COVID-19 AS A HEALTH EDUCATION CHALLENGE: A PERSPECTIVE CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: Coronavirus disease 2019 (COVID-19) has spread throughout China and has been involving Italy since February 2020. In March, Italy is the 1st Country worldwide for number of deaths. Continuous spreading may be due to lack of knowledge about gravity of disease, way to prevent it and risk behaviors. It is important during a pandemic to set up appropriate preventative and information campaigns.

Materials and methods: We used an anonymous multiple-choice questionnaire sent by mail to evaluate the knowledge about the principal aspects of disease, related to prevention skills, clinical basis, false myths, and personal elective way of information. The same questionnaire was proposed in April 2020, when pandemic began, and after one year, to analyze all possible changes.

Results: A total of 1000 persons aged from 18 to 74 were selected for our study. Knowledge about basic rules of prevention was good, while they didn't have an appropriate one about main clinical characteristic. Many participants believed in controversial measures of prevention.

Conclusions: This study shows the need to apply all the strategies of medical education for a correct management of an epidemic, including prevention and technical notices. The lack of knowledge can stimulate the development of non-scientific theories and inappropriate behaviour.

Keywords: COVID-19 pandemic, infection control, surveys and questionnaires, community health education.

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Introduction

The novel coronavirus 2019-nCoV (n-CoV-19), first identified in China in December 2020[1, 2] has soon become a worldwide public health concern[3, 4]. In Italy the first two cases were registered in Rome in January 2020[5]. In all Western Europe, the number of deaths steadily rises, and all countries have seen a clear exponential increase from the outset[6]. In a few weeks, a state of emergency has been declared in Italy, which became the first non-Asian country to re-port autochthonous cases of Coronavirus disease 2019 (COVID-19); overall, as of March 22th there have been 59,138 notified cases (with 5,476 deaths)[7]. Since the first appearance of n-CoV-19 in Italy, the Italian Government has implemented all measures to restrict viral spread[8], Italian Government also promoted an open information about all good practices to prevent inter-human transmission such as: avoid social relations, staying at home, provide for a good hands' hygiene and wear mask only in case of symptoms[9]. However, unfair practices soon have spread. For example, although the correct use of mask was also promoted

by WHO since 29th January 2020[10], its real use has soon appeared improper worldwide, resulting in a shortage of their availability[11] and adoption of severe measures by governments to ensure sourcing for their Countries[12].

After few months the use of face masks became mandatory, considering suitable as "community masks" (not for medical use, not responding to quality certifications) single-use, washable or self-produced masks made up of multilayer materials, to cover from the chin to above the nose[13]. An important reason to discourage widespread use of face masks was to preserve limited supplies for professional use in healthcare settings[14]. We believe that an adequate information for population during an epidemic, could reduce the development of inadequate prevention measures by people or the diffusion of false myths about the disease involved[15, 16]. This phenomenon referred to as the 'infodemic' has stood out in the context of the COVID-19 pandemic[17], a large increase in the volume of information associated with a specific topic in a short period of time due to a specific incident, making misinformation and manipulation of information spreading like a virus. As inappropriate beliefs, behaviors and feelings growth could be facilitated by an incomplete knowledge of a problem[18]. In this study we want to analyze main aspects of prevention notions, clinical aspects, and false-myths about SARS-CoV-2.

Materials and methods

A perspective cross sectional study was conducted using an online questionnaire (Table 1), which has already been implemented in medical studies for a long time[19], on knowledge and beliefs, administrated to a group of 1000 people residing in Calabria, southern Italy region, randomly extracted from the database of our Hospital. The questionnaire was distributed through the personal mail address, in April 2020 and the second time, after one year, in April 2021.

General information

1. Age
2. Sex:
a. Male
b. Female
c. Not answer
3. Which of the following devices do you use/have you used mainly to be informed about COVID-19?

a. Television
b. Social Network
c. Messaging
d. Official websites (WHO, PubMed, Italian Government)
e. Newspaper or magazines
4. What knowledge do you believe you have on the issue of COVID-19?
a. Excellent
b. Good
c. Moderate
d. Insufficient
e. No answer

Principal prevention skills

5. Could hand-washing reduce risk of infection?
a. Yes
b. No
c. No answer
6. Could 'staying at home' reduce the risk of infection?
a. Yes
b. No
c. No answer
7. Should healthy subjects wear medical mask?
a. Yes
b. No
c. No answer

Acceptation of non-scientific theories

8. Does high assumption of vitamin C prevent infection?
a. Yes
b. No
c. No answer
9. Could insect bites transmit infection?
a. Yes
b. No
c. No answer
10. Could sunbathing reduce risk of infection?
a. Yes
b. No
c. No answer
11. Could drinking hot water reduce the risk of infection?
a. Yes
b. No
c. No answer
12. Could we take home coronavirus-19 through shoes or dresses?

a.   Yes
b.   No
c.   No answer

Specialistic notices

13.   At what age people may get COVID-19?
a.   All ages
b.   Only some age ranges
14.   Do we have a decisive care for COVID-19?
a.   Yes
b.   No
c.   No answer
15.   May an apparently healthy person be infected?
a.   Yes
b.   No
c.   No answer
16.   Which is the percentage of COVID patients they need recovery in intensive care unit?
a.   10-20%
b.   30-40%
c.   50-60%
d.   More than 60%
17.   Does a vaccine against COVID-19 exist?
a.   Yes
b.   No
c.   No answer

Table 1: Questionnaire used for the survey

The operative plan consisted in extraction of mail contacts, sending mail with questionnaire, registration of the number of emails sent, registration of the number of individuals who accepted to fill the questionnaire. The questionnaire, composed by 15 multiple-choice questions, was structured in four parts: in the first, we asked the personal level of perceived knowledge and the main sources used to get informations. To guarantee anonymity we only asked age and sex.

In the second part we examined main prevention skills, the ones officially advised by WHO, asking about: the need of wearing protective mask by healthy subjects; washing hands; staying at home or avoid social relations. In third part, we evaluated controversial and unofficial strategies commonly known to prevent SARS-CoV-2 infection such as: high assumption of vitamin C, transmission from insect bites, sunbathing, drinking hot water, carrying home virus through shoes or dresses. In the last part, we measured the appropriate knowledge about the main clinical aspects of the disease: the age of patient who can become infected, the existence of a vaccine[20]

and of a decisive care, the concept of 'asymptomatic', the risk of an infected person to need recovery in intensive care unit. All data are expressed as mean ± standard deviation (SD). A statistical analysis was carried out to evaluate significant differences between male and female (p<0.05). To ensure 2020's responders were as aged as 2021's, and reflecting the same population, t- test was applied. The analysis was performed using Prism Version 9.1.1 (GraphPad Software Inc., San Diego, California), an already validated method in scientific literature[18].

Results

We have sent 1000 questionnaires per year which were filled by:
• In April 2020, 774 people, 494 females (63.8%) and 276 males (35.6%). 4 individuals (0.5%) preferred to not declare their sex.
• In April 2021, 648 people, 360 females (55.5%) and 286 males (44.2%). 2 individuals (0.3%) did not declare their sex. (Figure 1-A). Figure 1 A, B, C general information about participants to our study.
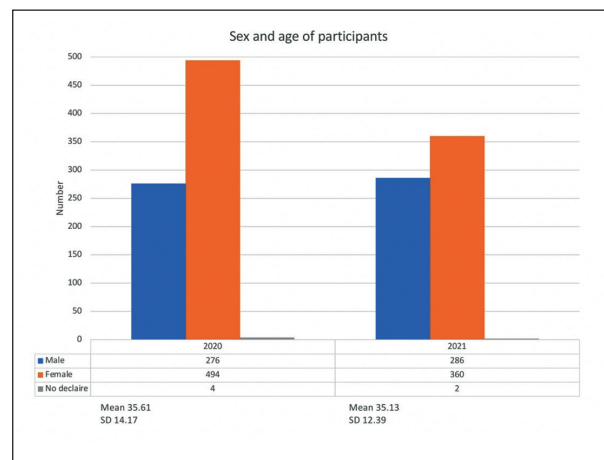

Figure 1-A: In April 2020, 774 people were enrolled to our study: 494 females (63.8%) and 276 males (35.6%), In April 2021, 648 people, 360 females (55.5%) and 286 males (44.2%), in 2021, 2 people (0.3%) did not declare their sex. A statistical analysis was executed: no statistically significant differences between male and female (p>0.05).

We didn't receive any answer from 226 people in 2020, and 352 in 2021 so we considered they refused the participation to our study. We analyze all answer for each year.

April 2020
Through the first part of the questionnaire, 2.8%[22] of participants thought they had an excellent

knowledge about COVID-19 and only 12,5% (97) believed they had and insufficient knowledge. Among the remaining people, 35.6% (276) responded that they had a good knowledge, 48.5% (376) moderate, and 0.3% (3) did not answer (Figure 1-B). They reported getting information about Covid-19 from television, followed by websites of recognized organizations; social networks, newspapers, and messaging (or texting) were respectively 12%, 8% and 0.7%. (Figure 1-C).
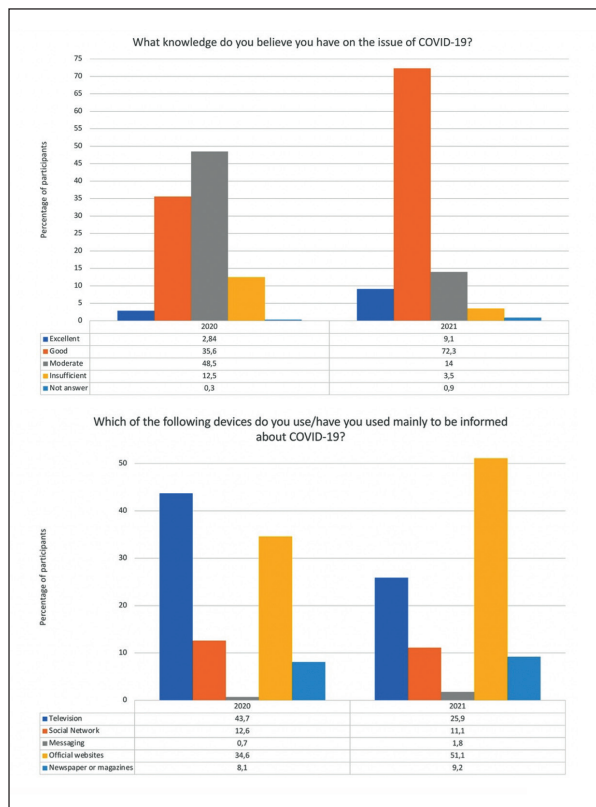

Figure 1-B, C: The two graphics can be read jointed: in 2020 only 2.8% of participants thought they have an excellent knowledge and 35.65% defining 'good' their skills, while after one year 72.3%of people declared they have a good knowledge (C). In part, this relief could be explained by the changing in the way of being informed: up to 51,8% increases the number of people using official websites, compared to 34.6% observed in 2020 (D).

In the second part of questionnaire, most of the participants appeared perfectly informed about the importance of handwashing (98.1%) (question 5) and avoid social relations staying home (99.2%) (questions 6). Conversely, an important lack of knowledge was shown about the wearing protective mask related indication (question 7): 46.5% of them considered mandatory its use by healthy subjects, differently from official statements. We emphasize in April 2020 the official indication was 'protective

mask must be used exclusively by symptomatic subjects'[6-10]. Regarding the acceptance of non-scientific theories (third part), 64% of people believed that COVID-19 could be carried home through dresses or shoes, 27% disagree, and 8% did not answer. More comfortable results were obtained for the remaining three questions: only 3% believed in the transmission of virus through insect bites (9.9% no answer), 9.6% though sunbath protect against infection (6% no answer) and 9% (60 people) stated drinking hot water reduces the risk of infection (7.7% no answer).

The last part of questionnaire relative to medical notices, showed different trend between the five questions: 96.5% of people knew COVID-19 can be developed at all ages and an apparently healthy person could be infected (98.8% of agreement). The risk of compliances requiring intensive care unit appeared overestimated: only 58.3% of them thought it is about 10%, while 27.9% indicated 'from 30 to 40%', 9% stated 'from 50 to 60%' and 34 people (4.6%) believe the risk is more than 60%. About therapeutic strategies, only 7.8% though we have a decisive care (87% thought we don't, 4.9% no answer) and 95.2% knew a vaccine still didn't exist. Figure 2 A-B Specialistic notices.
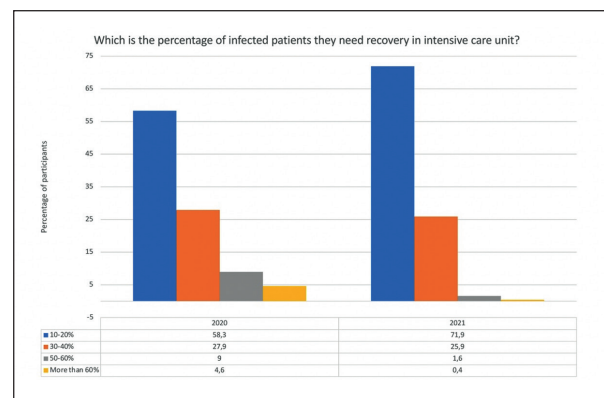

Figure 2-A: At the start of pandemic in 2020, the risk to need recovery in intensive care unit was overestimated: certainly, this was influenced by high death rate in first moths of pandemic, related to the poor capacity to treat COVID-19. After one year, more than 70% of participants showed a better awareness of this risk.

April 2021

A definite trend of 72.3% of participants (469) though they had a good knowledge about the topic, moderate knowledge characterized 14% (91). The remaining respondents were 'excellent' informed in 9.1% of total (59), still 'insufficient' 3.5% (23) and 0.9% (6) did not answer. More than half stated they choose official websites to be informed (51.8%),

followed by television (25.9%) and social network (11.1%) (Figure 1). The section of prevention strategies showed the following answers: the importance of handwashing was shared by 99% of responders; the isolation – or 'the staying-home'- was understood by 92.7% (612) of people, although 5.4% (35) disagreed and 1.8% (12) did not answer.
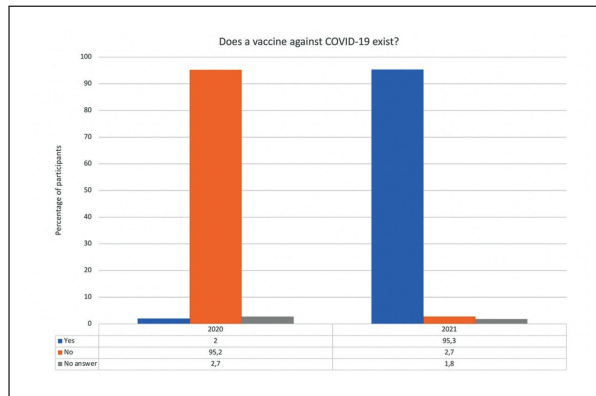

Figure 2-B: In 2020, even if we did not have a vaccine against COVID-19, 2% of people believed we did. After one year, despite mediatic highlights and public promotion campaign, 2,7% of people think we do not a vaccine against SARS-CoV-2, and 1,8% prefers to not answer.

The use of safety mask - become mandatory about a year earlier – was well known by 94.4% (612) but disapproved by 3.54% (23) and not answered by 2%(13). The questionnaire section 'acceptance of non-scientific theories' showed: 6% (39) of people believing C-vitamin reduces the risk of infection (9.1% no answer), 3.85% (25) participants convinced insect bites can carry virus (5.5% no answer), 8.95% (58) stated sunbath reduces contagion (6.32% no answer); drinking hot water was a preventive strategy for 32 individuals (4.93%) and 528 persons (81.4%) knew they can carry virus home through shoes or clothes.

Regarding the technical notions, 96.14% (623) individuals knew COVID-19 can be developed at all ages. A person apparently healthy could be infected for 95.9% (622) of participants, while 1.85% (12) disagreed. The risk to develop a form of disease requiring intensive care unit was considered approximately 10-20% by 71.9% (466) of people and 30-40% by 25.9% (168), while the overestimation characterized 0.46% (3) of people (those answering 50-60%) and 1.69% (11) (those answering more than 60%). The existence of a decisive therapy is considered by 44.4 % (288) of total versus 51.8% (336), only 24 people didn't answer (3.70%). The question 'does a vaccine exist?' gets 95.3% (618) of positive answer, 12 people did not answer (1.85%), 18 participants curiously stated 'it doesn't exist' (2.7%).

Discussion

First data emerging from our study is the easy use and prompt acceptance of digital form questionnaire. On both occasions, it was accepted and filled by more than 60% of questioned. This modality is fast, economic, and well accepted. It reduces the sense of judgement associated to the direct interview and it can be performed when the participant prefers, at the most appropriate time. However, at the second time in 2021, we observed a reduction into the number of participants: 774 in 2020 versus 648 in 2021, with a decrease of 16.27 %. This changing could be probably explained through the collective feeling of redundancy and continuous media storming about COVID-19 and pandemic.

We believe at the beginning of a collective problem, such as coronavirus in April 2020, the will to cooperate and to help was greater, making people more prone to accept an interview. Additionally, in April 2020 people were suddenly catapulted into the dimension of lockdown, isolation, and all-day-home daily life, all factors resulting in more own time disposable to accept the questionnaire. An interesting data is the change of feeling on personal knowledge about COVID-19: in 2020 only 2.8% of participants thought they have an excellent knowledge and 35.65% defined 'good' their skills, while after one year 72.3%of people declared they have a good knowledge. In part, this relief could be explained by the changing in the way of being informed: up to 51.8% of people use official websites, compared to 34.6% observed in 2020. Analyzing the answers, our work suggests that knowledge of the interviewed people about COVID-19 was initially incomplete. Moreover, we found that the lack of knowledge regards as scientific characteristics of disease, as more simple aspects who can be acquired through a correct public information.

For example, 360 people in April 2020 thought that healthy people should wear protective mask, although this was never sentenced by official recognized healthy organization. As well as stated, that time by WHO, wearing medical mask when not indicated represent a burden. This behavior procures unnecessary costs and create a false sense of security that could lead to neglecting other essential measures, such as hand hygiene practices,

or it can reduce the tendency to respect the 'staying-at-home' prescription. In the same way, 64% of them stated they can carry virus home through dresses or shoes, which was 81.4% after one year. Considering the perception of the disease, in 2020 more than 30% had a wrong idea about the risk of needing of intensive cares, which was not particularly different in April 2021 (28%). A further interesting result characterizes 2,7% of people who does not believe a COVID vaccine exists and 1,8% not answering: the numbers confirm a lack of informations about COVID vaccine, in line with literature data[22].

The fact that this lack of knowledge may be prevented with implementing strategies of communications let us re-think to public health policies, especially teaching strategies. The correct perception of a phenomenon could improve the capacity and tendency to prevent it. In our case, COVID-19 still represent an emergency worldwide and especially for Italy. A fragmentary and incomplete healthy education could improve the development and the confidence in non-scientific theories or wrong behaviors[23], resulting in unjustified collective fear and unnecessary costs[24].

Several factors may influence the acquiring of incorrect information, such as: television (reporters often propose false, inappropriate, or unclear notions), messaging and social network (which represent elective way of circulating the so called 'fake news'). Our study is characterized by a limit. The number of participants is limited, and the results could not perfectly represent the trend of Italian people. Nevertheless, it still constitutes a valid cross-sectional analysis in a varied sample providing an important starter point to evaluate population needs in terms of health education.

Conclusions

This study demonstrates that the management of a critical affair in public health, such as a pandemic, mustn't ignore a correct education of people about the various aspects of the problem. It's important to perform educational programs.

The first purpose must be a correct analysis of the problem, to let people understand risks, possible consequences, to avoid overestimation or terrifying legends. In this way, a specific prevention program can be carried out, to help people to not-accept unofficial sources which suggest no-scientific behaviors. The reduction of inappropriate behaviors might result in reduction of health costs or even

in a better control of epidemic burden. The study also confirms that the use of web questionnaire is well accepted[25] because it can be done respecting anonymity, reduces the sense of "being evaluated" of the patient, and it requires just a smartphone.

Finally, in parallel with crisis unit, emergency field hospitals and every kind of alarmism, a sanitary emergency must stimulate also the develop of a special health education unit, coordinated by central authorities through some territorial divisions, permitting the information at multiple levels. This must be considered as a real public health priority.

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