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Knowledge, attitudes and practices towards COVID-19: A cross-sectional study in the resident cape-verdean population

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ABSTRACT
Context: The first case of COVID-19 in Cabo Verde was confirmed on March 19, 2020. Since the beginning of the pandemic in the country, the government and health authorities have adopted restrictive measures to prevent the spread of SARS-CoV-2 and well as defined risk communication and community involvement strategies. The present study aimed at assessing the knowledge, attitudes, and practices of the Cape Verdean resident population towards COVID-19, to support the government and the national health system in the definition of public health policies related to COVID-19.

Method: A cross-sectional study was conducted among 1996 participants aged 16 years old and above. Data collected from April 5 to April 12, 2020, via an online self-reporting questionnaire adapted from a Chinese study. Descriptive statistics, chi-square tests, simple and multiple linear regression analyses were performed to determine factors associated with knowledge, attitudes, and practices towards COVID-19.

Results: The overall correct answer rate related to the knowledge about COVID-19 was 82% (9/11 * 100), 1970 (98.70%) of the participants declared they had stayed at home in recent days, 1926 (96.49%) had not attended parties, funerals or crowded places and 1860 (93.19%) confirmed changes in daily routines due to COVID-19. The majority of the participants, 1797 (90.26%), preferred receiving information about COVID-19 in Portuguese and trusted information transmitted by health professionals. Furthermore, television, radio, and newspapers were the preferred means of transmitting information about COVID-19. Participants’ knowledge influenced COVID-19 prevention and control practices (rho = 0.119; p = 0.000).

Conclusions: These findings showed that the resident population had a good level of knowledge about COVID-19; however, there is a need to use more effective strategies to improve attitudes and practices towards COVID-19 to attain better results in controlling the pandemic in Cabo Verde.

1. Introduction
This article reports the knowledge, attitudes, and practices of the Cabo Verdean population concerning COVID-19 at the beginning of the pandemic in the country. COVID-19 is an emerging respiratory disease caused by the new coronavirus SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2), after a set of cases of viral pneumonia of unknown origin first reported in December 2019 in the city of Wuhan, China, and quickly spread to other continents (World Health Organization, 2020b). Following the global evolution of the infection,
COVID-19 was declared a public health emergency of international concern by the World Health Organization (WHO) on January 30, 2020, and a pandemic on March 11, 2020 (World Health Organization, 2020a).

Despite the unprecedented measures adopted by the WHO and authorities worldwide, COVID-19 continues affecting thousands of people every day around the world. The COVID-19 fatality rate remains high globally. Currently (June 21, 2021), COVID-19 has already affected 178 million people. Over three million of these (3,864,180) have died from the disease (World Health Organization, 2020b).

1.1. Characterization and background of COVID-19

COVID-19 effects do not limit to those infected by the virus. It affects society as the virus has significant implications for people’s lives in general (Roy et al., 2020). Therefore, since the COVID-19 emergence in Wuhan city, China, in 2019, there has been an intense mobilization of the scientific community to understand the virus better and develop effective treatments and/or vaccine to curb the evolution of the pandemic and achieve the long-awaited return to normality (Paiva, 2020).

Most people who contract the disease have mild to moderate symptoms and recover without needing special treatment. However, some people affected by the SARS-CoV-2 virus do not develop symptoms of COVID-19 disease and are thus called asymptomatic cases. Severe cases may progress with breathing difficulty or shortness of breath, chest pain, loss of speech or movement (World Health Organization, 2020b). People with chronic comorbidities, immunocompromised individuals, and older adults are part of the risk groups, which are more likely to develop severe cases of the disease (Abate et al., 2020).

Coronaviruses (CoV) are a large viral family known since the mid-1960s that cause respiratory infections in humans and animals. According to the WHO, most people have been infected with common coronaviruses throughout their lives, with young children most likely to be infected by this virus (World Health Organization, 2020a). Coronavirus infections usually cause mild to moderate respiratory illnesses, similar to a common cold, however, some coronaviruses can cause severe respiratory syndromes, such as the Severe Acute Respiratory Syndrome (SARS), first reported in China in 2002, and further spread to over a dozen countries in North America, South America, Europe, and Asia (World Health Organization, 2020a).

In 2012 another new coronavirus different from the one that caused SARS in the early 2000s was isolated. The disease then called Middle East Respiratory Syndrome (MERS), and the new virus causing it, the MERS-associated coronavirus (MERS-CoV), was unknown until their identification in Saudi Arabia (World Health Organization, 2020a).

1.2. Reservoir, mode of transmission, prevention, and treatment of COVID-19

In general, coronaviruses can remain viable (i.e., maintain their infectivity) for a few days in the environment. This period depends on different factors, such as environmental temperature or exposure to ultraviolet radiation (World Health Organization, 2020b). Signs and symptoms of COVID-19 infection appear after an incubation period of approximately 2–14 days, depending on the age and immune system of the affected individual (Rothan & Byrareddy, 2020).

Studies have shown that the disease transmission occurs between infected humans (from person to person) through droplets expelled from the mouth or nose when infected people speak, cough, or sneeze (Peeri et al., 2020; World Health Organization, 2020b). Once someone is infected, the virus multiples in the individual’s airways, which becomes infectious and can transmit the virus to other people, regardless of the presence of symptoms or not.

Likewise, according to the WHO, transmission can also occur when contaminated hands after contact with surfaces containing viral particles touch the mouth, eyes, or nose (World Health Organization, 2020b).

Due to the lack of specific treatment, the WHO recommends preventive measures to reduce the spread of the virus. Physical distancing, avoiding crowds of people, restraining from sharing personal objects, practicing “respiratory etiquette or hygiene” measures, washing hands regularly and correctly with soap and water and applying alcohol gel, and respecting the containment measures adopted by governments are the appropriate means for the prevention of COVID-19 (World Health Organization, 2020b).

Despite experts’ efforts, no specific antiviral drugs to combat COVID-19 infection have been developed so far (Li et al., 2020; Rothan & Byrareddy, 2020). However, some therapeutic options have shown promising results for specific cases.

Due to the dedication and commitment of the international scientific community, at the end of 2020, some vaccines considered effective for the immunization of the world population against the SARS-CoV-2 virus were approved. According to the WHO, there are currently 284 candidate vaccines in development, 102 of which have already been tested in humans (World Health Organization, 2021). Mass vaccination of the population is considered one of the most economic measures to control the pandemic and reduce impacts on health, the economy, and the social level (World Health Organization, 2021). With the approval of some vaccines by national regulatory authorities in different territories, several countries have started mass vaccination through selected groups in the first quarter of 2021 (World Health Organization, 2020c; Freund, 2020).

1.3. COVID-19 in Cabo Verde

The first case of COVID-19 in Cabo Verde was confirmed on March 19, 2020, in an English tourist, on the island of Boa Vista. While the first Cape Verdean citizen was diagnosed on March 25, 2020, in the city of Praia and was also an imported case (Ministério da Saúde e da Segurança Social, 2020b).

Since the declaration of the pandemic, the Cabo Verdean government and health authorities had adopted several restrictive measures and risk communication strategies that were aimed at encouraging the implementation of preventive measures. These include social (physical) distancing, hand, and environmental hygiene, the use of masks, respiratory etiquette, among other means of individual and collective protection to combat the spread of the pandemic (Ministério da Saúde e da Segurança Social, 2020a).

The adoption of restrictive measures such as the declaration of a state of emergency (Presidential Decree No. 06/2020), which was in effect from March 28 to May 29, 2020, with three successive extensions, helped control the rapid spread of COVID-19 in the initial stages of the pandemic (Presidência da República, 2020). The implementation of these unprecedented national measures helped avoid the healthcare services’ overloading and allowed for their reorganization.

Despite health authorities’ efforts to curb the virus propagation, COVID-19 has already spread to all the islands of the Cabo Verde archipelago, with significant social and economic implications for the country. According to WHO, Cabo Verde was one of the African Portuguese-speaking countries (PALOP) most affected by COVID-19 (World Health Organization, 2020d).

The COVID-19 pandemic in Cabo Verde has evolved at a moderate pace, with a slight increase in the number of cases after lifting the lockdown measures on May 29, 2020. The epicenter of the infection has often alternated between islands, and the most affected islands have been Boa Vista, Santiago, Sal, São Vicente, Fogo, and Santo Antão. As of June 21, 2021, of the country has confirmed 32076 cases of COVID-19, 31194 recovered cases and 238 deaths (Ministério da Saúde e da...
1.4. Relevance of the study

Knowledge, attitudes and practices towards COVID-19 in the resident Cabo Verdean population

Since the beginning of the pandemic, Cabo Verdian authorities have implemented several measures to control the spread of the disease in the country. Some strategies to control the spread of the virus include and/or are based on educational campaigns. However, adherence has been inconsistent over the course of the pandemic and variable across islands. Education and sensitization of the population are considered some essential measures in controlling diseases and epidemics, as observed in the SARS epidemic in 2003 (Bell et al., 2003). From the perspective of Zhong et al. (2020), people’s adherence to prevention and control measures can be largely affected by the knowledge, attitudes, and practices of the population regarding COVID-19.

CAP studies consist of surveys applied to population samples to assess their level of knowledge, attitudes, and practices concerning a particular social phenomenon (Austrian et al., 2020). The methodology dates back to the early 1950s, initially applied to the area of family planning. They are studies with a simple design that are easy to apply and interpret, capable of producing generalizable quantitative data in short periods. These data, in turn, can serve as a starting point for exploratory qualitative analyzes of social norms and other determinants of behavior (Austrian et al., 2020).

To delineate strategies aimed at the cognitive and behavioral realities of the population, it is necessary to carry out KAP studies aiming to understand them (Zhong et al., 2020). The author above argues that to combat this pandemic and minimize its impact on public health and socioeconomic, it is crucial that local populations adopt the prevention and control measures oriented by local authorities (Zhong et al., 2020).

To effectively introduce COVID-19 prevention and control measures, it is necessary that people are aware of the basic principles of hygiene and the means of transmission and spread of infection by SARS-CoV-2. Thus, to successfully win the fight against COVID-19 in Cabo Verde, the resident population must be committed to preventing and controlling the disease.

Due to their advantages, CAP studies have been widely used to assess populations’ level of knowledge, attitudes, and practices during epidemics. Since the beginning of the COVID-19 pandemic, this research modality has been carried out in several countries (Akalu et al., 2020; Al-Hanawi et al., 2020; Austrian et al., 2020; Azlan et al., 2020; Clements, 2020; Erfani et al., 2020; Goumenou et al., 2020; Hussain et al., 2020; Lau et al., 2020; Manjate et al., 2020; Olapegba et al., 2020; Rahman & Sathi, 2020; Reuben et al., 2020; Rios-González, 2020; Zhong et al., 2020).

For the present study, a literature review was carried out in the prominent international health journals and repositories (PubMed, PMC, JMRI), Google Academic, official sites (WHO, Government), and digital journals. Scientific articles, full texts in PDF or HTML were searched, without language restriction, using the terms «knowledge, attitudes, and practices regarding COVID-19», «infection by the new coronavirus», «cross-sectional studies», «COVID pandemic –19».

From the literature review, several articles were found on the subject under study. We found CAP COVID-19 studies from several countries, from Asia, America, Europe, and Africa. However, we came across fewer CAP studies from the African continent, particularly from Portuguese-speaking African Countries (PALOP). Among the pertinent studies identified, the KAP study by Zhong et al. (2020) stands out as one of the primary KAP studies on the topic.

Despite the various KAP studies carried out globally, there is no validated questionnaire for conducting KAP studies concerning COVID-19. Therefore, the questionnaire from the study by Zhong et al. has been adapted to studies in other countries. Similar to the present study, most KAP studies on COVID-19 identified were carried out through virtual platforms (Clements, 2020; Erfani et al., 2020; Zhong et al., 2020).

Considering the theory that adherence to health policies is strongly influenced by the knowledge, attitudes, and practices of a population, the National Institute of Public Health of Cabo Verde designed the present study at the beginning of the pandemic, a week after the declaration of the state of emergency. Its objective was to understand and analyze the knowledge, attitudes, and practices of the Cabo Verdian resident population towards COVID-19.

More specifically, the present COVID-19 KAP study aimed to analyze the degree of knowledge of the resident Cabo Verdian population about the signs, symptoms and forms of transmission of COVID-19; describe the attitudes of the population living in Cape Verde regarding the country’s capacity to combat the COVID-19 pandemic; to identify the practices of the population living in Cape Verde in the prevention and control of COVID-19; to identify approaches and means of communication considered credible for the transmission of information about COVID-19; determine the correct response rates of knowledge of the population residing in Cape Verde about COVID-19; relate the sociodemographic variables with the correct responses of knowledge, positive attitudes and assertive practices of prevention and control of COVID-19; relate knowledge and attitudes towards COVID-19 prevention and control practices and analyze the influence of sociodemographic variables (gender, age group, marital status, level of education and profession/occupation) on the knowledge scores of the resident population about COVID-19.
2.3. Data collection instrument

The 23-question KAP questionnaire was adapted from the KAP study conducted in China (Zhong et al., 2020). The questionnaire consisted of two parts: sociodemographic data and questions about knowledge, attitudes, and practices towards COVID-19. The second part of the questionnaire included 11 questions on clinical symptoms and modes of transmission of COVID-19; three questions assessed attitudes towards the disease; five questions were related to behaviors concerning prevention and control. Lastly, four questions inquired on information and communication. Participants were given response options of “True,” “False,” or “I Do Not Know”, “Agree,” “Disagree” or “I Do Not Know” as well as “Yes”, “No” or “I Do Not Know” to questions regarding knowledge, attitudes, and practices, respectively. Knowledge questions were assigned one (1) point for each correct answer, and 0 (zero) points for incorrect and/or uncertain answers. The score ranged from 0 to 11, with the highest score indicating better knowledge of COVID-19.

2.4. Statistical analysis

In this study, the data were analyzed using the software Statistical Package for the Social Sciences (SPSS, v. 26). Descriptive analysis of the data and determination of the correct response rates was performed based on the frequencies of the correct responses. Chi-square test was used to determine the association between sex, age, marital status, education level, profession and correct response rates regarding knowledge, positive attitudes and assertive practices; Poisson correlation model was used to analyze the influence of sociodemographic variables on the knowledge. Finally, the Spearman correlation test was performed to verify any correlation between knowledge, attitudes, and practices. The level of statistical significance was 0.05.

2.5. Ethical approval and data protection

The National Data Protection Commission of Cabo Verde approved the study protocol through authorization document No. 90/2020. Participants who consented to participate voluntarily in the study clicked on the «Accept» button, filled in their names, and were directed to complete the self-reporting questionnaire.

3. Results

3.1. Sociodemographic characteristics

A total of 1996 residents participated in the study; the majority of them lived in the islands of Santiago (54.51%), São Vicente (21.69%), and Sal (8.87%). Most of the participants, 1009 (50.58%), were women, 970 (53.27%) declared they held a university degree, and 618 (31.91%) affirmed that their professional category could be classified as “Experts in Scientific and Intellectual Activities” in accordance with the National Classification of the Professions of Cape Verde (INE, 2010). Detailed demographic characteristics are described in (Appendix A p. 30).

3.2. Evaluation of knowledge

Eleven (11) questions were used to measure the knowledge of the resident Cape Verdean population about the signs, symptoms, and modes of transmission of COVID-19. The median knowledge score for participants was 9 (RANGE: 0–11), suggesting an overall correct answer rate of 82% (9/11 * 100), and the range of the correct answer rate of the participants concerning the 11 knowledge questions varies from 26.3% to 99.2% (Table 1).

![Table 1](image-url)

| Questions                                                                 | Options          | %             |
|---------------------------------------------------------------------------|------------------|---------------|
| K1. The main clinical symptoms of COVID-19 are fever, fatigue, dry cough,  | True             | 91.00%        |
| myalgias (muscular pain in any part of the body).                         | False            |               |
| K2. Currently, there is no effective cure for COVID-19, but early         | True             | 94.10%        |
| symptomatic and supportive treatment can help most patients recover       | False            |               |
| from the infection.                                                      | Know             |               |
| K3. Not all persons with COVID-19 will develop severe cases.              | True             | 92.30%        |
|                                                                            | False            |               |
|                                                                            | I Do Not Know    |               |
| K4. Only those who are elderly, have chronic illnesses, and are obese     | True             | 48.20%        |
| are more likely to be severe cases.                                       | False            |               |
|                                                                            | I Do Not Know    |               |
| K5. Contact with wild animals would result in the infection by the        | True             | 63.00%        |
| the novel coronavirus (SARS-CoV-2).                                       | False            |               |
|                                                                            | I Do Not Know    |               |
| K6. The novel coronavirus (SARS-CoV-2) spreads via respiratory droplets  | True             | 95.80%        |
| of infected individuals.                                                  | False            |               |
|                                                                            | I Do Not Know    |               |
| K7. Ordinary residents must wear masks to prevent the infection by the    | True             | 26.30%        |
| the novel coronavirus (SARS-CoV-2).                                       | False            |               |
|                                                                            | I Do Not Know    |               |
| K8. It is not necessary for children and young adults to take measures    | True             | 97.00%        |
| to prevent the infection by the new coronavirus (SARS-CoV-2).             | False            |               |
|                                                                            | I Do Not Know    |               |
| K9. To prevent the infection by the new coronavirus (SARS-CoV-2),         | True             | 99.20%        |
| individuals must wash their hands regularly and avoid going to crowded   | False            |               |
| places such as supermarkets, bars, restaurants and taking public         | I Do Not Know    |               |
| transportation, among other preventive measures.                         |                  |               |
| K10. Isolation and treatment of people who are infected with the         | True             | 98.60%        |
| new coronavirus (SARS-CoV-2) are effective ways to reduce the spread of   | False            |               |
| the virus.                                                               | I Do Not Know    |               |
| K11. People who have contact with someone infected with the new          | True             | 97.40%        |
| coronavirus (SARS-CoV-2), must be immediately isolated in a proper place | False            |               |
| and observed for a period of 2-14 days.                                  | I Do Not Know    |               |

Source: National Institute of Public Health, April 2020 - N = 1996.

The majority of the participants, 1979 (99.15%) reported that to avoid infection by the new coronavirus (SARS-CoV-2), individuals should wash their hands frequently and avoid going to crowded places, and 1968 (98.6%) affirmed that isolation and treatment of people infected with the SARS-CoV-2 virus are effective ways to reduce the spread of the disease. Only 524 (26.3%) of the respondents affirmed that people should wear masks to prevent infection by the new coronavirus and 961 (48.17%) of the participants stated that only elderly people, with chronic illnesses and the obese, are more likely to develop severe cases of COVID-19 (Table 2).

The Chi-Square results showed that the knowledge scores were significantly different across gender, age groups, marital status, educational level, and profession/occupation. (Appendix B p. 31).

Poisson’s regression model showed that age 16 to 44 (OR = 0.956, p = 0.000), education level pedagogical institute or secondary school (OR = 0.935, p = 0.000), occupation student (OR = 0.951, p = 0.000) were significantly associated with lower scores of knowledge of COVID-19.
compared to the reference groups.

On the other hand, females (OR = 1.013, p = 0.024), marital status (OR = 1.456, p = 0.000) and others (OR = 1.576, p = 0.000), and intermediate and intellectual professional categories (OR = 1.042, p = 0.000) were significantly associated with the highest COVID-19 knowledge scores, when compared to the reference groups (Table 3).

Spearman’s correlation analysis between knowledge and attitudes with practices indicates that the level of knowledge has a significant positive correlation with COVID-19 prevention and control practices (rho = 0.119; p = 0.000) and that attitudes are not correlated with practices (Table 4).

### Table 2
Knowledge of study participants on symptoms and modes of transmission of COVID-19 (N=1996).

| Questions | Options | N   | %   |
|-----------|---------|-----|-----|
| K1. The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, myalgia (muscular pain in any part of the body). | True | 1815 | 90.93 |
|  | False | 155 | 7.77 |
|  | I Do Not Know | 26 | 1.3 |
| K2. Currently, there is no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection. | True | 1878 | 94.09 |
|  | False | 36 | 1.8 |
|  | I Do Not Know | 82 | 4.11 |
| K3. Not all persons with COVID-19 will develop severe cases. | True | 1841 | 92.23 |
|  | False | 54 | 2.71 |
|  | I Do Not Know | 101 | 5.06 |
| K4. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases. | True | 909 | 45.56 |
|  | False | 961 | 48.17 |
|  | I Do Not Know | 125 | 6.27 |
| K5. Contact with wild animals would result in the infection by the new coronavirus (SARS-CoV-2). | True | 234 | 11.72 |
|  | False | 1257 | 62.98 |
|  | I Do Not Know | 505 | 25.3 |
| K6. The new coronavirus (SARS-CoV-2) spreads via respiratory droplets of infected individuals. | True | 1912 | 95.79 |
|  | False | 46 | 2.3 |
|  | I Do Not Know | 38 | 1.9 |
| K7. Ordinary residents must wear masks to prevent the infection by the new coronavirus (SARS-CoV-2). | True | 524 | 26.25 |
|  | False | 1228 | 61.52 |
|  | I Do Not Know | 244 | 12.22 |
| K8. It is not necessary for children and young adults to take measures to prevent the infection by the new coronavirus (SARS-CoV-2). | True | 41 | 2.05 |
|  | False | 1936 | 96.99 |
|  | I Do Not Know | 19 | 0.95 |
| K9. To prevent the infection by the new coronavirus (SARS-CoV-2), individuals must wash their hands regularly and avoid going to crowded places such as supermarkets, bars, restaurants and taking public transportation among other preventive measures. | True | 1979 | 99.15 |
|  | False | 11 | 0.55 |
|  | I Do Not Know | 6 | 0.3 |
| K10. Isolation and treatment of people who are infected with the new coronavirus (SARS-CoV-2) are effective ways to reduce the spread of the virus. | True | 1968 | 98.6 |
|  | False | 14 | 0.7 |
|  | I Do Not Know | 14 | 0.7 |
| K11. People who have contact with someone infected with the new coronavirus (SARS-CoV-2), must be immediately isolated in a proper place and must be observed for a period of 2-14 days. | True | 1943 | 97.34 |
|  | False | 37 | 1.85 |
|  | I Do Not Know | 16 | 0.8 |

Source: National Institute of Public Health, April 2020 - N = 1996.

### Table 3
Correlation between knowledge score and sociodemographic variables (N - 1996).

| Variables | OR  | 95% IC | p-value |
|-----------|-----|-------|---------|
| Sex       |     |       |         |
| Female    | 1.013 | (1.002-1.025) | 0.024 |
| Male      | 1   |       |         |
| Age group |     |       |         |
| 16-44 years old | 0.956 | (0.945-0.967) | 0.000 |
| 45 and over | 1   |       |         |
| Marital status |     |       |         |
| Married   | 1.456 | (1.311-1.617) | 0.000 |
| Others*  | 1.576 | (1.311-1.894) | 0.000 |
| Never Married*  | 1 |       |         |
| Education level |     |       |         |
| Higher education | 1.011 | (0.991-1.031) | 0.289 |
| Pedagogical institute or secondary school | 0.935 | (0.913-0.957) | 0.000 |
| Others*  | 1   |       |         |
| Profession/Occupation |     |       |         |
| Intermediate and intellectual professional | 1.042 | (1.026-1.059) | 0.000 |
| Student | 0.951 | (0.927-0.976) | 0.000 |
| Unemployed | 0.984 | (0.949-1.021) | 0.394 |

* reference category.
1 separated/divorced and widowed; 2 Pedagogical Institute, High School and Professional Training; 3 placed in other professional categories.

### Table 4
Spearman correlation analysis between knowledge, attitudes and practices.

| Practices | Knowledge | Attitudes |
|-----------|-----------|-----------|
|           |          | (p = 0.000) | (p = 0.00816) |

Source: National Institute of Public Health, April 2020 - N = 1996.

**The correlation is significant at the 0.01 level (2-tailed).**

### Table 5
Evaluation of participants attitudes towards COVID-19.

| Questions | Options | N   | %   |
|-----------|---------|-----|-----|
| A1. Do you agree that COVID-19 will finally be successfully controlled? | Agree | 1520 | 76.15 |
|  | Disagree | 70 | 3.51 |
|  | I Do Not Know | 406 | 20.34 |
| A2. Do you have confidence that Cabo Verde can win the battle against the pandemic COVID-19? | Agree | 1746 | 87.47 |
|  | Disagree | 36 | 1.80 |
|  | I Do Not Know | 214 | 10.72 |

Source: National Institute of Public Health, April 2020 - N = 1996.

### 3.3 Evaluation of attitudes

The results indicate that the majority of subjects, 1520 (76.15%), were confident that the new coronavirus would successfully be controlled, and 1746 (87.48%) were sure that Cabo Verde could win the fight against COVID-19, while about 250 (12.52%) of the respondents were not confident in the country’s success in the fight against the COVID-19 pandemic. (Table 5).

Participants who disagreed or reported not knowing whether the country could win the fight against the COVID-19 pandemic affirmed that this could be possible if there were: maximum involvement of the population in complying with the rules implemented during the state of emergency, such as social distancing and other restrictive measures for the prevention and control of the disease. Furthermore, there had to be
Table 6
Evaluation of participants’ practices towards COVID-19 (N = 1996).

| Questions                                                                 | Options          | N   | %   |
|---------------------------------------------------------------------------|------------------|-----|-----|
| P1. In recent days, did you change your daily routine due to COVID-19?    | Yes              | 1860| 93.19|
|                                                                           | No               | 133 | 6.66|
|                                                                           | I Do Not Know    | 3   | 0.15|
| P2. In recent days, have you tried to stay home most of the time?         | Yes              | 1970| 98.70|
|                                                                           | No               | 26  | 1.30|
| P3. In recent days, have you been to a party, funeral or any crowded place?| Yes              | 70  | 3.51|
|                                                                           | No               | 1926| 96.49|
| P4. In recent days, have you worn a mask and/or gloves when leaving home? | Yes              | 272 | 13.63|
|                                                                           | No               | 1724| 86.37|

Source: National Institute of Public Health, April 2020 - N = 1996.

3.4. Evaluation of practices

From the results obtained, it was found that 1970 (98.70%) of the subjects declared to have stayed at home in recent days; 96.49% (1926) did not attend parties, funerals, or crowded places, and 1860 (93.19%) confirmed changes in daily routines due to COVID-19. Regarding the use of gloves and masks, 272 (13.63%) of the subjects claimed to have used gloves or masks when leaving home (Table 6).

Results showed that sociodemographic characteristics and prevention and control practices towards COVID-19 were significantly associated with age groups, marital status, and profession. Respondents most confident that the pandemic could be controlled were over 44 years of age, married, and unemployed (Appendix C p. 31).

3.5. Evaluation of communication and information

Healthcare professionals were identified as the most suitable people/professionals to transmit information about COVID-19, 1805 (90.98%). Television 1643 (82.56%), radio 405 (20.35%) and newspapers 333 (16.73%) are the preferred and most reliable means of receiving information about the disease by the population and the vast majority, 1797 (90.26%) of the subjects preferred receiving information in Portuguese (Appendix E p. 31–32).

4. Discussion

This is the first study on Knowledge, Attitudes, and Practices towards COVID-19 conducted in Cabo Verde. Following our literature review, it is the second among the African Portuguese-speaking countries (PALOP). Apart from the present study, only Mozambique has carried out a KAP COVID-19 study. Due to the context in which the study took place and the online format of the questionnaire, of the 1996 participants aged 16–65 years old or over (median age 39), more than half (53.27%) declared to have a degree. In general, these data are similar to other KAP studies carried out elsewhere, where most respondents claimed to belong to age groups of young people and young adults (Zong et al., 2020, Clements, 2020; Erfani et al., 2020; Rahman & Sathi, 2020). However, this study participants’ level of education was not representative of the resident Cabo Verdean population. According to data from the 2018 statistical yearbook, 9.5% of the resident Cabo Verdean population had higher education, the literacy rate was 40.1%, and the illiteracy rate was 7.7% (INE, 2018).

The fact that the majority of respondents claim to have higher education (Bachelor’s, Master’s, and Ph.D.) suggests that these participants were individuals with greater ease in the use of information and communication technologies (internet, mobile phones, computers, and others) and, therefore, were more likely to search for information (self-knowledge). Data from the Continuous Multi-Objective Survey (CMS) of the National Institute of Statistics revealed that in 2020, 67% of Cape Verdean households had internet access at home and that cellphones were the main means of accessing the internet in households (Ribeiro, 2020).

Considering that this was the first experience of the resident Cape Verdean population with the SARS-CoV-2 virus, the results showed that the population had a high level of knowledge about the signs, symptoms, and modes of transmission of COVID-19. However, the population’s knowledge has little influence on COVID-19 prevention and control practices ($\rho = 0.119; p = 0.000$) and none on attitudes ($\rho = 0.005; p = 0.816$).

The median knowledge score of the resident Cape Verdean population on the signs and symptoms and modes of transmission of COVID-19 was nine (9) (Range 0–11) and had an overall correct answer rate of 82% (9–11 * 100).

In general, the levels of knowledge concerning COVID-19 in the different KAP studies analyzed were good. The knowledge correct answer scores of the present study (82%) are superior to a Thailand KAP study (Rahman & Sathi, 2020), which reported an overall knowledge rate among Thais of 73.4%. They are also higher than the knowledge rate founded in a study from the United States of America (80%) among US citizens (Clements, 2020). However, the Cabo Verdean knowledge score is below the Iranian (Erfani et al., 2020) and Chinese study (Zhong et al., 2020), which reported an overall correct answer rate of 85% and 90%, respectively.

Despite the slight fluctuations in the overall correct answer rates, the results of the studies mentioned above are close to those of the Cabo Verdean CAP study. Zhong et al. (2020) stated that the data showed that most Chinese residents of high socioeconomic status, particularly women, are knowledgeable about COVID-19, maintain optimistic attitudes, and have adequate practices concerning COVID-19. Our study results indicate that greater knowledge is significantly associated with females, persons aged 44 or over, married and others (separate/divorced and widowed), with higher education and others (Pedagogical Institute, Secondary Course, Professional Training), belonging to the class of intermediate and intellectual level professionals.

Similarly, data from the KAP study in Iran showed a significant correlation between female gender, older age, and higher education with knowledge, attitude, and practice. The multiple linear regression analysis showed that male participants, non-health-related professions, single people, and lower educational levels were significantly associated with lower knowledge scores. These data are close to our study’s results, which revealed that those in the male group, never married, under 44 years of age, with a low level of education (primary and secondary) have low levels of knowledge regarding COVID-19.
Even though the correct answer rate was high, it was found that participants had poor knowledge about the need for the use of masks by regular members of the public 524 (26.25%) and the likelihood of developing severe cases among the elderly, obese, and chronically ill 961 (48.17%).

The low rate of correct answers on the use of masks as one of the prevention and control measures against the infection caused by SARS-CoV-2 could be associated with information conveyed in the initial stages of the COVID-19 pandemic by WHO (Neves, 2020) and recommendations adopted by the country at the time.

These recommendations suggested that masks should only be used by specific groups such as healthcare professionals, patients with COVID-19, and those with symptoms similar to COVID-19. At the time of data collection, the official guidelines on the mandatory use of masks had not been issued. Subsequently, by decree nº 47 of April 25, the Cape Verdean government imposed the mandatory use of masks in closed places (Assembleia Nacional, 2020; Agencia Lusa, 2020).

The low rate of masks used as a personal protection measure has also been reported in a United States of America study. The author stated that only 24% of Americans said they had used masks when leaving home in the last five days (Clements, 2020). On the other hand, the study by Zhong et al. (2020) reported that only 2% of Chinese citizens claimed not to wear masks in public at the time of data collection, one week after the start of the COVID-19 pandemic in that Asian country. It is noteworthy that in Asia, especially in China, Chinese authorities have determined the use of masks as mandatory since the beginning of the pandemic.

Based on the literature, one notes that, although people are generally aware of infection prevention and control measures, they cannot always adequately comply with them. The literature analyzed suggests that, although the belief in the possibility of controlling the virus is high, the overall score for practices is moderate.

In the present study, most participants showed positive attitudes towards overcoming COVID-19 and the country’s ability to win the fight against the pandemic. As a result, most participants stated that they had complied with prevention and control measures for COVID-19, such as staying at home, avoiding places with large crowds, and changing daily routines.

The vast majority, 1797 (90.26%), of the subjects prefer to receive information about COVID-19 in Portuguese, by healthcare professionals 1805 (90.98%), transmitted by television 1643 (82.56%), radio 405 (20.35%) and newspapers 333 (16.73%). These findings are similar, in part, to those of the Iranian study (Erfani et al., 2020), where the author reported that 82.9% of Iranians chose social and media networks as the most credible means of information. In the present study, even though social media platforms are widely used, the participants did not choose them as credible means to obtain information about COVID-19.

Considering that the country has never experienced a similar situation, the positive results of the present study, such as the high rate of correct responses regarding the signs and symptoms of COVID-19, the positive attitude towards the country’s ability to win the fight against COVID-19, and assertive behavior in controlling the disease may be associated with the adoption of assertive measures by the Cabo Verdean authorities.

Based on the significant positive association between knowledge and practices, findings of this study suggest that health education programs, mainly targeting individuals with less knowledge about COVID-19, are essential to encourage positive attitudes and maintain safe practices. Health education is an essential public health tool in combating emerging diseases, such as infection by the new coronavirus (Clements, 2020).

5. Study limitations

Being an online study, the sample population used is not representative of the resident Cape Verdean population. As a result, the sample may not have included subjects in older age groups, with low education levels and those who do not have access to the internet. In addition to this, the questionnaire was made available online for only one week, which may have limited the number of participants. Hence, a new study is needed with a stratified sample representative of the resident Cape Verdean population.

6. Conclusions

This study brought valid contributions to the formulation of public health policies aimed at controlling and eliminating the COVID-19 pandemic in Cabo Verde. The results of the present study, in particular, the high levels of knowledge about the main clinical symptoms, forms of prevention, and control of COVID-19 in the resident Cabo Verdean population may be helpful for comparison purposes with other KAP COVID-19 studies at the global level, particularly on the African continent. They can also be an important aid in understanding the phenomenon of COVID-19, in addition to helping in planning public health interventions, in formulating and implementing policies. Although knowledge related to COVID-19 among the study participants was high, the results show the utmost need to increase knowledge about COVID-19 in the resident Cape Verdean population through health literacy, which can also result in improvements in the attitudes and practices of the population regarding the pandemic. Additionally, these findings suggest that health authorities should provide updated information about the disease, in Portuguese, transmitted by television, radio, and newspapers to the resident population to promote and reinforce responsible social behavior to support the prevention and control measures against COVID-19.

CRediT authorship contribution statement

Maria de Fátima Carvalho Alves: were responsible for the conception, study design and adaptation of the questionnaire and data collection, were responsible for the statistical analysis and design of the tables and figures, coordinated the project, leading the operationalization of the study, from the collection, treatment of data and writing of the manuscript. All authors contributed to the drafting of the article and agreed with the decision to publish this study. Maria da Luz Lima Mendonça: were responsible for the conception, study design and adaptation of the questionnaire and data collection. All authors contributed to the drafting of the article and agreed with the decision to publish this study. Janice de Jesus Xavier Soares: were responsible for the conception, study design and adaptation of the questionnaire and data collection. All authors contributed to the drafting of the article and agreed with the decision to publish this study. Silvania Da Veiga Leal: were responsible for the conception, study design and adaptation of the questionnaire and data collection, were responsible for the statistical analysis and design of the tables and figures. Silvania Da Veiga Leal: were responsible for the conception, study design and adaptation of the questionnaire and data collection, were responsible for the statistical analysis and design of the tables and figures. Silvania Da Veiga Leal: were responsible for the conception, study design and adaptation of the questionnaire and data collection, were responsible for the statistical analysis and design of the tables and figures. Silvania Da Veiga Leal: were responsible for the conception, study design and adaptation of the questionnaire and data collection, were responsible for the statistical analysis and design of the tables and figures. Silvania Da Veiga Leal: were responsible for the conception, study design and adaptation of the questionnaire and data collection, were responsible for the statistical analysis and design of the tables and figures.
the tables and figures. All authors contributed to the drafting of the article and agreed with the decision to publish this study.

Declaration of competing interest

No funding was obtained for this study. The authors declare that they have no financial and/or personal conflicts of interest in the design and implementation of this study.

APPENDIX

Appendix A
Demographic Characteristics of Participants(N = 1996)

| Variables                                           | N  | %     |
|-----------------------------------------------------|----|-------|
| Sex/Gender                                          |    |       |
| Male                                                | 986| 49.42 |
| Female                                              | 1009| 50.58 |
| Age Group                                           |    |       |
| 16-24                                               | 230| 11.52 |
| 25-44                                               | 1329| 66.58 |
| 45-64                                               | 405| 20.29 |
| 65 e +                                              | 32 | 1.61  |
| Mean ± Standard Deviation: (39 ± 0.607)              |    |       |
| Marital Status                                      |    |       |
| Not married                                         | 1244| 62.33 |
| Married                                             | 491 | 24.6  |
| Separated/Divorced                                  | 111 | 5.56  |
| Married in fact (de facto)                          | 138 | 6.91  |
| Widower                                             | 12 | 0.6   |
| Education level                                     |    |       |
| Basic education                                     | 54 | 2.97  |
| Secondary school                                    | 480| 26.36 |
| Vocational training                                 | 116| 6.37  |
| University degree                                   | 970| 53.27 |
| Master degree                                       | 147| 8.07  |
| Doctorate                                           | 29 | 1.59  |
| Baccalaureate                                       | 21 | 1.15  |
| Pedagogical Institute                               | 4 | 0.22  |
| Profession                                          |    |       |
| Specific military professions                       | 9  | 0.46  |
| Representatives of the legislative and executive branches, directors and executive managers | 107 | 5.52 |
| Specialists in intellectual and scientific activities| 618| 31.91 |
| Intermediate technicians and professionals           | 340| 17.55 |
| Administrative staff                                | 194| 10.02 |
| Personal service personnel, security and safety personnel and sales | 173| 8.93 |
| Farmers and skilled workers in agriculture, fisheries and forestry | 6| 0.31 |
| Workers, craftsmen and similar workers              | 45 | 2.32  |
| Plant and machine operators and assembly workers     | 25 | 1.29  |
| Elementary professions                              | 45 | 2.32  |
| Students                                            | 200| 10.33 |
| Retired                                             | 52 | 2.68  |
| Business people                                     | 40 | 2.07  |
| Unemployed                                          | 83 | 4.29  |

Island of residence

| Island of residence       | N  | %     |
|----------------------------|----|-------|
| Santo Antão                | 98 | 4.9   |
| São Vicente                | 433| 21.7  |
| São Nicolau                | 18 | 1.1   |
| Sal                        | 177| 8.9   |
| Boavista                   | 61 | 3.1   |
| Maio                       | 21 | 1.1   |
| Santiago                   | 1088| 54.5 |
| Fogo                       | 83 | 4.2   |
| Brava                      | 15 | 0.7   |

Source: National Institute of Public Health, April 2020 - N = 1996.

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Appendix B. Correlation between sociodemographic variables and participants’ knowledge score related to COVID-19 (N = 1996)

| Variables | Sex (n, %) | Age (n, %) | Marital Status | Education (n, %) | Profession | Other $x^2$ | $P$ |
|-----------|------------|------------|----------------|-----------------|------------|-------------|-----|
|           | Male | Female | $x^2$ | P | 16–44 | 44 e + $x^2$ | P | Married | Never Married | $x^2$ | P | Basic and Secondary | Higher Education | $x^2$ | P | Unemployed | Student | Intermediate level and intellectual professionals | Other $x^2$ | P |
| C1-correct | 0.214388085557975 | .643 | 15.118 | .000* | 10.198 | .006* | 15.338 | .000* | 55.622 | .000* |
| 900 | 915 | 1397 | 418 | 460 | 1238 | 117 | 467 | 1066 | 132 | 74 | 154 | 1181 | 354 | 91.3% | 90.7% | 89.6% | 93.6% | 96.7% | 91.7% |
| C2-correct | .017 | .897 | 4.111 | .043* | 6.436 | .040* | 10.198 | .006* | 15.118 | .000* | 20.011 | .000* |
| 927 | 950 | 1458 | 420 | 473 | 1292 | 113 | 478 | 1103 | 137 | 76 | 177 | 1214 | 354 | 94.0% | 94.2% | 93.5% | 96.1% | 96.2% | 92.7% |
| C3-correct | .322 | .570 | 13.158 | .000* | 14.095 | .001* | 44.542 | .000* | 33.237 | .000* | 36.068 | .000* |
| 906 | 934 | 1420 | 421 | 470 | 1254 | 117 | 459 | 1092 | 129 | 72 | 172 | 1214 | 354 | 91.9% | 92.6% | 91.1% | 96.3% | 95.7% | 91.5% |
| C4-correct | 5.413 | .020* | 7.691 | .006* | 214 | 593 | 71 | 41.0% | 51.7% | 50.4% | 34 | 73 | 648 | 173 | 94.0% | 94.2% | 93.5% | 96.1% | 96.2% | 44.8% |
| C5-correct | 10.996 | .001* | 1.206 | .272 | 9.904 | .007** | 56.073 | .000* | 29.447 | .000* |
| 585 | 671 | 972 | 285 | 334 | 839 | 84 | 264 | 778 | 98 | 50 | 106 | 849 | 210 | 45.5% | 50.7% | 46.5% | 54.0% | 56.0% | 54.4% |
| C6-correct | .615 | .437 | 9.430 | .002* | 5.299 | .071 | 15.884 | .000* | 25.384 | .000* |
| 948 | 963 | 1482 | 430 | 474 | 1316 | 122 | 498 | 1113 | 131 | 77 | 181 | 1234 | 364 | 96.1% | 95.4% | 95.1% | 98.4% | 96.5% | 94.3% |
| C7-correct | .585 | .444 | 17.779 | .000* | 10.843 | .004* | 10.815 | .004* | 6.862 | .076 |
| 256 | 257 | 375 | 149 | 144 | 336 | 44 | 112 | 327 | 38 | 19 | 38 | 348 | 102 | 90.9% | 97.9% | 97.0% | 94.0% | 96.3% | 102 |
| C8-correct | .125 | .724 | .130 | .719 | 2.457 | .283 | 21.679 | .000* | 17.129 | .001* |
| 955 | 980 | 1511 | 425 | 481 | 1335 | 120 | 502 | 1124 | 139 | 78 | 191 | 1244 | 365 | 96.9% | 97.1% | 96.9% | 97.9% | 98.1% | 94.6% |
| C9-correct | .606 | .436 | 2.571 | .109 | 3.741 | .154 | 1.263 | .532 | 3.412 | .332 |
| 976 | 1002 | 1543 | 436 | 490 | 1368 | 121 | 528 | 1139 | 140 | 81 | 198 | 1260 | 382 | 99.0% | 99.3% | 99.0% | 99.9% | 99.0% | 99.0% |
| C10-correct | .004 | .951 | 5.575 | .018* | 12.617 | .002* | 4.821 | .090 | 5.179 | .159 |
| 972 | 995 | 1532 | 436 | 491 | 1354 | 123 | 522 | 1124 | 138 | 81 | 194 | 1254 | 381 | 98.6% | 98.6% | 98.3% | 99.0% | 99.0% | 98.7% |
| C11-correct | 1.123 | .289 | .768 | .381 | 3.683 | .159 | 1.628 | .443 | 2.653 | .448 |
| 956 | 986 | 1515 | 428 | 482 | 1344 | 117 | 518 | 1121 | 136 | 79 | 195 | 1233 | 379 | 97.0% | 97.7% | 97.2% | 97.9% | 97.2% | 98.2% |

Source: National Institute of Public Health, April 2020.
Appendix C. Correlation between sociodemographic variables and participants’ attitudes towards COVID-19 (N = 1996)

| Variables | Sex (n, %) | Age (n, %) | Marital Status (n, %) | Education (n, %) | Profession |
|-----------|-----------|-----------|-----------------------|-----------------|------------|
|           | Male      | Female    | 16–44 | 44 e+ | x² | P       | Married | Never Married | Other | x² | P       | Basic and Secondary | Higher Education | Other | x² | P |
| A1-positive |          |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Sex (n, %) |            |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Male      | 769       | 750       | 1171  | 349   | 4.241 | .039+ | 401     | 1028 | 91 | 10.927 | .004* | 395 | 891 | 101 | 4.597 | .100 |
| Female    | 78.0%     | 74.3%     | 75.1% | 79.9% | .200 | .555  | 81.7%   | 74.4% | 74.0% | 1.074 | .584  | 74.0% | 77.7% | 71.6% | 3.834 | .147 |
| A2-positive |          |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Sex (n, %) |            |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Male      | 870       | 875       | 1361  | 385   | 3.679 | .055  | 429     | 1213 | 104 | 1.045 | .307  | 458 | 1017 | 120 | 7.769 | .016* |
| Female    | 88.2%     | 86.7%     | 87.3% | 88.1% | .200 | .555  | 87.4%   | 87.8% | 84.6% | 1.074 | .584  | 85.8% | 88.7% | 85.1% | 3.834 | .147 |

Source: National Institute of Public Health, April 2020.

Appendix D. Correlation between sociodemographic variables and participants’ practices related to COVID-19 (N = 1996)

| Variables | Sex (n, %) | Age (n, %) | Marital Status (n, %) | Education (n, %) | Profession |
|-----------|-----------|-----------|-----------------------|-----------------|------------|
|           | Male      | Female    | 16–44 | 44 e+ | x² | P       | Married | Never Married | Other | x² | P       | Basic and Secondary | Higher Education | Other | x² | P |
| P1-assertive |          |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Sex (n, %) |            |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Male      | 951       | 974       | 1492  | 434   | .010 | .922  | 482     | 1322 | 121 | 13.153 | .000* | 513 | 1113 | 136 | 9.548 | .008* |
| Female    | 96.5%     | 96.5%     | 95.7% | 94.3% | 1.942 | 434   | 98.2%   | 97.2% | 99.2% | 98.2% | 97.1% | 96.9% | 97.1% | 96.9% | 95.2% | 1.192 | .008* |
| P2-assertive |          |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Sex (n, %) |            |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Male      | 146       | 126       | 202   | 70    | 2.279 | .131  | 80      | 176  | 16  | 2.718 | .099  | 63   | 157  | 22  | 3.939 | .139  |
| Female    | 14.8%     | 12.5%     | 13.0% | 16.0% | .016 | .550  | 16.3%   | 12.7% | 13.0% | 16.3% | 13.7% | 16.0% | 13.7% | 15.6% | 1.183 | .396  |
| P3-assertive |          |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Sex (n, %) |            |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Male      | 972       | 997       | 1354  | 436   | .016 | .550  | 489     | 1358 | 121 | 5.018 | .025* | 525  | 1133 | 140 | 6.709 | .035* |
| Female    | 98.6%     | 98.8%     | 98.4% | 99.8% | 1.534 | 436   | 99.6%   | 98.3% | 100.0% | 99.6% | 98.9% | 99.3% | 98.9% | 99.3% | 98.8% | 1.063 | .532  |
| P4-assertive |          |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Sex (n, %) |            |           |       |       |    |         |         |             |       |    |         |                  |                |       |    |    |
| Male      | 915       | 944       | 1452  | 408   | .452 | .501  | 464     | 1284 | 112 | 5.018 | .028  | 480  | 1087 | 131 | 2.833 | .049  |
| Female    | 92.8%     | 93.6%     | 93.1% | 93.4% | 1.452 | 408   | 94.5%   | 92.9% | 91.1% | .028 | .501  | 89.9% | 94.5% | 92.9% | 86.7% | 89.0% | 94.4% | 86.7% | 8.209 | .001* |

Source: National Institute of Public Health, April 2020.
Appendix E
Evaluation of reliable reliable means of communication and information related to COVID-19 by study participants (N = 1996).

| Variables                   | N  | %      |
|-----------------------------|----|--------|
| Members of the family       | 39 | 1.97   |
| Friends                     | 7  | 0.35   |
| Healthcare professionals    | 1805 | 90.98 |
| Community leaders           | 10 | 0.5    |
| Religious leaders           | 3  | 0.15   |
| Community health workers    | 42 | 2.12   |
| Government representatives  | 47 | 2.37   |
| WHO Representatives         | 18 | 0.91   |
| International scientists    | 13 | 0.65   |

Languages

| Languages | N   | %    |
|-----------|-----|------|
| English   | 32  | 1.61 |
| Portuguese| 1797| 90.26|
| Creole    | 153 | 7.68 |
| French    | 9   | 0.45 |

| Variables                          | N  | %      |
|------------------------------------|----|--------|
| Conferences/Presentations          | 176 | 8.84   |
| Community dialogue                 | 5  | 0.25   |
| Schools                            | 4  | 0.20   |
| Newspapers                        | 333 | 16.73  |
| Social Media                       | 99  | 4.97   |
| Other community interventions      | 4  | 0.20   |
| Radio                              | 405 | 20.35  |
| Television                         | 1643 | 82.56  |

Source: National Institute of Public Health, April 2020 - N = 1996.

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