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Knowledge about COVID-19 Best Practices in the North of Portugal and the Importance of Health Education in the Prevention of Pandemic Events

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Abstract: Introduction: The rapid global spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has made COVID-19 one of the biggest pandemics of all time, with several devastating public health challenges. In this study, we investigated the knowledge towards COVID-19 best practices in the north of Portugal. **Methods:** A descriptive cross-sectional study was performed with a convenience sample of the population of northern Portugal to assess their knowledge about COVID-19, SARS-CoV-2 and measures to prevent and mitigate pandemics. An online validated questionnaire was completed by 411 participants, from September to October 2020. **Results:** The overall correct knowledge was 81.3%, which indicates a good knowledge by the northern Portuguese respondents about COVID-19. The correct answer score differed considerably between men and women, being significantly higher among the latter (12.28 ± 1.22; $p = 0.011$). Moreover, the highest knowledge was observed in participants who attended high school or above (12.27 ± 1.21; $p < 0.000$). **Conclusion:** This study contributes to the analysis of COVID-19 knowledge by the northern Portuguese population, emphasizes the crucial role of health education in the control and mitigation of the COVID-19 pandemic, and provides field-based evidence to prevent the next pandemic event.

Keywords: best practices; COVID-19; knowledge; north of Portugal

1. Introduction

In December 2019, an outbreak of pneumonia of unknown etiology emerged in Wuhan, Hubei Province, China [1–3]. Genome sequencing showed that the agent was a new coronavirus, SARS-CoV-2, and the disease was designated COVID-19 [4,5]. The rapid global spread of the virus has made COVID-19 one of the biggest pandemics of all time, with several devastating public health challenges. At the present time, there have been more than 476 million confirmed cases of infection and more than 6 million deaths [6]. In

Portugal, more than 3.5 million cases of infection and more than 21.5 thousand deaths were confirmed [7]. The disease is highly contagious, and its main symptoms include fever, dry cough, fatigue, myalgia, and dyspnea [8]. People's adherence to the control measures of the pandemic is essential, which is largely affected by their knowledge and practices towards COVID-19, in accordance with a previous study [9]. Measures have been adopted to control SARS-CoV-2 transmission in Portugal, including the closure of public spaces, isolation, and care for infected people and suspected cases [10]. The emergence of pandemics is influenced by several socioeconomic, environmental, and ecological factors [11]. History has shown that large-scale epidemics occur when global sociodemographic factors are unbalanced. When an infectious disease spreads through the population, whether it is more restricted geographically or propagated globally, the knowledge, attitudes, practices, and resilience of the population may stop the progress of the pandemic and determine the scale of severity that it reaches, since they depend on the nature and complexity of human behavior, directly reflecting who we are, what we do, and how we live and interact with other people, animals, and the environment. Therefore, good knowledge about the etiological agent, transmission, i.e., ways of infection and, particularly, the preventive measures is necessary. It is thus essential to invest in educating the population to obtain the most favorable results possible in a pandemic context through knowledge and health promotion measures [11,12]. Health education is fundamental in the control and prevention of past, present, and future pandemic events. When an infectious disease spreads through the population, whether it is more restricted geographically or spread globally, it is the knowledge, attitudes, and practices of the population that can stop the progress of a potential pandemic. Furthermore, they may determine the scale of severity that it reaches, since they depend on the nature and complexity of human behavior, and the interaction with other people, animals, and the environment [13].

The novelty of COVID-19, together with its uncertainties, makes it critical that health authorities plan strategies to prepare and guide the population, mainly through health education programs. Due to the globalization and interconnectedness of modern times, pandemics remain a real threat to human societies [11]. It is certain that communities are never fully prepared for future pandemics. However, we know that pandemics disproportionately impact socially disadvantaged classes. A future challenge is the mitigation of health inequalities and structural social vulnerabilities that many people face globally and one of the best tools to this end is health education and health promotion.

The evolution of the pandemic depends on practices of the population, which are directly influenced by their knowledge. Zhong et al. [9] investigated Chinese residents about knowledge, attitudes, and practices towards COVID-19 during the rapid rise period of the outbreak and concluded that the greater the knowledge about COVID-19, the lower the likelihood of dangerous practices. McCaffery et al. [14] and Riiser et al. [15] showed that health education is directly associated with the ability to identify negative behaviors and the practice of preventive behaviors. The aim of the study was to assess the knowledge of the population of the North of Portugal about COVID-19. This information is essential to determine the type of intervention needed to mitigate this pandemic and prevent the next pandemic event.

2. Materials and Methods

A cross-sectional study about the knowledge of COVID-19 best practices was conducted from October to November 2020. A voluntary survey was carried out among a convenience sample of 411 participants from the North of Portugal. Portugal is a medium-sized country on the European scale. The North region represents 35% of the Portuguese population, which corresponds to around 3.6 million citizens; 22% of the total area of continental Portugal; and 30% of the municipalities in mainland Portugal [16].

Individuals were eligible to participate if they were at least 18 years of age. After agreeing to participate in the study, each participant was asked to complete an anonymous, confidential, 15 min self-administered written questionnaire distributed in online

social media platforms. The sample size of this study was calculated according to the formula of survey sample size calculation [17]. Assuming a 50% default prevalence, a 95% confidence level, and a 10% absolute error, 384 participants were necessary to include in the study. To allow for a 10% non-response, the smallest sample size required was 411 participants.

The questionnaire was based on a literature review [9,18,19] and designed by the authors (epidemiologists) to obtain information. The questionnaire consisted of 25 closed or short answer (that could be categorized) questions about general knowledge, COVID-19 knowledge, and the use of protective masks. This questionnaire was previously pre-tested to improve validity and reliability. Therefore, it was applied to 40 non-participants before the study was initiated to help improve clarity of the questions and ensure that the estimated time needed to complete the survey (approximately 10 min) was accurate. The questionnaire gathered data including respondent's demographic characteristics (gender, age, education level, residence, and occupation). The definitions of physical/mental occupation were not present in the questionnaire, but they were based on the respondent's definition. The study received ethical approval from the Ethics Commission of University of Trás-os-Montes e Alto Douro (Doc49-CE-UTAD-2020).

Data Analysis

Data were entered into an Excel database (Microsoft Corp., Redmond, WA, USA) and exported and analyzed using SPSS v27.0 (SPSS, IBM Corporation, New York, NY, USA). For descriptive purposes, Pearson $\chi 2$ test was conducted for each variable in the study looking at socio-demographic differences. Frequencies of correct knowledge answers were described. These questions were answered on a true/false basis with an additional "I don't know" option. A correct answer was assigned 1 point and an incorrect/unknown answer was assigned 0 points. The total knowledge score ranged from 0 to 15, with a higher score denoting a better knowledge of COVID-19. Knowledge scores of different participants according to demographic characteristics were compared with independent-samples *t*-test, one-way analysis of variance (ANOVA), or $\chi 2$ test as appropriate. Statistical significance was based on a p-value < 0.05.

3. Results

A total of 411 individuals participated in the study. Participants had a median age of 35.4 years. The youngest respondent was 18 years old and the oldest was 81 years old. Regarding gender, 76.9% (n = 316) were women and 23.1% (n = 95) were men. In relation to academic background, 67.7% had higher education (attended or completed). As for marital status, 55.0% (n = 226) were single, 30.4% (n = 125) were married, 5.6% (n = 23) were living as a couple without being married, 7.3% (n = 30) were divorced, and 1.7% (n = 7) were widowed.

3.1. Knowledge of the Population about SARS-CoV-2 and COVID-19

Most respondents in this study correctly answered the question about "what is a virus?", with 92.9% (n = 382) choosing the option "small infectious agent invisible to the naked eye". However, 6.6% (n = 27) of the respondents chose the option "a dangerous bacteria" and 0.5% (n = 2) "small living organism with the size of a flea".

Almost three quarters of the respondents (74.0%; n = 304) answered affirmatively to the question about whether they had heard of epidemiological outbreak events in previous years. Those who answered in the affirmative way were asked to indicate "which epidemiological outbreaks have you previously heard about?". Severe acute respiratory syndrome (SARS) was the most frequent answer (n = 53), followed by Middle East respiratory syndrome (MERS) (n = 17). Bird flu, swine flu, or Spanish flu was answered 10 times. Eight answers referred to the location of the outbreaks in the Far East and in nine answers the year when the outbreaks occurred was correctly mentioned.

Respondents were asked how the COVID-19 outbreak would have arisen. Participants could choose between some plausible options and more unlikely ones. Several answer options were given, as well as the options "other" and "which". Table 1 presents a summary of the answers given to the questions. The majority of respondents answered that the virus already existed in nature (51.6%), and 2.7% of respondents chose that the virus had a zoonotic origin. For 29.2% of the respondents, the virus was created in a laboratory in China, while for 0.7% it was created in a laboratory in the USA. In addition, 1.5% of the respondents mentioned that the virus was created in a laboratory, but without knowing the country. For 14.6% of respondents, the chosen option was "I have no idea".

Table 1. Answers about the origin of the SARS-CoV-2 pandemic virus.

Answers about the Origin of the SARS-CoV-2 Pandemic Virus	n (%)
The virus was created in a laboratory in the USA	3 (0.7%)
The virus already existed in nature	212 (51.6%)
The virus was created in a laboratory in China	120 (29.2%)
The virus does not exist	1 (0.3%)
The virus is an alien (i.e., came from another planet)	0 (0.0%)
I have no idea	59 (14.6%)
Other—virus is from zoonotic origin	11 (2.7%)
Other—virus created in a laboratory but not knowing the country	5 (1.5%)
Total	411

With the aim of studying the population's knowledge about the prevention and mitigation of the COVID-19 pandemic, participants were asked if they should have food and water at home, and 58.6% (n = 241) answered affirmatively to this question. Respondents who answered affirmatively were asked how long they should have food and water stored as a way of prevention, with 171 participants answering this question, of which 56.1% considered the period of "2 weeks" and 53.2% the period of "1 month".

General knowledge about the COVID-19 pandemic is presented in Table 2. In this study, 76.9% (n = 316) correctly considered that they needed to wash their hands for 20 s. It should be noted that 1.7% of respondents chose the option "at least 5 s" and 8.0% the option "at least 10 s". More than half of the respondents correctly identified the social distance of "1–2 m" (51.3%; n = 211). The majority of respondents (98.1%; n = 403) considered it "false" that if they did not have symptoms, it meant that they were not infected. More than half of the respondents correctly considered that companion animals, such as dogs and cats, could be infected with SARS-CoV-2 (54.3%; n = 223). The majority of participants correctly considered it "false" that companion animals, such as dogs and cats, could transmit SARS-CoV-2. More than 90% of the participants (90.3%; n = 371) answered that disinfecting the paws of dog/cat with bleach after the walk was an incorrect procedure. The majority considered it incorrect (94.9%; n = 390) that they could not be infected by touching contaminated surfaces. Almost all of the participants (99.8%; n = 410) considered it "false" that the use of gloves meant subsequent hand washing was not required. Regarding the use of disinfectant dismissing the need for hand washing, 87.3% (n = 359) of the participants answered that it was "false". Almost all of the participants, 97.1% (n = 399), considered it "false" that whenever they coughed or sneezed they should use their hands. Only 20% (n = 82) of respondents correctly considered that detergents inactivate the virus. Regarding the question about using antibiotics against COVID-19, almost all participants (95.1%; n = 391) answered that this practice was incorrect. The majority of participants (n = 95.1%; n = 391) considered that it was not safe to be in a group of people, without social distance, even if they wore a mask. The same percentage considered it "false" that the use of a visor replaces the use of a mask.

The proportion of correct answers to the 15 questions about the knowledge on COVID-19 ranged from 53.3% to 100%. The mean score of correct answers was 12.2 (standard deviation of 1.21, range of variation from 8 to 15 correct answers), showing a percentage of correct answers around 81.3% (12.2/15 × 100).

Table 2. General knowledge about COVID-19 (n = 411).

Questions	% of Correct Answers
Small infectious agent invisible to the naked eye	92.9%
Hand washing—at least 20 s	76.9%
Distance between other people (social distance)—1–2 m	51.3%
If I do not have symptoms, it means I am not infected (False)	98.1%
Companion animals, namely dogs and cats, can become infected with SARS-CoV-2 (True)	54.3%
Companion animals, namely dogs and cats, can transmit SARS-CoV-2 (False)	73.5%
I must disinfect my dog/cat's paws with bleach after a walk (False)	90.3%
I cannot get infected by touching contaminated surfaces (False)	94.9%
The use of gloves does not require hand washing (False)	99.8%
The use of disinfectants dismiss hand washing (False)	99.8%
Whenever I cough or sneeze, I should do it into my hands (False)	97.1%
Any detergent inactivates the virus (True)	20.0%
Antibiotics are effective in preventing COVID-19 (False)	95.1%
It is safe to be in a group of people, without social distance, as long as you wear a mask (False)	95.1%
The use of the visor replaces the use of a mask (False)	95.1%

3.2. Knowledge about the Use of Protective Masks

Participants were asked if they considered that they had sufficient knowledge about the use of protective masks. Most responded affirmatively to this question (54.0%; n = 222). Those who answered negatively (46.0%; n = 189) were asked what they would like to know. The summary of responses is presented in Table 3. Only 107 participants responded to this question. Most participants would like to obtain information about the effectiveness of masks (42.1%).

Table 3. Knowledge that participants (n = 107) would like to obtain about masks.

Knowledge That Participants Would Like to Obtain about Masks	n (%)
Durability of the different types of masks (number of uses, hours of use, conditions of use—wet, dry, sweat)	11 (10.3%)
Correct use (placement and disposal)	4 (3.7%)
Efficacy (filtering power, differences in effectiveness between masks, masks that should not be used)/Level of protection/Scientific information	45 (42.1%)
Washing instructions of the mask (tissue masks)	4 (3.7%)
Storage instructions (during meals, in the car, etc.)	9 (8.4%)
Advantages and disadvantages of its use (health implications of its use)	9 (8.4%)
General information without specifying	25 (23.4%)

3.3. COVID-19 Knowledge Score in Relation to Demographic Variables

In this study, the score for correct answers differed considerably between men and women, being significantly higher in women ($p = 0.011$). The level of education was also significant, with the highest level of knowledge reflected in those with secondary and higher education ($p < 0.000$) (Table 4).

Table 4. Demographic characteristics of participants and COVID-19 knowledge score by demographic variables.

Characteristics	Number of Participants (%)	Knowledge Score (Mean ± Standard Deviation)	T/F	*p*-Value
Gender			1.734	0.011
Man	95 (23.1%)	11.92 ± 1.15		
Woman	316 (76.9%)	12.28 ± 1.22		
Age-group (years)			2.009	0.092
18–29	203 (49.4%)	12.22 ± 1.16		
30–39	46 (11.2%)	12.20 ± 1.16		
40–49	68 (16.5%)	12.25 ± 1.29		
50–59	73 (17.8%)	12.27 ± 1.12		
More than 60	21 (5.1%)	11.48 ± 1.57		
Marital status			0.267	0.899
Married	125 (30.4%)	12.21 ± 1.25		
Divorced	30 (7.3%)	12.33 ± 0.99		
Living as couple	23 (5.6%)	12.00 ± 1.16		
Single	226 (55.0%)	12.18 ± 1.21		
Widow	7 (1.7%)	12.29 ± 1.38		
Education			8.470	0.000
Elementary school	26 (6.3%)	11.27 ± 1.25		
High school	97 (23.6%)	12.22 ± 1.09		
Higher education	288 (70.1%)	12.27 ± 1.21		
Occupation			2.202	0.087
Unemployed	29 (7.1%)	11.66 ± 1.54		
Student	127 (30.9%)	12.24 ± 1.18		
Physical labor	131 (31.8%)	12.18 ± 1.09		
Mental labor	124 (30.2%)	12.27 ± 1.25		

4. Discussion

To the best of our knowledge, this is the first study examining the knowledge about COVID-19 among Portuguese residents in the north of Portugal.

The present study has revealed a good knowledge of the northern Portuguese population regarding COVID-19. Indeed, the overall proportion of correct answers to the questions about COVID-19 was 81.3%, in a period during which incidence and prevalence of the disease were high in Portugal and around the world. This questionnaire was not carried out right at the beginning of the pandemic in Portugal, but between September and October 2020. Therefore, given the seriousness of this public health problem, there was already a lot of information available by health authorities and other sources in various social media, which greatly contributed to the knowledge among the population.

Previous studies carried out in other pandemic events demonstrate the importance of the population's knowledge to mitigate those events. In a study conducted in Saudi

Arabia on MERS, Almutairi et al. [20] concluded that knowledge was a significant predictor of concern, precaution, and use of preventive measures. Studies of knowledge and attitudes of Chinese healthcare professionals during COVID-19 and the 2009 H1N1 influenza pandemic have shown that appropriate training and implementation of protective measures in a hospital setting increase the willingness of team members to treat patients [21,22]. Additionally, it was shown that the greater the knowledge of health professionals, the more confident they were in defeating the virus [23].

The high proportion of correct answers about COVID-19 may also be due to the fact that the majority of participants (70.1%) had completed higher education (i.e., bachelor's, master's, or PhD degrees). The positive association between higher education and risk perception, knowledge, and protective behavior regarding COVID-19 reported in a previous study supports this hypothesis [24]. The overall rate of correct responses about COVID-19 in the present study was consistent with other studies of COVID-19 knowledge from several countries, as the one by Al-Hanawi et al. [18], carried out in Saudi Arabia, with an overall rate of correct answers of 81.4%; the study by Azlan et al. [19], carried out in Malaysia, with an overall rate of correct answers of 80.5%; and the study by Bates et al. [25], conducted in Ecuador, with an overall rate of correct answers of 82.3%. In China, Zhong et al. [9] obtained a higher overall rate of correct answers (90%), possibly due to the country's historical relationship with other infectious diseases, such as SARS. On the other hand, Hezima et al. [26], in Sudan, obtained a lower correct answer rate in a knowledge questionnaire (78.2%), a circumstance hypothetically explained by the fact that the questionnaire was carried out when the country was not yet in the COVID-19 outbreak phase.

In the present study, almost three quarters of respondents (74.0%) claimed to have knowledge of previous coronavirus outbreaks. However, when asked to indicate which outbreaks they knew about, the SARS response was answered 53 times and MERS was answered only 17 times, with the other responses obtained not corresponding to coronavirus outbreaks. This result indicates that most respondents were not aware of previous outbreaks. The vast majority of the participants (92.9%) were aware of what a virus is. Nevertheless, 6.6% believed that it was a "dangerous bacterium" and 0.5% "a small living organism with the size of a flea", which shows that, even in a pandemic context, there is some lack of knowledge about the agent that causes it. This shows flaws in previous health education regarding infectious diseases and their agents, which can potentially lead to low pandemic preventive measures.

Regarding the origin of SARS-CoV-2, those who had an opinion were mainly divided between natural origin (51.6%) or creation in a laboratory in China (29.2%). The opinion about the latter may have arisen due to a lack of knowledge about the factors behind the emergence of pandemics or a certain stigmatization of the country.

In relation to basic hygiene measures, the education of the participants on hand hygiene could be improved, since a considerable percentage of the respondents did not demonstrate a good knowledge about it, replacing hand washing with the use of disinfectants or shortening the recommended wash time.

Regarding knowledge about social distance, the majority of participants (95.1%) correctly considered that it was not safe to be with people without social distance, even wearing a mask. Even so, 5% considered this situation safe, which can be worrying, since masks are not completely effective and social distance is essential to prevent transmission of the virus through the respiratory route [27]. In addition, only 51.3% of the participants correctly responded to the recommended social distance (1–2 m), so the social distance recommendations should have been more emphasized, since this prevents the transmission of SARS-CoV-2 [28,29].

Most participants (94.5%) showed a good knowledge about indirect transmission, since they considered that they could be infected through a contaminated surface. Moreover, almost all of the participants demonstrated good knowledge about preventive measures, such as not coughing or sneezing into their hands. However, only 20% of the

participants considered that all disinfectants are effective in inactivating SARS-CoV-2. Therefore, more information should have been provided on surface disinfection, which prevents indirect transmission [30]. Nevertheless, there is currently no conclusive evidence of indirect transmission of SARS-CoV-2 [28], although viability studies of the virus on different surfaces suggest that indirect transmission by contact with contaminated surfaces is possible [28,31–33].

Regarding knowledge about face masks, the majority (95.1%) of the participants were aware that the visor does not replace the use of a mask. However, a considerable number of respondents indicated that they did not have enough knowledge about masks, and would like to obtain more information about their protection/effectiveness. These results show that it would be beneficial to provide more information about masks in order to avoid misconceptions and doubts about one of the main measures to prevent the COVID-19 pandemic, a circumstance that could influence adherence to their use.

Regarding the sample's knowledge of COVID-19 in animals, the majority considered that companion animals, namely dogs and cats, can be infected with SARS-CoV-2 (54.3%), but cannot transmit the virus to other animals and to humans (73.5%). The fact that these values were not extremely high has shown that there was some division between participant's responses, which can be considered normal, since, when the questionnaire was carried out, this topic was quite uncertain. There is evidence of natural infection in several animal species (nonhuman primates, cats, ferrets, hamsters, rabbits, and bats); however, there is no indication that dogs and cats can transmit the virus to humans [34,35].

The majority of respondents (90.3%) considered that pets should not be disinfected with bleach after being walked. Even so, it is worrying that around 10% considered this practice correct. The opinion of these 10% may have arisen from misinformation, since during the last months of 2020 the myth circulated that this practice would be beneficial. Internet and web-based platforms are very useful for dissemination of information by health authorities [36]. However social networks also expose people to the danger of misinformation, such as incorrect news and conspiracy theories, which causes direct negative impacts on health [37]. For this reason, health education and digital health literacy is more important than ever to combat misinformation, providing adequate and easily accessible and understandable information, so that the population follows reliable recommendations [38,39].

Almost all participants were well informed that antibiotics were not effective in preventing COVID-19. This knowledge is extremely important because, in addition to not preventing infection by SARS-CoV-2, the exaggerated and unjustified use of antibiotics contributes to the resistance of bacteria to them. In fact, instead of preventing a problem, antibiotics may potentiate the emergence of multidrug-resistant bacteria, which by themselves already constitute a risk to public health [40]. The present results corroborate the latest Eurobarometer data that state there are more people aware that antibiotics do not kill viruses than in 2009 [41].

In this study, women presented a higher knowledge score, which is consistent with previous studies [42,43]. Probably due to a higher stress level and other psychosocial effects, women worry more and seek knowledge and prevention instructions [44–46]. The relation between knowledge and level of education was also significant, with knowledge being higher among respondents with high school and higher education. Other studies on COVID-19 knowledge, attitudes, and practices have also shown that being a woman and more advanced levels of education were significantly associated with higher knowledge about this infection and disease [9,18,19,26]. These results suggest that the health education intervention would be more effective if it was targeted at certain demographic groups, i.e., knowledge of COVID-19 could be improved if health education programs were specifically designed for men or people with low level of education.

Unlike the studies mentioned above, in the present one the response scores did not differ significantly with age. Zhong et al. [9], Al-Hanawi et al. [18], and Azlan et al. [19] reported that older people had higher knowledge, contrasting to Hezima et al. [26], who

reported that people between the ages of 18 and 25 had higher knowledge. A recent study found that Spanish adolescents scored lower on knowledge about COVID-19, but they scored higher on COVID-19 safety practices [46]. The income level is also significant in some studies, with a higher income level being associated with higher knowledge [9,18,19]. A previous study in Portugal with the aim to understand possible predictors of health literacy of COVID-19 found that health knowledge regarding COVID-19 is associated with the level of education. This factor is positively correlated with health literacy of the population and the correct use of digital technologies and web-based health information [47]. However, there is a need to strengthen the digital health literacy capacities even in higher education [39] to prevent the next pandemic event.

5. Study Limitations

This study had some limitations and the results should be interpreted taking those limitations into account. The first limitation is related to the convenience sample that covered only the north of Portugal. Another limitation refers to the fact that people between 18–29 years old were overrepresented. Therefore, a selection bias could have occurred. These points might limit generalizing the study results. In addition, the questionnaire was conducted online in a social platform, and hence people without access to the internet or unable to use it were not included. Due to limited access to the internet and online health information resources, vulnerable populations in society, such as the elderly and rural people are more likely to have a lower knowledge of COVID-19. Consequently, analysis of these groups deserves extra attention. Nevertheless, the present study provides important information about knowledge of COVID-19 best practices in the north of Portugal because it was conducted during a pandemic phase. Despite some limitations, this survey could be a useful tool for decision makers to promote programs and campaigns aimed at informing and educating the Portuguese population in future pandemic events.

6. Conclusions

Previous studies have shown that health literacy directly influences the knowledge, attitudes, and practices of the population, which inevitably reflects the evolution and consequences of the pandemic. The results of the present study are promissors, but there is still a gap in the basic knowledge and misinformation of standard precautions to prevent infectious diseases. In order to overcome these barriers, health educators need to combine efforts to guide the use of evidence-based medical and scientific sources for the acquisition of health-related information by the authorities and general population. Educational campaigns concerning the transmission of knowledge should be assertive and include evidence-based and apprehensible information. Therefore, it is essential to invest in the education of the population to obtain the most favorable result possible in a pandemic context.

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