Leadership is a social process occurring in a group where an individual demonstrates the ability to guide a group toward achieving a common goal (Gilmartin & D'Aunno, 2007; Tubbs & Schulz, 2006; Yukl, 2013). Leadership models and theories have evolved over time and moved from the belief that leaders "are born" to an understanding that leadership comprises personalities, values, and competencies (Alban-Metcalf & Alimo-Metcalf, 2013; Yukl, 2013).

Leadership scholars have found that individual personalities and values remain relatively stable throughout the life span. Competencies are individuals' abilities to perform a task or role (Boyatzis & Boyatzis, 2008) and are characterized by individuals' knowledge, skills, attitude, and behaviors (Krathwohl et al., 1971). Competencies are learned and developed through an iterative, lifelong process based on individuals' professional roles and life experiences (Tubbs & Schulz, 2006).

Competency theorists commonly group leadership behaviors into task-related competencies, relational competencies, and change and adaptive competencies (Heifetz & Linsky, 2017; Stogdill, 1974; Yukl, 2012). Crisis leadership scholars suggest in addition to the above leadership competencies that are formed and developed outside of crisis situations, collaboration is an important element in the crisis situation (Bavik et al., 2021; Caringal-Go et al., 2021; Kapucu & Ustun, 2018). Figure 1 shows the integrated framework for pandemic leadership that guided our work. This review focused on analyzing the evidence on leading during pandemics to characterize the crisis leadership behavioral competencies commonly demonstrated during a pandemic. Ultimately, our discussion of how crisis leadership competencies apply within the current and potentially future pandemics will be key to developing future health care and public health sector leadership.

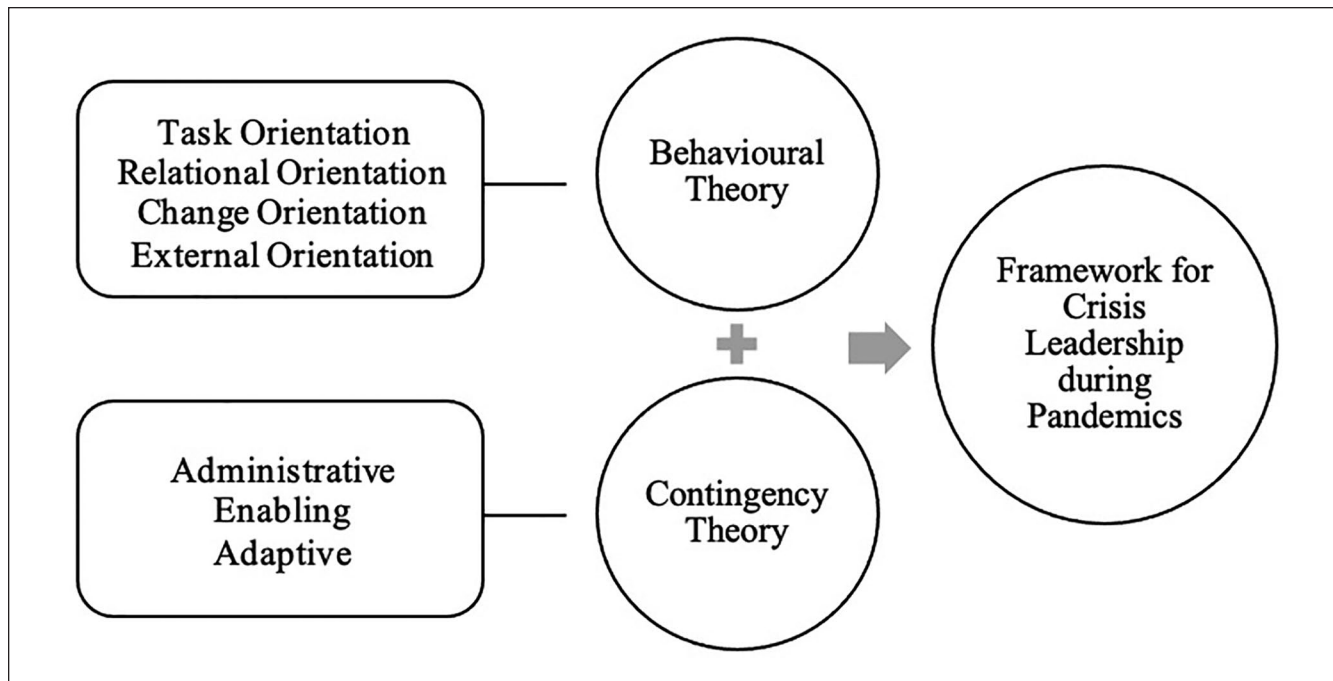


Figure 1. A conceptual framework for crisis leadership during pandemics based on behavioral and contingency theory models of competencies.

Table 1. Application of a SPICE Framework to Pandemic Leadership Literature.

SPICE framework	Description
Setting	Health care or public health
Phenomena of interest	Competencies related to crisis leadership during pandemics including SARS, Zika, Ebola, COVID-19, MERS, and H1N1
Comparison	Studies with or without comparators
Evaluation	Studies that evaluate outcomes and impacts of different leadership competencies

Note. SPICE = criteria around setting, phenomena of interest, comparison, and evaluation.

Method

Our study followed the WHO Rapid Review Guide and the Joanna Briggs Institute 2020 guide for scoping reviews (Peters et al., 2020; Tricco et al., 2017), and we report results following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for scoping reviews. Based on our research objectives, we developed the following guiding research questions:

1. What is known and understood about crisis leadership during a pandemic in the health and public health sector?
2. What are the contextual enablers and barriers that shape the health and public health sector crisis leadership during a pandemic?

Our inclusion and exclusion criteria for the study are presented in Table 1, which presents our eligibility criteria

developed within a SPICE framework (i.e., criteria around setting, phenomena of interest, comparison, and evaluation).

Search Strategy

We adopted comprehensive search strategies for the following electronic databases focused on the health care and business literature: MEDLINE (via Ovid), PsycINFO (via Ovid), CINAHL (via EBSCO), Business Source Premier (via EBSCO), and Canadian Business & Current Affairs (via ProQuest). An academic health sciences librarian from the University of Toronto developed search strategies with input from the research team. We initially conducted the search in Ovid MEDLINE. We reviewed our search results using the Peer Review of Electronic Search Strategies tool (McGowan et al., 2016), a checklist for comparing, among other things, the types of errors in articles found and the relative fit of articles to the research question, before translating the search strategy into other databases using their command language.

We limited searches by date from the SARS pandemic (2003) to the start of vaccine rollout period for the COVID-19 pandemic (December, 2020). Then, we ran searches in four databases, and exported the final search results into Covidence, a review management software in which duplicates were identified and removed. To capture any papers that may have been missed, we conducted targeted journal hand searches.

Data Charting

To minimize selection bias, two independent screeners reviewed a sample of 20 articles identified from the search against inclusion and exclusion criteria to fine-tune the criteria. We considered the following final inclusion and exclusion criteria for article selection. Articles were included if they (1) focused on a pandemic since and including SARS, (2) contained an evaluation of leadership, (3) were written in English, (4) were published in a peer-reviewed journal, (5) used objective evaluation methods (qualitative or quantitative), and (6) met our SPICE criteria.

Reviewer teams used the fine-tuned inclusion and exclusion criteria to complete title and abstract screening for the remaining articles. We retrieved publications that met the inclusion and exclusion criteria for a full-text review. We used a predefined data extraction form based on our research objectives and guiding research questions. Data extraction categories included citation, research aims, research type, data collection methods, methodological quality, pandemic type, country, type of leader, leadership competencies discussed, enablers and barriers to leadership success, the focus of the main results, author conclusions, and space for an open-ended reviewer note. To ensure the assessment's integrity, we piloted data extraction from a sample of eight publications with two to three researchers coding each publication. We then held a group discussion to resolve inconsistencies and refine the data extraction tool. Once we refined the tool, extractors moved ahead with the full data extraction.

Risk of Bias Reduction

Scoping reviews are conducted to provide an overview of the existing evidence regardless of methodological quality or risk of bias. As a standard, included sources of evidence are not critically appraised for scoping reviews (Peters et al., 2020; Tricco et al., 2017). However, given the variability in the literature, we adapted a modified version of the CASP Qualitative Studies Checklist as a screening tool to assess the potential risk of bias (Ma et al., 2020). We assessed full texts selected for data extraction against the following criteria: assessment of clear research aims, objective research methods, method appropriateness for the research aims, and appropriate data collection. We rated whether each study met the criteria or did not meet the criteria. Studies that met all the requirements were rated 1 (*excellent*) and studies that did

not meet all the criteria were rated 5 (*very poor*). We excluded studies that did not meet any of the criteria.

Data Analysis and Synthesis

We used NVivo qualitative software to synthesize the data on the included articles into codes inductively and deductively. We then analyzed the data using an iterative process rooted in grounded theory to compare and develop emergent themes (Strauss & Corbin, 1997). The team linked the emergent themes using a concept map after considering the number of times each theme was discussed as a factor of leadership during a crisis or after considering a contextual element that shaped the leadership. The research team collectively reviewed the emergent themes from the concept map to identify and reconcile discrepancies.

Results

Study Selection

The searches generated 8,282 unique articles published from January 2003 to December, 2020. After reviewing the articles' titles and abstracts, we determined that 803 articles met the criteria for a full-text review. Most of these articles were opinion articles or commentaries without objective data. After the full-text review was conducted, 35 articles were found to meet the final inclusion criteria (see Figure 2).

Study Characteristics

Of the 35 studies identified for final inclusion in our review, 20 involved qualitative methods such as interviews and case studies. Four studies were systematic or literature reviews. Six studies used quantitative methods, such as surveys; two studies used mixed methods; and three studies were interventional studies with before-and-after measures. However, 17 of the 35 articles focused on COVID-19-related experience; four focused on Ebola; and another four focused on SARS. The remaining 10 focused on Influenza, H1N1, H5N1, and pandemics in general. The researchers in these studies focused on multiple leadership areas in both governments and nonprofits, including health policy, clinical medicine, public health, and pharmaceutical leadership. These studies came from the Canada, the United States, Europe, China, Taiwan, West Africa, Malaysia, Norway, the United Kingdom, and South Korea. Table 2 provides a summary of the study characteristics.

Crisis Leadership Competencies

We identified and grouped crisis leadership competencies into task, people, and adaptive competencies through a thematic analysis approach. Contextual enablers and barriers were distinguished as political, structural and cultural

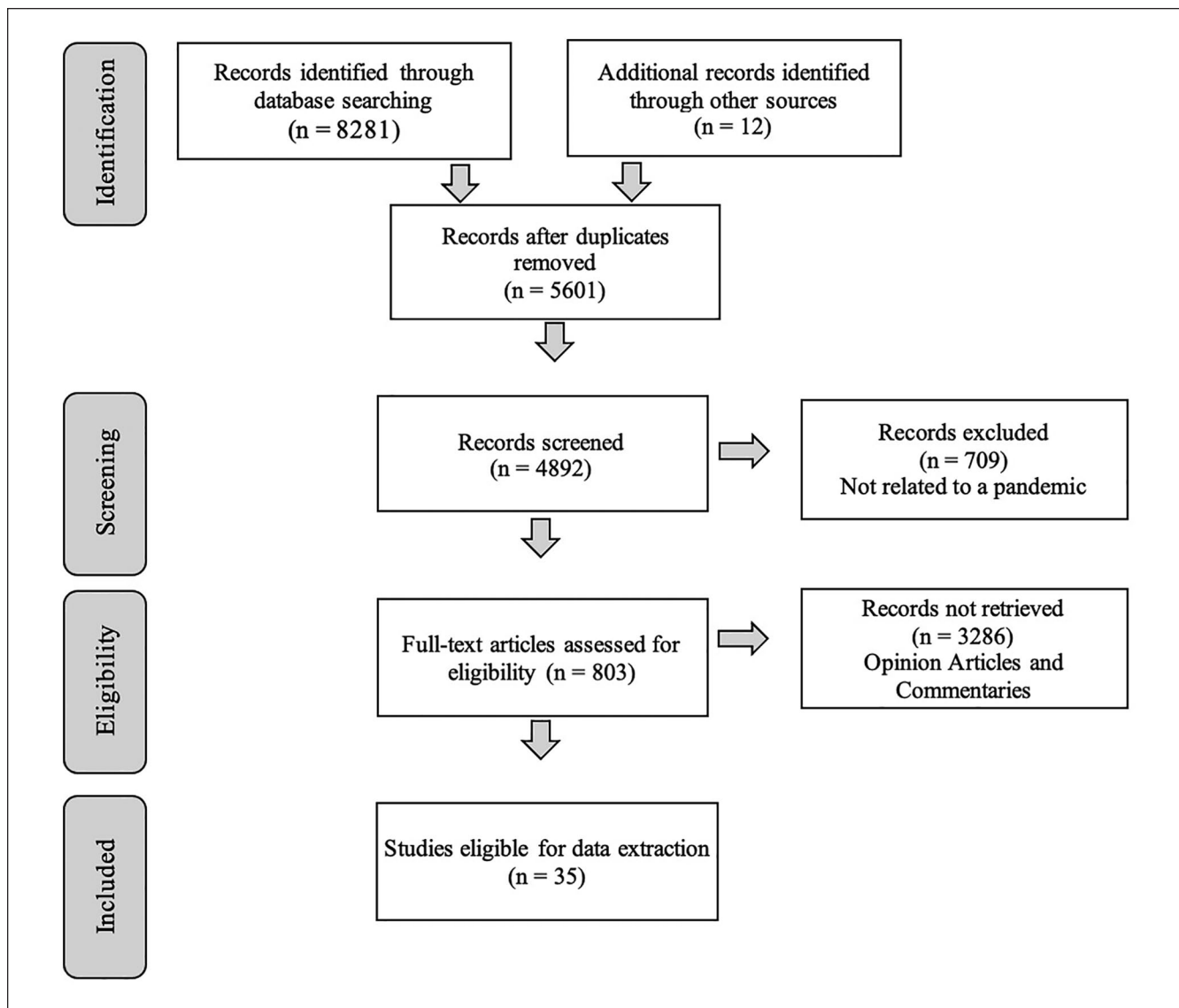


Figure 2. Crisis leadership PRISMA 2009 flow diagram.

Note. PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

factors. Table 3 outlines the specific competencies related to these groupings as well as the enablers and barriers.

Task Competencies. Task competencies focus on the knowledge, skills, and behaviors required to manage pandemic responses. During a pandemic crisis, leaders are called on to perform tasks such as preparation and planning, communication, and collaboration based on their content knowledge expertise. Preparing and planning emerged as a core leadership competency in 57% of the included studies. Preparing and planning ranged from identifying a crisis early to developing emergency preparedness protocols, managing the implementation of such protocols, allocating resources, monitoring the crisis, and developing contingency plans. A segment of the included studies (51%)

discussed communication as an essential task competency during a crisis. In the precrisis phase, leaders were expected to use effective communication skills to form functional partnerships and engage in collaborative planning exercises. During the crisis event, leaders were expected to use effective communication skills to engage others in preparing risk responses, sharing emergency risk communication with the public, and communicating a clear vision for cultivating a shared sense of purpose. Additionally, public-facing leaders faced both negative and positive media attention during a public health crisis. As such, communication skills related to media communication were considered an essential capability.

Finally, leaders' ability to build collaboration emerged as an instrumental task competency in 37% of the included

Table 2. Study Characteristics of Reviewed Literature.

#	Authors (year)	Methodological rigor (1 = excellent, 5 = very weak)		Data collection	Pandemic	Country	Setting
1	Ahmed et al. (2020)	2	Quantitative	COVID-19	China	Hospitals	
2	Andrew et al. (2018)	4	Mixed	Ebola	The United States	Hospitals	
3	Austin et al. (2007)	3	Qualitative	SARS	Canada	Pharmacy	
4	Avery and Park (2019)	4	Quantitative	Pandemic	The United States	Public health	
5	Chuang et al. (2020)	4	Qualitative	COVID-19	The United States	Clinical	
6	Crouse Quinn (2008)	4	Qualitative	Influenza	General	Government	
7	Deitchman (2013)	4	Qualitative	Influenza	The United States	Public health	
8	Emans et al. (2020)	4	Qualitative	COVID-19	The United States	Government and public health	
9	Geiger et al. (2020)	4	Qualitative	Ebola	Uganda	Public health	
10	Georgiades (2020)	4	Qualitative	Plagues	Athens, Greece; Byzantine Empire; Europe	Public health	
11	Hadley et al. (2011)	4	Quantitative	Pandemic	General	Public health	
12	Holtom et al. (2020)	4	Quantitative	COVID-19	The United States	Government and not-for-profit	
13	Ikram (2020)	4	Qualitative	COVID-19	China, Norway, The United Kingdom	Hospital	
14	Kimball (2019)	4	Interventional	Ebola	West Africa	Health policy	
15	Lancaster et al. (2020)	4	Qualitative	COVID-19	The United States	Clinical	
16	Laxton et al. (2020)	4	Qualitative	COVID-19	The United States	Nursing and long-term care	
17	Leider et al. (2017)	3	Systematic review	Pandemic	General	Emergency preparedness	
18	Lexa and Fessell (2020)	4	Qualitative	COVID-19	The United States	Clinical	
19	Moorkamp et al. (2020)	3	Qualitative	COVID-19	Netherlands	Health systems	
20	Nicola et al. (2020)	4	Literature review	COVID-19	General	Health policy	
21	Nyenswah (2016)	3	Qualitative	Ebola	Liberia	Public health	
22	Paixão et al. (2020)	5	Review	COVID-19	General	Health care	
23	Rehill et al. (2020)	4	Qualitative	COVID-19	England	Clinical	
24	Romney et al. (2020)	4	Literature review	COVID-19	The United States	Public health	
25	Sangal et al. (2020)	4	Quantitative	COVID-19	The United States	Clinical	
26	Sergent and Stajkovic (2020)	4	Mixed method	COVID-19	The United States	Government	
27	F. J. Shih et al. (2009)	3	Qualitative	SARS	Northern Taiwan	Hospital	
28	Sobelson et al. (2013)	4	Interventional study	H1N1	The United States	Government and not-for-profit	
29	Sultana et al. (2020)	4	Quantitative	COVID-19	Malaysia	Pharma industry	
30	Tham et al. (2020)	4	Qualitative	COVID-19	Singapore	Clinical	
31	Thomas and Young (2011)	4	Qualitative	H5N1 Asian Avian Flu	The United States	Government	
32	Tseng et al. (2005)	3	Qualitative	SARS	Taiwan	Hospital leaders	
33	Wang et al. (2008)	3	Interventional study	SARS	China	Public health	
34	Whitwell et al. (2020)	4	Qualitative	COVID-19	The United Kingdom	Hospital	
35	You and Ju (2019)	4	Qualitative	MERS	South Korea	Political and public health leaders	

Table 3. Crisis Leadership Competencies.

#	Crisis leadership competencies													Contextual enablers/barriers		
	Task competencies			People competencies			Adaptive competencies						Political	Structural	Cultural	
	Preparing and planning	Communication	Collaboration	Inspiring and influencing	Presence and well-being	Empathy and awareness	Decision making	Systems thinking/ sense making	Tacit skills							
1	Ahmed et al. (2020)	X			X											
2	Andrew et al. (2018)	X	X			X									X	
3	Austin et al. (2007)	X	X				X						X		X	
4	Avery and Park (2019)	X	X					X								
5	Chuang et al. (2020)	X					X									
6	Crouse Quinn (2008)	X												X		X
7	Deitchman (2013)	X	X		X								X			
8	Emans et al. (2020)	X	X			X								X		X
9	Geiger et al. (2020)	X	X		X									X		X
10	Georgiades (2020)	X		X												
11	Hadley et al. (2011)	X														
12	Holtom et al. (2020)	X			X											
13	Ikram (2020)	X														
14	Kimball (2019)	X					X									
15	Lancaster et al. (2020)	X														
16	Laxton et al. (2020)	X				X								X		X
17	Leider et al. (2017)	X												X		X
18	Lexa and Fessell (2020)	X														
19	Moorkamp et al. (2020)	X				X								X		X
20	Nicola et al. (2020)	X	X			X								X		X
21	Nyenswah (2016)	X	X			X								X		X
22	Paixão et al. (2020)	X	X													
23	Rehill et al. (2020)	X				X										
24	Romney et al. (2020)	X				X										
25	Sangal et al. (2020)	X				X										
26	Sergent and Stajkovic (2020)	X														
27	F. J. Shih et al. (2009)	X					X									
28	Sobelson et al. (2013)	X														
29	Sultana et al. (2020)	X				X										
30	Tham et al. (2020)	X														
31	Thomas and Young (2011)	X														
32	Tseng et al. (2005)	X					X									X
33	Wang et al. (2008)	X				X										
34	Whitwell et al. (2020)	X														
35	You and Ju (2019)	X														X

studies. Given pandemics' transboundary nature, collaboration was considered essential for effectively coordinating pandemic responses and minimizing resource wastage. In a crisis, leaders needed to develop networks with other organizations and cultivate interpersonal relationships grounded in mutual trust and understanding among their team and others. Collaboration was essential for facilitating exchanges of information and creating consensus on crucial decisions. The three task competencies were inter-related in many of the studies reviewed; for example, communication and/or collaboration being important to enable effective planning, or effective planning enabling better collaboration.

People Competencies. People competencies focus on the skills and behaviors required to manage the interpersonal relationships necessary to lead pandemic responses. Leaders' ability to engage others for collective actions was presented as essential in leading during a pandemic. It required attributes such as demonstrating empathy and awareness (34.3%), being physically and emotionally present for others (presence) and caring about the well-being of self and others (well-being; 25.7%), and the ability to inspire and influence others (22.9%). For example, leaders who were able to empathize with team members, respect others' values and demonstrate an inclusive approach to engage others were able to build interpersonal relationships, increase trust and improve morale, decrease occupational stress, and increase engagement for their teams and others.

Adaptive Competencies. Adaptive competencies focus on the skills and behaviors required to respond to the dynamic nature of pandemic responses. Leaders' ability to rapidly adapt to the changing context was essential in successful crisis leadership. Of the included studies, 42.9% discussed the importance of adaptive decision-making abilities. For example, during dynamic crises, leaders were often called on to make crucial decisions with minimal evidence or rapidly evolving evidence. This decision-making required tacit knowledge of the problem (20%) and systems thinking and sensemaking abilities (17.1%) to have a broad perspective of the decisions' impact, predominantly when the decisions relied on incomplete evidence and ethical dilemmas.

Contextual Factors That Shape Crisis Leadership During a Pandemic

Contextual factors shape how leadership competencies are demonstrated. However, the literature reviewed on pandemic-related crises provided minimal evidence on contextual factors that shape the crisis leadership competencies (Table 3). Furthermore, no causal evidence was provided to support how these factors influence how leaders respond to a crisis. Indeed, 31% of the articles discussed how structural

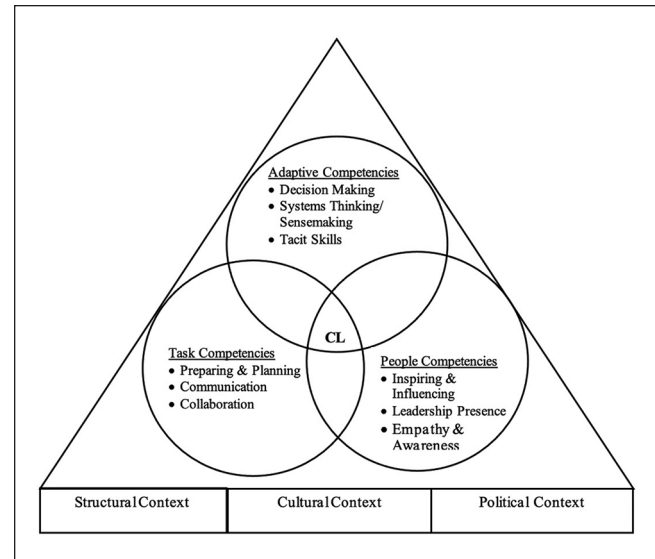


Figure 3. Framework for crisis leadership (CL) during pandemic: Competencies and contextual enablers/barrier.

factors such as hierarchy, lack of team cohesiveness, and resource allocation issues played a central role in shaping the ability to demonstrate task competencies related to communication, decision making, and planning. For example, in complex structures with centralized control, decisions often required multiple levels of approval, which delayed decision making. Organizations with distributed leadership structures were able to adapt to pandemic crises more rapidly.

Culture shapes communication approaches, collaboration styles, decision-making processes, and interpersonal relationship (Dorfman et al., 2012). However, 20% of the articles discussed cultural factors played an important role in shaping leaders' crisis leadership competencies. Despite the cultural difference, transparent communication was a crucial factor for enhancing trust and credibility among stakeholders. This improved trust between leader and the larger stakeholders, and improved leaders' ability to facilitate collaboration with multiple stakeholders and influence decisions (Wang et al., 2008; You & Ju, 2019). Gender roles, particularly within leadership, are a key cultural construction shaped by social norms (Segal, 2003), and one study team explored whether being female served as a potential enabler for improving empathy and communication. (Sergent & Stajkovic, 2020). However, no causal relationship between gender and leadership effectiveness was identified.

Political factors such as power dynamics among local, state, and federal agencies influence a leader's ability to lead and access the required resources during a crisis were addressed in 22.9% of the articles. For example, the articles discussed how distrust in elected officials influenced people's willingness to trust communications from public health and health care leaders related to pandemic measures.

Framework for Crisis Leadership During a Pandemic

Crisis leadership during a pandemic is complex and dynamic. The studies reviewed show that leaders work at intersection of task, people, and adaptive competencies to lead during crisis such as pandemics (Figure 3). These results demonstrate how political, structural, and cultural contextual factors shape the competencies. Minimal evidence exists on the causal relationship between the contextual factors and the task, people, and adaptive competencies.

Discussion and Conclusion

To our knowledge, this is the first review to investigate how leadership has been conceptualized and operationalized in the context of pandemics as crises. Given the lack of standard concepts, frameworks or assessment tools related to crisis leadership, we used a scoping review methodology rather than a systematic review methodology to map the key concepts and contextual factors related to crisis leadership in a pandemic situation. We identified that in a pandemic context, leaders function at the intersection of task, people, and adaptive competencies. Political, structural, and cultural contexts influence the demonstration of these competencies. In general, during a crisis, leaders who demonstrated credibility and clear command of the situation, the ability to make and engage in consistent and responsible decisions and communications, and a transparent communication process were able to inspire and influence change.

Our findings are consistent with the current view of leadership as including administrative, adaptive, and enabling functions (Heifetz & Laurie, 2001; Uhl-Bien et al., 2007; Yukl, 2012). Although the current leadership theories explore leadership as a complex phenomenon shaped by contextual factors, task leadership and people leadership are often viewed as siloed functions. For example, traditionally in health care, leaders are recruited for their years of experience in a task area to lead an organization or team (Wolter et al., 2015). However, we found across studies that leaders cannot function in a siloed function during pandemics. We derived a framework for pandemic leadership that reflects a threefold interaction among task, people, and adaptive competencies within political, structural, and cultural contexts. For example, in a dynamic crisis, leaders must demonstrate their ability to focus on the task while empathizing with people's situations and demonstrating nimble adaptability to rapidly changing events. As such, health care and public health leaders should have competencies in people and adaptive competencies, in addition to the more common subject matter mastery, in order to face current and future crises.

We have seen several significant pandemics in the past 20 years. Health systems globally need to strengthen workforce capacity to effectively face pandemics and avoid the case fatality and mortality burden we have witnessed with the

COVID-19 pandemic. To effectively achieve this goal, health care organizations must engage in better training to prepare their workforce to lead effectively during rapidly evolving crises, such as the COVID-19 pandemic. At the public policy level, the crisis leadership framework set forth in this study can be a crucial supplement to leadership training offered to public health officials and clinicians by government organizations such as the Centers for Disease Control and Prevention that include competency training in their curriculums (Centers for Disease Control and Prevention, 2018). Understanding key crisis leadership behaviors helps health care organizations design evidence-informed and competency-based training programs.

The scope of literature published between the SARS crisis in 2003 and the COVID-19 pandemic in December 2020 limits our study findings. The current literature contained few empirical studies from which to draw firm conclusions about specific leadership competencies, temporal factors, and response effectiveness. As such, it was not feasible to explore how contextual factors moderated the effects of the competencies. Furthermore, these studies provided vague conceptual definitions of leadership, and studies did not use standardized instruments that measured leadership competencies in a crisis situation effectively, which caused conceptual inconsistencies. In addition, task competencies were weighted heavily in the current crisis leadership literature; this is unsurprising because emergency management and crisis management literature has focused primarily on crises' planning and mitigation functions.

Future studies should focus on broadening the leadership focus by examining beyond task competencies and exploring the factors related to people and adaptive competencies. We suggest that authors of future crisis leadership studies expand the methodological approaches and use qualitative and mixed-method approaches to understand the temporal aspects of pandemics and related leadership behaviors.

We noted the empirical studies found on pandemic leadership rarely made explicit references to a clear definition of crisis leadership or to existing leadership theories or models. To understand the dynamic patterns among task, people, and adaptive competencies of crisis leadership and the contextual influences, future authors of crisis leadership studies should define these constructs clearly and situate their research in existing crisis leadership research. In addition, our analysis of crisis leadership is specific to pandemics and future work could further explore the applicability to other crisis situations, such as climate crisis.

In conclusion, the research on pandemic leadership must become more robust if we are to better understand what makes pandemic responses successful. At present, it remains difficult to draw firm conclusions on how leadership competencies impact outcomes or the explicit mechanisms that shape contextual factors. Overall, pandemic leadership is an area that will continue to evolve as more researchers use empirical research designs and assessment methods to study

leadership competencies. Until we have a larger body of empirical research on crisis leadership, any conclusions asserted for pandemics or any other crisis require further investigation.

Acknowledgments

Authors acknowledge the contribution by Sabine Caleja and Ana Patricia Ayala, who helped with article search and screening tasks.

Author Contributions

Abi Sriharan (AS), Attila J. Hertelendy (AJH), Jane Banaszak-Holl (JBH), Michelle M. Fleig-Palmer (MMF), Cheryl Mitchell (CM), and Sara J. Singer (SS) conceptualized and designed the review. AS, AJH, JBH, MMF, Devin J. Rapp (DJR), SS, and CM reviewed titles, abstracts, and full-text papers for eligibility. AS, AJH, Amit Nigam (AN), JBH, MMF, DJR, SS, and CM were responsible for extracting data and all data extraction. AS, JBH, and CM were responsible for data synthesis. AS, AJH, JBH, and MMF prepared the initial draft manuscript. AS, AJH, JBH, DJR, JG, AN, SS, and CM reviewed and edited the manuscript.

Declaration of Conflicting Interests


The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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References

- Ahmed, F., Zhao, F., & Faraz, N. A. (2020). How and when does inclusive leadership curb psychological distress during a crisis? Evidence from the COVID-19 outbreak. *Frontiers in Psychology, 11*, 1898. <https://doi.org/10.3389/fpsyg.2020.01898>
- Alban-Metcalf, J., & Alimo-Metcalf, B. (2013). Reliability and validity of the "leadership competencies and engaging leadership scale." *International Journal of Public Sector Management, 26*(1), 56-73. <https://doi.org/10.1108/09513551311294281>
- Andrew, S. A., Arlikatti, S., Chatterjee, V., & Ismayilov, O. (2018). Ebola crisis response in the USA: Communication management and SOPs. *International Journal of Disaster Risk Reduction, 31*(October), 243-250. <https://doi.org/10.1016/j.ijdrr.2018.04.028>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19-32. <https://doi.org/10.1080/1364557032000119616>
- Armstrong, D., Moore, J., Fraher, E. P., Frogner, B. K., Pittman, P., & Spetz, J. (2021). COVID-19 and the health workforce. *Medical Care Research and Review, 78*(1), 4S-6S. <https://doi.org/10.1177/1077558720969318>
- Austin, Z., Martin, J. C., & Gregory, P. A. M. (2007). Pharmacy practice in times of civil crisis: The experience of SARS and the blackout in Ontario, Canada. *Research in Social and Administrative Pharmacy, 3*(3), 320-335. <https://doi.org/10.1016/j.sapharm.2006.09.001>
- Avery, E. J., & Park, S. (2019). The influences of relationship quality with external partners and required levels of approval of messaging on crisis preparedness. *Public Relations Review, 45*(1), 119-127. <https://doi.org/10.1016/j.pubrev.2018.08.001>
- Barrios, J. M., & Hochberg, Y. (2020). *Risk perception through the lens of politics in the time of the COVID-19 pandemic* (National Bureau of Economic Research No. w27008). <https://doi.org/10.3386/w27008>
- Bavik, Y. L., Shao, B., Newman, A., & Schwarz, G. (2021). Crisis leadership: A review and future research agenda. *Leadership Quarterly*. Advance online publication. <https://doi.org/10.1016/j.leaqua.2021.101518>
- Boin, A., Kuipers, S., & Overdijk, W. (2013). Leadership in times of crisis: A framework for assessment. *International Review of Public Administration, 18*(1), 79-91. <https://doi.org/10.1080/12294659.2013.10805241>
- Boyatzis, R., & Boyatzis, R. E. (2008). Competencies in the 21st century. *Journal of Management Development, 27*(1), 5-12. <https://doi.org/10.1108/02621710810840730>
- Caballero-Anthony, M., Teng, P., & Montesclaros, J. M. L. (2020). *COVID-19 and food security in Asia: How prepared are we?* (NTS Insight No. IN20-03). <https://think-asia.org/handle/11540/12065>
- Caringal-Go, J. F., Teng-Calleja, M., Franco, E. P., Manaois, J. O., & Zantua, R. M. S. (2021). Crisis leadership from the perspective of employees during the COVID-19 pandemic. *Leadership & Organization Development Journal, 42*(4), 630-643. <https://doi.org/10.1108/LODJ-07-2020-0284>
- Centers for Disease Control and Prevention. (2018). *Public health professionals gateway: National Leadership Academy for the Public's Health*. <https://www.cdc.gov/publichealthgateway/nlaph/index.html>
- Chuang, E., Cuartas, P. A., Powell, T., & Gong, M. N. (2020). "We're not ready, but i don't think you're ever ready": Clinician perspectives on implementation of crisis standards of care. *AJOB Empirical Bioethics, 11*(3), 148-159. <https://doi.org/10.1080/23294515.2020.1759731>
- Coe, E., Enomoto, K., Finn, P., Stenson, J., & Weber, K. (2020, September 4). Understanding the hidden costs of COVID-19's potential impact on US healthcare. *McKinsey & Company*. <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/understanding-the-hidden-costs-of-covid-19s-potential-impact-on-us-healthcare>
- Crouse Quinn, S. (2008). Crisis and emergency risk communication in a pandemic: A model for building capacity and resilience of minority communities. *Health Promotion Practice, 9*(4 Suppl.), 18S-25S. <https://doi.org/10.1177/1524839908324022>
- D'Auria, G., & De Smet, A. (2020 March 16). *Leadership in a crisis: Responding to the coronavirus outbreak and future challenges*. <https://www.mckinsey.com/business-functions/organization/our-insights/leadership-in-a-crisis-responding-to-the-coronavirus-outbreak-and-future-challenges>
- Deitchman, S. (2013). Enhancing crisis leadership in public health emergencies. *Disaster Medicine and Public Health Preparedness, 7*(5), 534-540. <https://doi.org/10.1017/dmp.2013.81>

- Dorfman, P., Javidan, M., Hanges, P., Dastmalchian, A., & House, R. (2012). GLOBE: A twenty year journey into the intriguing world of culture and leadership. *Journal of World Business*, 47(4), 504-518. <https://doi.org/10.1016/j.jwb.2012.01.004>
- Emans, S. J., Ford, C. A., Irwin, C. E., Jr., Richardson, L. P., Sherer, S., Sieving, R. E., & Simpson, T. (2020). Early COVID-19 impact on adolescent health and medicine programs in the United States: LEAH program leadership reflections. *Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*, 67(1), 11-15. <https://doi.org/10.1016/j.jadohealth.2020.04.010>
- Fernandes, N. (2020). *Economic effects of coronavirus outbreak (COVID-19) on the world economy*. SSRN. <https://doi.org/10.2139/ssrn.3557504>
- Geiger, D., Harborth, L., & Mugyisha, A. (2020). Managing enduring public health emergencies such as COVID-19: Lessons from Uganda Red Cross Society's Ebola virus disease response operation. *BMJ Leader*, 4(3), 113-116. <https://doi.org/10.1136/leader-2020-000243>
- Georgiades, C. (2020). Leadership lessons from prior pandemics: Turning the coronavirus disease 2019 (COVID-19) pandemic into an opportunity. *Journal of the American College of Radiology*, 17(7), 906-908. <https://doi.org/10.1016/j.jacr.2020.04.027>
- Gilmartin, M. J., & D'Aunno, T. A. (2007). Leadership research in healthcare: A review and roadmap. *Academy of Management Annals*, 1(1), 387-438. <https://doi.org/10.5465/078559813>
- Hadley, C. N., Pittinsky, T. L., Sommer, S. A., & Zhu, W. (2011). Measuring the efficacy of leaders to assess information and make decisions in a crisis: The C-LEAD scale. *Leadership Quarterly*, 22(4), 633-648. <https://doi.org/10.1016/j.leaqua.2011.05.005>
- Harter, J. (2020, March 23). COVID-19: What employees need from leadership right now. *Gallup*. <https://www.gallup.com/workplace/297497/covid-employees-need-leaders-right.aspx>
- Hatami, H., Sjatil, P. E., & Sneader, K. (2020, May 28). The toughest leadership test. *McKinsey & Company*. <https://www.mckinsey.com/featured-insights/leadership/the-toughest-leadership-test>
- Heifetz, R., & Laurie, D. (2001). The work of leadership. *Harvard Business Review*, 79, 131-141.
- Heifetz, R., & Linsky, M. (2017). *Leadership on the line, with a new preface: Staying alive through the dangers of change*. Harvard Business Press.
- Hertelendy, A. J. (2020). COVID-19 Pandemic: An analysis of what is working, what we have learned thus far, and the challenges that remain ahead. *Journal of Emergency Management*, 18(7), 7-8. <https://doi.org/10.5055/jem.2020.0482>
- Holtom, B., Edmondson, A. C., & Niu, D. (2020, July 9). 5 Tips for communicating with employees during a crisis. *Harvard Business Review*. <https://hbr.org/2020/07/5-tips-for-communicating-with-employees-during-a-crisis>
- Kapucu, N., & Ustun, Y. (2018). Collaborative crisis management and leadership in the public sector. *International Journal of Public Administration*, 41(7), 548-561. <https://doi.org/10.1080/01900692.2017.1280819>
- Klann, G. (2003). *Crisis leadership: Using military lessons, organizational experiences, and the power of influence to lessen the impact of chaos on the people you lead*. Center for Creative Leadership.
- Kraaijenbrink, J. (2020, November 19). The two principles of crisis leadership that every leader should know. *Forbes*. <https://www.forbes.com/sites/jeroenkraaijenbrink/2020/11/19/the-two-principles-of-crisis-leadership-that-every-leader-should-know/?sh=5ef783e66e49>
- Krathwohl, D., Bloom, B., & Masia, B. (1971). The classification of educational goals. *Handbook II: Affective Domain*. David McKay Co.
- Kurz, R. S., & Carter Haddock, C. (1989). Leadership: Implications of the literature for health services administration research. *Medical Care Review*, 46(1), 75-94. <https://doi.org/10.1177/107755878904600104>
- Lancaster, E. M., Sosa, J. A., Sammann, A., Pierce, L., Shen, W., Conte, M. C., & Wick, E. C. (2020). Rapid response of an academic surgical department to the COVID-19 pandemic: Implications for patients, surgeons, and the community. *Journal of the American College of Surgeons*, 230(6), 1064-1073. <https://doi.org/10.1016/j.jamcollsurg.2020.04.007>
- Last, J. M. (1993). Dictionary of epidemiology. *CMAJ: Canadian Medical Association Journal*, 149(4), 400. <https://doi.org/10.1136/jech.47.5.430>
- Laxton, C. E., Nace, D. A., & Nazir, A., for Post-Acute, A. T. S., & Medicine, L. T. C. (2020). Solving the COVID-19 crisis in post-acute and long-term care. *Journal of the American Medical Directors Association*, 21(7), 885-887. <https://doi.org/10.1016/j.jamda.2020.06.017>
- Leider, J. P., DeBruin, D., Reynolds, N., Koch, A., & Seaberg, J. (2017). Ethical guidance for disaster response, specifically around crisis standards of care: A systematic review. *American Journal of Public Health*, 107(9), e1-e9. <https://doi.org/10.2105/AJPH.2017.303882>
- Lexa, F. J., & Fessell, D. (2020). Leadership in the aftermath of Coronavirus Disease 2019 (COVID-19): Next steps post surge. *Journal of the American College of Radiology*, 17(7), 913-914. <https://doi.org/10.1016/j.jacr.2020.05.020>
- Ma, L. L., Wang, Y. Y., Yang, Z. H., Huang, D., Weng, H., & Zeng, X. T. (2020). Methodological quality (risk of bias) assessment tools for primary and secondary medical studies: What are they and which is better? *Military Medical Research*, 7(1), Article 7. <https://doi.org/10.1186/s40779-020-00238-8>
- Marmot, M., & Allen, J. (2020). COVID-19: Exposing and amplifying inequalities. *Journal of Epidemiology & Community Health*, 74(9), 681-682. <https://doi.org/10.1136/jech-2020-214720>
- McGowan, J., Sampson, M., Salzwedel, D. M., Cogo, E., Foerster, V., & Lefebvre, C. (2016). PRESS peer review of electronic search strategies: 2015 Guideline statement. *Journal of Clinical Epidemiology*, 75, 40-46. <https://doi.org/10.1016/j.jclinepi.2016.01.021>
- Mitroff, I. I., Shrivastava, P., & Udwadia, F. E. (1987). Effective crisis management. *Academy of Management Perspectives*, 1(4), 283-292. <https://doi.org/10.5465/ame.1987.4275639>
- Moorkamp, M., Torenvlied, R., & Kramer, E. H. (2020). Organizational synthesis in transboundary crises: Three principles for managing centralization and coordination in the corona virus crisis response. *Journal of Contingencies and Crisis Management*, 28(2), 169-172. <https://doi.org/10.1111/1468-5973.12294>
- Munn, Z., Peters, M. D., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, 18(1), Article 143. <https://doi.org/10.1186/s12874-018-0611-x>

- Nicola, M., Sohrabi, C., Mathew, G., Kerwan, A., Al-Jabir, A., Griffin, M., Agha, M., & Agha, R. (2020). Health policy and leadership models during the COVID-19 pandemic-review article. *International Journal of Surgery*, *81*(September), 122-129. <https://doi.org/10.1016/j.ijso.2020.07.026>
- Nyenswah, T. (2016). Leadership in times of crisis: A personal reflection from the center of the Ebola epidemic response in Liberia. *Health Systems and Reform*, *2*(3), 208-212. <https://doi.org/10.1080/23288604.2016.1216253>
- Paixão, G., Mills, C., McKimm, J., Hassanien, M. A., & Al-Hayani, A. A. (2020). Leadership in a crisis: Doing things differently, doing different things. *British Journal of Hospital Medicine*, *81*(11), 1-9. <https://doi.org/10.12968/hmed.2020.0611>
- Peters, M. D. J., Godfrey, C., McInerney, P., Munn, Z., Tricco, A. C., & Khalil, H. (2020). Chapter 11: Scoping reviews (2020 version). In E. Aromataris & E. Z. Munn (Eds.), *JBI reviewer's manual*. <https://doi.org/10.46658/JBIMES-20-12>
- Rehill, N., Begley, A., Mantell, K., & Roberts, C. M. (2020). Clinical academic leadership in COVID-19: A rapid response to sharing emerging insights in intensive care. *BMJ Leader*, *4*(4). <https://doi.org/10.1136/leader-2020-000292>
- Romney, D., Fox, H., Carlson, S., Bachmann, D., O'Mathuna, D., & Kman, N. (2020). Allocation of scarce resources in a pandemic: A systematic review of US state crisis standards of care documents. *Disaster Medicine and Public Health Preparedness*, *14*(5), 1-7. <https://doi.org/10.1017/dmp.2020.101>
- Sangal, R. B., Wrzesniewski, A., DiBenigno, J., Reid, E., Ulrich, A., Liebhardt, B., Bray, A., Yang, E., Eun, E., Venkatesh, A. K., & King, M. (2020). Work team identification associated with less stress and burnout among front-line emergency department staff amid the COVID-19 pandemic. *BMJ Leader*, *5*(1). <https://doi.org/10.1136/leader-2020-000331>
- Segal, E. S. (2003). Cultural constructions of gender. In C. R. Ember & M. Ember (Eds.), *Encyclopedia of sex and gender* (pp. 3–11). Springer. https://doi.org/10.1007/0-387-29907-6_1
- Sergent, K., & Stajkovic, A. D. (2020). Women's leadership is associated with fewer deaths during the COVID-19 crisis: Quantitative and qualitative analyses of United States governors. *Journal of Applied Psychology*, *105*(8), 771-783. <https://doi.org/10.1037/apl0000577>
- Shih, F. J., Turale, S., Lin, Y. S., Gau, M. L., Kao, C. C., Yang, C. Y., & Liao, Y. C. (2009). Surviving a life-threatening crisis: Taiwan's nurse leaders' reflections and difficulties fighting the SARS epidemic. *Journal of Clinical Nursing*, *18*(24), 3391-3400. <https://doi.org/10.1111/j.1365-2702.2008.02521.x>
- Shih, W. (2020). Global supply chains in a post-pandemic world. *Harvard Business Review*. <https://hbr.org/2020/09/global-supply-chains-in-a-post-pandemic-world>
- Sobelson, R. K., Young, A. C., Marcus, L. J., Dorn, B. C., Neslund, V. S., & McNulty, E. J. (2013). The meta-leadership summit for preparedness initiative: An innovative model to advance public health preparedness and response. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, *11*(4), 251-261. <https://doi.org/10.1089/bsp.2013.0056>
- Stogdill, R. M. (1948). Personal factors associated with leadership: A survey of the literature. *Journal of Psychology*, *25*(1), 35-71. <https://doi.org/10.1080/00223980.1948.9917362>
- Stogdill, R. M. (1974). *Handbook of leadership: A survey of theory and practice*. Free Press.
- Strauss, A., & Corbin, J. M. (1997). *Grounded theory in practice*. Sage.
- Sultana, U. S., Tarofder, A. K., Darun, M. R., Haque, A., & Sharief, S. R. (2020). Authentic leadership effect on pharmacists job stress and satisfaction during COVID-19 pandemic: Malaysian perspective. *Journal of Talent Development and Excellence*, *12*(3s). <https://www.iratde.com/index.php/jtde/article/view/563>
- Tham, K. Y., Lu, Q., & Teo, W. (2020). Infodemic: What physician leaders learned during the COVID-19 outbreak: A qualitative study. *BMJ Leader*, *4*(4). <https://doi.org/10.1136/leader-2020-000288>
- Thomas, J. C., & Young, S. (2011). Wake me up when there's a crisis: Progress on state pandemic influenza ethics preparedness. *American Journal of Public Health*, *101*(11), 2080-2082. <https://doi.org/10.2105/AJPH.2011.300293>
- Tricco, A. C., Langlois, E., & Straus, S. E., & World Health Organization. (2017). *Rapid reviews to strengthen health policy and systems: A practical guide*. World Health Organization.
- Tseng, H. C., Chen, T. F., & Chou, S. M. (2005). SARS: Key factors in crisis management. *Journal of Nursing Research*, *13*(1), 58-65. <https://doi.org/10.1097/00134372-200503000-00008>
- Tubbs, S. L., & Schulz, E. (2006). Exploring a taxonomy of global leadership competencies and meta-competencies. *Journal of American Academy of Business*, *8*(2), 29-34. <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.473.9266&rep=rep1&type=pdf>
- Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era. *The leadership quarterly*, *18*(4), 298–318.
- Wang, C., Wei, S., Xiang, H., Wu, J., Xu, Y., Liu, L., & Nie, S. (2008). Development and evaluation of a leadership training program for public health emergency response: Results from a Chinese study. *BMC Public Health*, *8*(1), Article 377. <https://doi.org/10.1186/1471-2458-8-377>
- West, R., Michie, S., Rubin, G. J., & Amlôt, R. (2020). Applying principles of behaviour change to reduce SARS-CoV-2 transmission. *Nature Human Behavior*, *4*, 451-459. <https://doi.org/10.1038/s41562-020-0887-9>
- Whitwell, K., Maynard, R., Barry, N., Cowling, V., & Sood, T. (2020). Strategic planning and response to COVID-19 in a London emergency department. *Emergency Medicine Journal*, *37*(9), 567-570. <https://doi.org/10.1136/emermed-2020-209797>
- Wolter, N., Tarnoff, S. L., & Leckman, L. (2015). Recruiting and retaining physician leaders. In *Healthcare: The Journal of Delivery Science and Innovation*. Advance online publication. <https://doi.org/10.1016/j.hjdsi.2015.08.009>
- You, M., & Ju, Y. (2019). Salience of public leaders' "meaning making" in news coverage of a health crisis. *Journal of Contingencies and Crisis Management*, *27*(4), 400-405. <https://doi.org/10.1111/1468-5973.12259>
- Yukl, G. A. (2012). Effective leadership behavior: What we know and what questions need more attention. *Academy of Management Perspectives*, *26*(4), 66-85. <https://doi.org/10.5465/amp.2012.0088>
- Yukl, G. A. (2013). *Leadership in organizations* (8th ed.). Pearson.
- Zenger, J., & Folkman, J. (2020, December 30). Research: Women are better leaders during a crisis. *Harvard Business Review*. <https://hbr.org/2020/12/research-women-are-better-leaders-during-a-crisis>