# Public Awareness of Coronavirus (COVID-2019) in Qassim Region Saudi Arabia.

Mabrouk AL-Rasheedi（✉ mab6208@hotmail.com ）

Ministry Of Health    https://orcid.org/0000-0002-4730-0575

Yasir Alhazmi

King Faisal Medical City

ALreshidi Mateq Ali

Sulaiman Al Rajhi Colleges

Maha ALrajhi

Qassim University

Nayef Samah Alharbi

Qassim Mental Health Hospital

Somayah Alsuhaibani

Qassim University

Mohammed Alrashidi

Irada Complex for Mental Health

Ghaleb Alharbi

Prince Mohammed Bin Abdulaziz Medical City

# Abstract

**Background** The rapid and extensive spread of the COVID-19 pandemic has become a major cause of concern for both general public and healthcare profession. Aim of this study is to analyze and evaluate the awareness of both the general public and healthcare providers in Qassim region in Saudi Arabia.

**Method** A cross-sectional study was conducted randomly in different shopping malls in the Qassim region from 10th of February to 10th of March, 2020. The structured questionnaire was used to gather information from participants.

**Result** 130 participants have answered the designed questionnaire, out of which 67participants were males(58.5% ) and 54 were females(41.5% ).Overall, 129 (99%) out of the 130 participants are aware of COVID-19, and 116 (90%) have recognize it as a respiratory disease and all of them (100 %) have recognized it as a contagious disease. Participants of the age group 20-40 showed higher awareness level than other age groups (P = 0.005). Significant positive correlation between high risk groups recognition, reliable source of information, infection symptoms, disease spread prevention and COVID_19 available treatments. While the reliable source of information awareness was positively correlated with all other questions, except for the long-term complications..

**Conclusion** General public and health care professionals from Qassim Region showed adequate awareness of COVID-19. However, there is a strong need to implement periodic educational interventions and training programs on infection control practices .

# Background

Coronavirus disease-19 (COVID-19)is more commonly referred to then Coronavirus, the main causative agent of the newly emerged communicable disease that is brought about by a new strain of the coronavirus (1). It has been officially named the Severe Acute Respiratory Syndrome Coronavirus 2, or SARS-CoV-2 (originally, this was called 2019-nCoV)(1)(2). In 2019, there was a spate of cases of respiratory illness that rapidly turned into an epidemic in Wuhan City, which is located in the Hubei Province of China(3). The first report of this was made to the World Health Organization (WHO) on the 31st of December of the same year (4). Approximately one month later, on the 30th of January 2020, the WHO announced that the outbreak of COVID-19 was being proclaimed a global health emergency (4). In addition, since the 21st of January 2020, the WHO has been publishing daily 'Situation Reports' on its website to update on the main facts, numbers (cases, deaths, and recoveries, by country), and other associated information about the disease(4).

The main symptoms of COVID-19 are fever, a cough, and shortness of breath, while the less common symptoms include muscle pain, anorexia, a general feeling of un wellness, sore throat, nasal congestion, dyspnea, and headache(5). Once an individual has been exposed to the disease, symptoms can manifest from anywhere between two and fourteen days(5).For the majority of individuals who contract COVID-19, only minor to middling cases of respiratory illness will be experienced, and they will not require any special medical interventions to recover. Conversely, a more severe illness has a high probability of developing if COVID-19 is contracted by the elderly or those with underlying medical conditions (such as cancer, cardiovascular disease, chronic respiratory disease, and diabetes)(5)

The main way in which COVID-19 is transmitted is via saliva or nose discharge droplets that travel when an individual carrying the disease coughs or sneezes(1). In addition, individuals can acquire the disease if they touch a contaminated surface and subsequently touch their eyes, mouth, nose, or general face area (6). Although COVID-19 can be killed by disinfectants, it is believed that it will survive on un cleaned, contaminated surfaces for a couple of hours(6).Currently, there is no definitive treatment or vaccine for COVID-19.Nevertheless, there are numerous clinical trials being conducted all over the world that are attempting to identify possible treatments for the disease. The WHO will report on clinical findings as and when tangible results become available(1)(7).

In the light of the absence of any effective treatment for this disease and with clearly identified of the mode of transmission, information and detailed knowledge of this virus is the most powerful tool that individuals have to fight this disease. Being informed about the causes of COVID-19 and the manner in which it spreads is the optimum means of avoiding it and decreasing transmission rates.(2)The key advice from the WHO to prevent the spread of COVID-19 is that people should remain at home, ensure social distancing measures are being taken, wash their hands frequently with soap and water, and frequently clean objects and surfaces that are touched on a regular basis(6); therefore, effective awareness training in workplaces will be essential in the fight to halt the spread of the disease.

The first step to raising peoples' defenses against COVID-19 is education (9). People must be informed about the symptoms of the disease, the actions they can take to protect themselves and the people they come into contact with, and what they can do if they themselves or someone they have been in contact with (such as a work colleague) have been exposed to the virus(9).

In Saudi Arabia, the Ministry of Health, in association with other organizations, has developed numerous programs to continuously educate the citizens and improve their level of awareness about COVID-19(10). Indeed, they have also striven to enhance the knowledge and resources for healthcare providers and citizens in the country at this time of pandemic. As mentioned earlier, the general publics' awareness and knowledge of this disease is of utmost importance in terms of controlling the spread of this virus and finally overcoming it. To the best of our knowledge, there has yet to be a study conducted specifically in this region on peoples' awareness of COVID-19. Therefore, in order to fill this research gap, the aim of this paper was to evaluate the knowledge and awareness of both the general public and healthcare providers in Qassim region in Saudi Arabia.

## Method

Descriptive, cross-sectional, and randomized study was conducted in Qassim region inside shopping malls from 10 February 2020 to 10 March 2020. All participants were recruited from Qassim province. Qassim is located in the center of Saudi Arabia, and it has more than 1.5 million inhabitants.

The following inclusion criteria were applied in this study: firstly, participants had to be adults (i.e., older than 17 years of age); secondly, participants had to reside in the Qassim region; and thirdly, participants needed to provide voluntary and informed consent prior to participating. Participants who did not satisfy these criteria were excluded from the study.

Data were obtained in-person using a structured questionnaire. A pilot study was undertaken to validate the questionnaire, and a panel of three domain-specific experts was used to test the data collection instrument.

Microsoft Excel was used to analyze data from 130 participants, as well as version 25 of the Statistical Package for the Social Sciences (SPSS). Excel was used for data entry and data representation purposes, and different categorical and quantitative variables were identified. Data were cleansed before running statistical analyses, and missing data and typographical errors were checked. Using SPSS, counts and percentages were examined for the categorical variables, and descriptive statistics were undertaken for the quantitative variables. Inferential statistics were also used to address the study's main research questions. The parametric assumptions associated with all variables were tested. Different comparisons were performed using the Mann-Whitney U test for independent two-group variables, while for more than two groups, the Kruskal-Wallis signed rank test was employed. Throughout this study, data are presented as median and quartiles, and P-values are considered statistically significant at < 0.05.

## Results

## Demographic characters

A total of 130 participants have answered the designed questionnaire, out of which 67participants were males and 54 were female with percentage of 58.5% and 41.5% respectively. Four age groups have been identified among the 130 participants (< 20, 20–40, 40 – 6, > 60), with around 75% of the second age group from 20–40. Educational level varied from intermediate education to postgraduate studies while the majority (66%) had BA or BSc. Profession showed variation between private, governmental, health and other sectors. The participants demographics is presented in (Table 1).

| Gender | Count (%) |
|---|---|
| Female | 54 (41.5) |
| Male | 76 (58.5) |
| Age | |
| <20 | 10 (7.7) |
| 20-40 | 96 (73.8) |
| 40-60 | 23 (17.8) |
| >60 | 1 (0.7) |
| Education | |
| Intermediate | 3 (2.3) |
| High school | 19 (14.6) |
| Diploma | 15 (11.5) |
| Bachelor | 86 (66.2) |
| Postgraduate | 7 (5.4) |
| Profession | |
| Government sector | 36 (27.7) |
| Private sector | 7 (5.4) |
| Health sector | 37 (28.5) |
| Other | 50 (38.4) |

Table 1
Demographics characters of participant

# General knowledge awareness of COVID-19

Results showed that 129 out of the 130 participants are aware of COVID-19, while 4.5% of the participants didn't know what it is, and 90% have recognize it as a respiratory disease and around 6% have identified it as SARS2 and 100% have recognized it as a contagious disease.

Participants have been asked to response if the COVID-19 is similar to the SARS virus and the responses varied where the participants have been divided into three similar groups with three different answers between yes and no and I don't know. 94% of the participants were able to recognize the correct incubation period of the virus while only 6% have chosen a wrong answer. Around 84% of the participants have considered the risk of COVID-19 is high while the rest have underestimated the risk of it. Out of the 130 participants, 125 were aware of the situation of the COVID-19 in the Saudi Arabia. Almost half of the

participants asked for more information about COVID-19. basic information awareness about COVID-19 (Table 2 and Figs. 2–4).

| Are you aware about COVID 19??? | |
|---|---|
| Yes | 129 (99.2) |
| No | 1 (0.8) |
| What is COVID 19? | |
| SARS2 | 8 (6.2) |
| Respiratory disease | 116 (89.2) |
| I do not know | 6 (4.6) |
| Is COVID19 contagious? | |
| Yes | 130 (100) |
| No | 0 (0) |
| Is COVID 19 same as SARS virus? | |
| Yes | 44 (33.8) |
| No | 38 (28.2) |
| I do not know | 48 (36.9) |
| Incubation period of COVID 19? | |
| 2-14 Days | 122 (93.8) |
| Three weeks | 4 (3.1) |
| Month | 1 (0.8) |
| I do not know | 3 (2.3) |
| What is risk of COVID19? | |
| High | 108 (83.1) |
| Intermediate | 9 (6.9) |
| Low | 8 (6.2) |
| I do not know | 5 (3.8) |
| What is the situation of COVID19 in KSA? | |
| Some cases were reported | 125 (96.1) |
| No cases were reported | 2 (1.53) |
| I do not know | 3 (2.30) |
| Do you need more info about COVID-19? | |
| No | 67 (51.5) |
| Yes | 63 (48.4) |

Table 2

# Awareness of COVID-19 detailed information

This part of the questionnaire composed of nine checkbox questions and responders should select as much correct choices as possible. Number of correct choices for each participant and number of participants who choose every choice within each question were used to represent the awareness of COVID-19 detailed information (Table 3).

| Number of correct choices Count (%) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| Who are at high risk for COVID-19? (3) | 7(5.38) | 33(25.3) | 30(23.0) | 60(46.1) | – | – | – | – | – |
| Source of information (reliable source)? (2) | 5(3.84) | 42(32.3) | 83(63.8) | – | – | – | – | – | – |
| What are the symptoms of COVID-19 infection? (8) | 2(1.53) | 9(6.92) | 3(2.30) | 28(21.5) | 31(23.8) | 23(17.6) | 25(19.2) | 6(4.61) | 3(2.30) |
| What is the mode of transmission? (2) | 5(3.84) | 125(96.1) | 0(0) | – | – | – | – | – | – |
| What are long term complications? (3) | 26(20) | 83(63.8) | 20(15.3) | 1(0.76) | – | – | – | – | – |
| How to prevent spread of COVID-19? (6) | 0(0) | 7(5.38) | 3(2.30) | 7(5.38) | 16(12.3) | 50(38.4) | 47(36.1) | – | – |
| Do you know treatment for COVID-19? (2) | 14(10.7) | 78(60) | 38(29.2) | – | – | – | – | – | – |
| What is your preparedness to fight COVID-19? (6) | 0(0) | 14(10.7) | 10(7.69) | 26(20) | 33(25.3) | 23(17.6) | 24(18.4) | – | – |
| How to prepare to fight COVID-19 within medical workers? (6) | 8(6.15) | 3(2.30) | 2(1.53) | 8(6.15) | 9(6.92) | 9(6.92) | 91(70) | – | – |
| *denotes significance level at $P$ value <0.05, **denotes significance level at $P$ value <0.01 | | | | | | | | | |

Table 3
Number and percentage of persons for each marked number of correct choices among the 130 participants

The highest awareness rate was recorded in the question of the reliable source of information where 64% of the participants have recognized all reliable sources while only 4% have not recognized any reliable source (Table 3). A total 92% of

participant have recognized WHO as the most reliable source of information about COVID-19 while Healthcare professionals came at second with 68%. Other options were selected with less than 15% of the participants (Fig. 5).Participants showed the second-high awareness towards the recognition of the high-risk groups with 46% of participants have chosen all high-risk groups, while only 5% of the participants have not recognized any group. Elderly people, Patients with chronic conditions, health care workers, was the arrangement of the high-risk groups with around 77%, 69%, 63% of selection respectively (Table 3 and Fig. 6).

Mode of transmission was only recognized through human to human transmission with 96% while on other side no participant has recognized contacting contaminated surfaces as a transmission mode (Table 3 and Fig. 7). Responses varied towards the recognition of disease symptoms were out of the eight known symptoms, only 2% were able to choose all symptoms while 5% where able to recognize seven of them and the highest rate was between 3 and 5 symptoms with around 60% of participants. A total of 87% have marked fever and shortness of breath to be the most common symptoms followed by cough (75%), sore throat (63%), tiredness (46%), muscle pain (39), the rest symptoms were chosen by less than 20% (Table 3 and Fig. 8). The lowest awareness rate was towards the long term complications of the disease where 20% of the participants have recognized none of the long term complications while 64% were able to recognize only one complication out of the three listed complications. Pneumonia was the highest marked complication by 78%, followed by death with 50%, while kidney failure was recognized by only 15% of the participants (Table 3 and Fig. 9).

Out of six measures to prevent COVID-19 spread, 36% of the participants have denoted the six measures followed by 38% with five measures recognized. The highest recognized measures among the participants were avoid travelling and gathering, sanitizers and cleaning materials usage, washing hands with soap for 20 seconds with 94%, 79%, 78% respectively (Table 3 and Fig. 10). Preparation to fight the COVID-19 showed a moderate awareness about possible options where over 80% were able to find more than two measures out of the six correct measures. Only 18% were able to identify the six measures correctly followed by 17% with five measures identified. It is noteworthy that this question in line with the spread prevention question showed 0% of participants failed to recognize at least one correct choice. General hygiene rules was the most marked measure with 95% of participants, followed by cover when coughing and sneezing and avoid contact with sick people with 88%, avoid travelling to infected areas with 84%, frequent hand wash 82%. It is worth mentioning that avoid raw animals was marked by 30% of participants, while avoid places handling animals was marked by 46% of participants (Table 3 and Fig. 11).

Responses towards the treatment for COVID-19 showed that 14% were not able recognize the proper handling of the disease while 60% were able to check one measure and 29% were able to find the two correct measures listed in the questionnaire. It is noteworthy to mention that all participants were aware of the fact that there is no vaccination yet for COVID-19 and 80% knew that there is no treatment as well while only 38% were able to recognize supportive treatment as a method to control or improve chances of disease control (Table 3 and Fig. 12).

Preparation of fighting COVID-19 among medical workers showed that 58% were non health workers while among medical workers, results showed that 70% were able to recognize the six important measures for preparation against the virus while around 6% of medical workers were not able to recognize any correct measures. Out of the 54 medical workers who responded to our questionnaire, 85% has recognized check supplies for emergencies as the first priority followed by contact international centers as CDC and WHO followed by evaluation of equipment and ventilators as the highest priority while alternative supplying checking came at last position with 48% (Table 3 and Fig. 13).

## Awareness level of COVID-19 among different groups

Investigating differences among different groups of the participants was done for sex, age, educational level and profession. Parametric assumptions were tested, and data showed significant violation against assumptions. Differences between different genders were examined using Mann-Whitney Signed rank test while differences among age, education, profession groups were tested using Kruskal-Wallis one way signed rank test. Results showed that there were no significant differences

among different groups for all questions except for two questions. There were significant differences of awareness levels among different groups of age and profession in response to the identification of the high risk groups. Participants of the age group 20–40 showed higher awareness than other age groups while government employees showed higher awareness level than other profession groups. Results showed that there were significant differences of awareness levels among different groups of age and sex in response to the identification of COVID-19 treatment. Participants of the age group 20–40 showed higher awareness than other age groups while females showed higher awareness level than males in response to the treatment of COVID-19 (Table 4).

| Question | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 |
|---|---|---|---|---|---|---|---|---|---|
| Q1- Who are at high risk for COVID-19? | 1.000 | .304** | .316** | 0.100 | 0.126 | .281** | .241** | 0.117 | -0.092 |
| Q2- Source of information (reliable source)? | .304** | 1.000 | .260** | .198* | -0.027 | .353** | .248** | .310** | 0.084 |
| Q3- What are the symptoms of COVID-19 infection? | .316** | .260** | 1.000 | .239** | .195* | .331** | 0.099 | .454** | 0.117 |
| Q4- What is the mode of transmission? | 0.100 | .198* | .239** | 1.000 | -0.016 | .306** | 0.073 | .192* | .222* |
| Q5- What are long term complications? | 0.126 | -0.027 | .195* | -0.016 | 1.000 | 0.131 | 0.115 | 0.051 | -0.128 |
| Q6- How to prevent spread of COVID-19? | .281** | .353** | .331** | .306** | 0.131 | 1.000 | .236** | .357** | 0.147 |
| Q7- Do you know treatment for COVID-19? | .241** | .248** | 0.099 | 0.073 | 0.115 | .236** | 1.000 | 0.096 | 0.062 |
| Q8- What is your preparedness to fight COVID-19? | 0.117 | .310** | .454** | .192* | 0.051 | .357** | 0.096 | 1.000 | .367** |
| Q9- How to prepare to fight COVID-19 within medical workers? | -0.092 | 0.084 | 0.117 | .222* | -0.128 | 0.147 | 0.062 | .367** | 1.000 |
| *denotes significance level at *P* value <0.05, **denotes significance level at *P* value <0.01 | | | | | | | | | |

Table 4
Awareness level comparisons among different groups of sex (Mann-Whitney Signed rank test), age, education and profession (Kruskal-Wallis one way signed rank test).

# Correlation among awareness levels of COVID-19 detailed information.

As parametric assumptions have been violated, non-parametric spearman correlation was investigated among awareness levels of COVID-19 specifics. Results showed significant positive correlation between high risk groups recognition, reliable source of information, infection symptoms, disease spread prevention and COVID_19 available treatments. While the reliable source of information awareness was positively correlated with all other questions except for the long term complications awareness. The lowest correlations were found between the awareness level of the long term complications and the available COVID-19 treatment in one side and all other questions on the other side. Long term complications awareness level was only correlated to the awareness level of disease symptoms while treatment awareness level was correlated to high risk group, information source and disease spread prevention (Table 5).

| | Q1 | Median | Q3 | Age | Sex | Education | Profession |
|---|---|---|---|---|---|---|---|
| Who are at high risk for COVID-19? | 33.33 | 66.66 | 100 | 0.005** | 0.798 | 0.387 | 0.039* |
| Source of information (reliable source)? | 50 | 100 | 100 | 0.945 | 0.303 | 0.398 | 0.219 |
| What are the symptoms of COVID-19 infection? | 37.5 | 50 | 75 | 0.493 | 0.65 | 0.112 | 0.834 |
| What is the mode of transmission? | 50 | 50 | 50 | 0.886 | 0.394 | 0.078 | 0.449 |
| What are long term complications? | 33.33 | 33.33 | 33.33 | 0.389 | 0.542 | 0.718 | 0.356 |
| How to prevent spread of COVID-19? | 66.66 | 83.33 | 100 | 0.687 | 0.219 | 0.072 | 0.942 |
| Do you know treatment for COVID-19? | 50 | 50 | 100 | 0.04* | 0.019* | 0.176 | 0.781 |
| What is your preparedness to fight COVID-19? | 50 | 66.66 | 83.33 | 0.241 | 0.875 | 0.485 | 0.606 |
| How to prepare to fight COVID-19 within medical workers? | 83.33 | 100 | 100 | 0.222 | 0.169 | 0.058 | 2.57 |

Table 5
Non-parametric spearman correlation among awareness levels of different questions

## Discussion

The purpose of this study was to evaluate the awareness of healthcare professionals and the general public regarding the coronavirus in Saudi Arabia's (KSA), Qassim region, focusing on both general awareness of COVID-19 and an awareness of detailed information about COVID-19. Although the first patient with coronavirus was diagnosed in Qassim region on 22 March 2020, the COVID-19 dashboard of the Saudi Ministry of Health indicates that Qassim has the lowest coronavirus prevalence across the country (10).

Regarding the general awareness of COVID-19 in the Al-Qassim region, almost every participant, whether a healthcare professional or a member of the general public, knew about the disease and the viral agent that causes it. This is consistent with the fact that many media organizations, due to the pandemic status of the coronavirus, frequently disseminate information, which has contributed to growing public awareness globally (11). For 95% of this study's participants, hygiene practices were considered the main way to prevent the transmission of COVID-19, which reflects the efficacy of the Saudi government's public health education initiatives, many of which have used digital technologies to spread essential information to the country's inhabitants. Furthermore, this awareness is consistent with the World Health Organization's (WHO) emphasis on the importance of regular, thorough, and well-timed hand washing (12).

Regarding the participants' awareness of detailed information about COVID-19, only 2% of the participants correctly identified the eight known symptoms of the disease, while 5% recognized seven of the eight symptoms. Most participants, approximately 60%, identified between three and five symptoms. These varying levels of awareness about the symptoms of COVID-19 may be linked to knowledge deficits, but they can also be accounted for by referencing the fact that, in different countries, different symptoms have been associated with the disease (13, 14). This variation in awareness of recognized symptoms may be too many change of WHO detection, especially at the beginning (11, 13).

The lowest level of awareness was associated with the long-term complications of COVID-19, as well as the disease's transmission mechanisms. The only mechanism of transmission identified by the participants was human-to-human, which 96% were aware of. However, contact with contaminated surfaces was not identified by any of the participants. Of the six measures mentioned in the questionnaire to prevent the transmission of COVID-19, only 36% identified all six, while 38% identified five of the six measures. One way to account for the participants' knowledge deficits regarding the possibility of

transmitting COVID-19 by contact with contaminated surfaces relates to the fact that this study was conducted early on in the coronavirus crisis. As such, it is possible that the participants lacked access to much of the information we have today. As for the lack of awareness about long-term complications, this could stem from the same reason, or it could be due to the fact that not much information has been disseminated about these complications. As such, more information is required for public education about transmission mechanisms and possible complications.

Awareness of COVID-19 management was high in the participants, and although no treatment has yet been proposed for the disease, a range of medications, including antimalarial and antiviral drugs, are being examined in clinical trials(15, 16 and 17). For example, evidence indicates that COVID-19 may be amenable to treatment with hydroxychloroquine, an antimalarial, and clinical trials are currently being conducted to see if this existing pharmaceutical can alleviate the symptoms of COVID-19 (e.g., pneumonia)(15, 16 and 17).

Subgroup analysis revealed that no significant differences existed between the different groups for every question, with the exception of two questions. Firstly, a significant difference was identified based on age group, and secondly, a significant difference was also identified for profession. Specifically, young individuals who worked in professional positions were associated with a greater awareness of the complications of COVID-19.

To the best of our knowledge, this is the first study that has sought to evaluate COVID-19 awareness in Saudi healthcare professionals and the general public in the Qassim region. In healthcare professionals, the results indicate that most are aware of the critical details that will aid in the fight against the pandemic. These results were consistent with a Najran-based cross-sectional study of the knowledge and attitudes towards the Middle East Respiratory System coronavirus (MERS-CoV) in healthcare professionals in primary healthcare centers and hospitals(18). Specifically, the study noted that healthcare professionals had a satisfactory level of knowledge about the disease(18). However, other KSA-based studies have been conducted in which it has been found that awareness for emerging infectious diseases is low, which highlights the importance of examining this issue further(19).

Finally, a noteworthy limitation of this study is that the sample group may not have been representative. For example, most of the participants were members of the young generation, meaning that the generalizability of these results to other parts of the KSA is low.

## Conclusion

This study found that healthcare professionals and members of the general public in Qassim region had adequate levels of awareness for the general and technical details surrounding COVID-19. Approximately 90% of the participants answered the structured questionnaire responses correctly. However, the results show that there are significant knowledge deficits in the sample group regarding the complications of COVID-19 and the mechanisms of transmission. This study indicates that there is an urgent need to implement regular educational interventions and training initiatives on infection control practices for COVID-19 across all healthcare professionals and also for general population through different way.

## Declarations

## Ethics approval and consent to participate

### Ethical approval

Obtained from the relevant committee (Ministry of health ) before conducting of this study and each participant has to accept this survey (consent form) as the first step during questionnaire process.

All participant signs in form before starting survey.

## Competing interests

Non.

## Funding

No funding for this study.

## Authors' contributions

All authors contributed to this study.

## Acknowledgements

I would like to express our special thanks for all Participants who sharing in this study.

## References

1. Who.int. 2020. Coronavirus. [online] Available at: <https://www.who.int/health-topics/coronavirus> [Accessed 22 March 2020].

2. CDC. 2019 Novel Coronavirus, Wuhan, China. CDC. Available at https://www.cdc.gov/coronavirus/2019-ncov/about/index.html. January 26, 2020; Accessed: January 27, 2020.

3. Gallegos A. WHO Declares Public Health Emergency for Novel Coronavirus. Medscape Medical News. Available at https://www.medscape.com/viewarticle/924596. January 30, 2020; Accessed: January 31, 2020.

4. Ramzy A, McNeil DG. W.H.O. Declares Global Emergency as Wuhan Coronavirus Spreads. The New York Times. Available at https://nyti.ms/2RER70M. January 30, 2020; Accessed: January 30, 2020.

5. Madjid M, Safavi-Naeini P, Solomon S, Vardeny O. Potential Effects of Coronaviruses on the Cardiovascular System. JAMA Cardiology. 2020;.

6. Key Messages and Actions for COVID-19 Prevention and Control in Schools [Internet]. Who.int. 2020 [cited 28 March 2020]. Available from: https://www.who.int/docs/default-source/coronaviruse/key-messages-and-actions-for-covid-19-prevention-and-control-in-schools-march-2020.pdf?sfvrsn=baf81d52_4

7. Ecdc.europa.eu. 2020. Homepage | European Centre For Disease Prevention And Control. [online] Available at: <https://www.ecdc.europa.eu/en> [Accessed 10 March 2020].

8. Shen C, Wang Z, Zhao F, Yang Y, Li J, Yuan J et al. Treatment of 5 Critically Ill Patients With COVID-19 With Convalescent Plasma. JAMA. 2020;.

9. Compliance Training - Interactive Services. 2020. Coronavirus (COVID-19) Awareness Training - Interactive Services. [online] Available at: <https://www.interactiveservices.com/coronavirus-covid-19-awareness-training/> [Accessed 24 March 2020].

10. COVID 19 Dashboard: Saudi Arabia [Internet]. Covid19.moh.gov.sa. 2020 [cited 21 April 2020]. Available from: https://covid19.moh.gov.sa/

11. WHO announces COVID-19 outbreak a pandemic [Internet]. Euro.who.int. 2020 [cited 21 April 2020]. Available from: http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic

12. Modi PD, Kumar P, Solanki R, Modi J, Chandramani S, Gill N: Hand hygiene practices among Indian medical undergraduates: a questionnaire-based survey. Cureus. 2017, 9:e1463. Accessed: March 25, 2020: 10.7759/cureus.1463

13. Pan, Lei, et al. "Clinical characteristics of COVID-19 patients with digestive symptoms in Hubei, China: a descriptive, cross-sectional, multicenter study." American Journal of Gastroenterology (2020).

14. Coronavirus disease 2019 (COVID-19) in the EU/EEA and the UK – eighth update [Internet]. Ecdc.europa.eu. 2020 [cited 21 April 2020]. Available from: https://www.ecdc.europa.eu/sites/default/files/documents/covid-19-rapid-risk-assessment-coronavirus-disease-2019-eighth-update-8-april-2020.pdf

15. NIH clinical trial of hydroxychloroquine, a potential therapy for COVID-19, begins [Internet]. National Institutes of Health (NIH). 2020 [cited 25 April 2020]. Available from: https://www.nih.gov/news-events/news-releases/nih-clinical-trial-hydroxychloroquine-potential-therapy-covid-19-begins

16. "SFDA" Approved WHO Solidarity clinical trial for COVID-19 to be conducted in Saudi Arabia by the Ministry of Health [Internet]. Sfda.gov.sa. 2020 [cited 25 April 2020]. Available from: https://www.sfda.gov.sa/en/drug/news/Pages/d12-4-2020aa1.aspx

17. NIH clinical trial of remdesivir to treat COVID-19 begins [Internet]. National Institutes of Health (NIH). 2020 [cited 25 April 2020]. Available from: https://www.nih.gov/news-events/news-releases/nih-clinical-trial-remdesivir-treat-covid-19-begins

18. Asaad A, El Sokkary R, Alzamanan M, El Shafei M. Knowledge and attitudes towards Middle East respiratory sydrome-coronavirus (MERS-CoV) among health care workers in south-western Saudi Arabia. Eastern Mediterranean Health Journal. 2020;26(04):435-442.

19. Al-Mohaissen M. Awareness among a Saudi Arabian university community of Middle East respiratory syndrome coronavirus following an outbreak. Eastern Mediterranean Health Journal. 2017;23(5):3
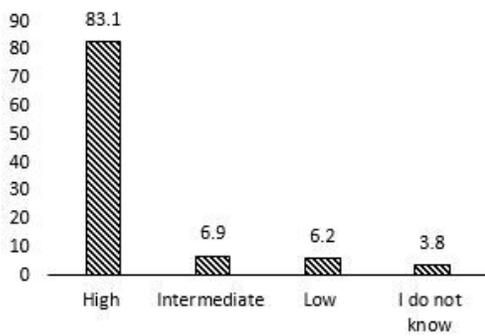
# Figures
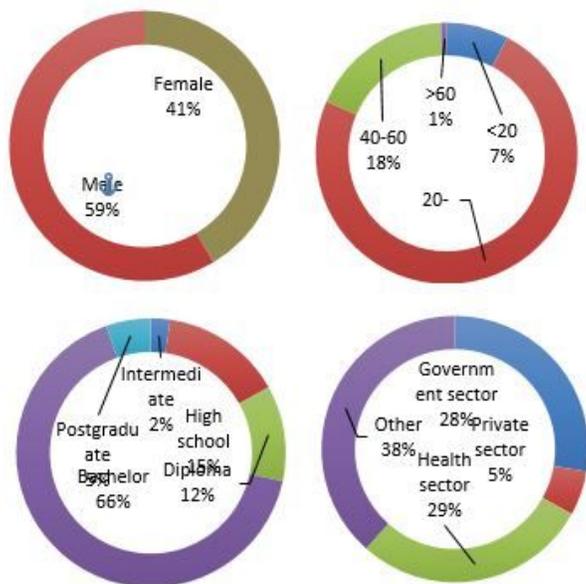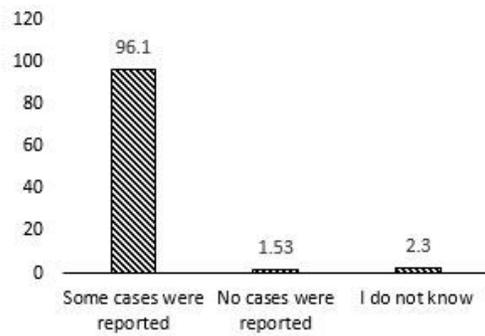


## Figure 1

Demographics characters of participant
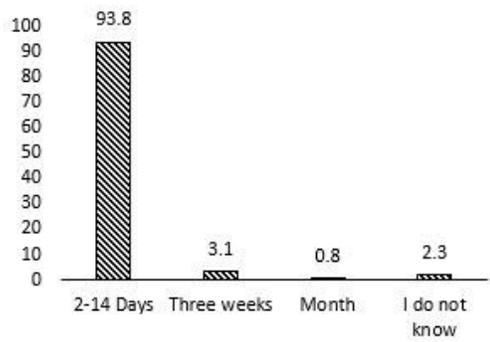
## Figure 2

Percentage of different responses to what is risk of COVID19?



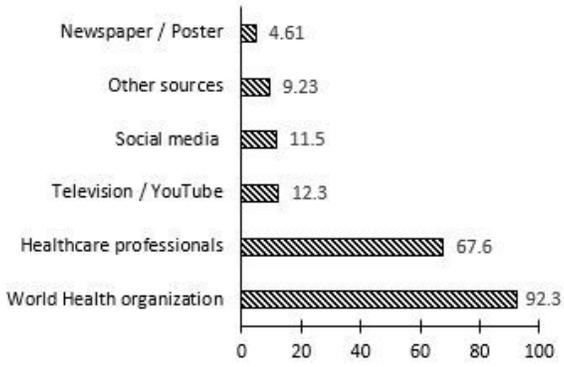## Figure 3

Percentage of different responses to what is the Incubation period of COVID 19?



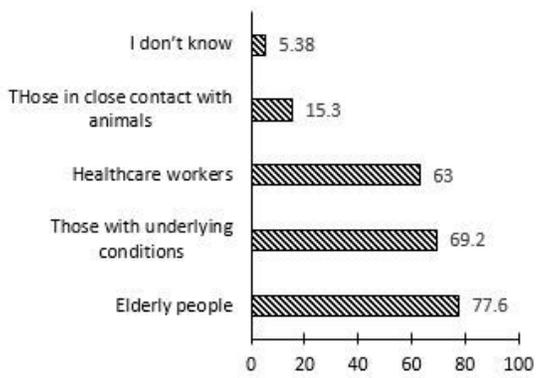## Figure 4

Percentage of different responses to what is the Incubation period of COVID 19?
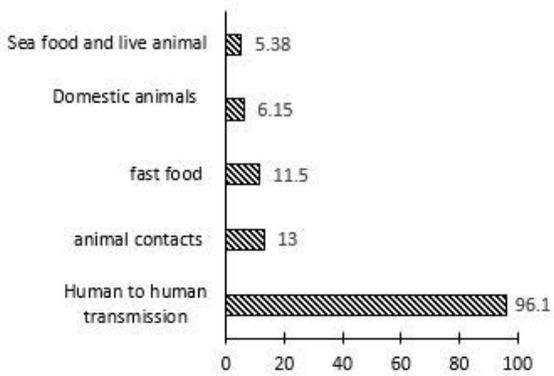
**Figure 5**

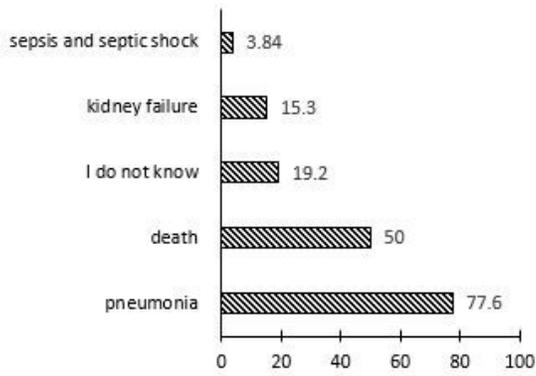Percentage of different responses to the reliable source of information about COVID-19



**Figure 6**

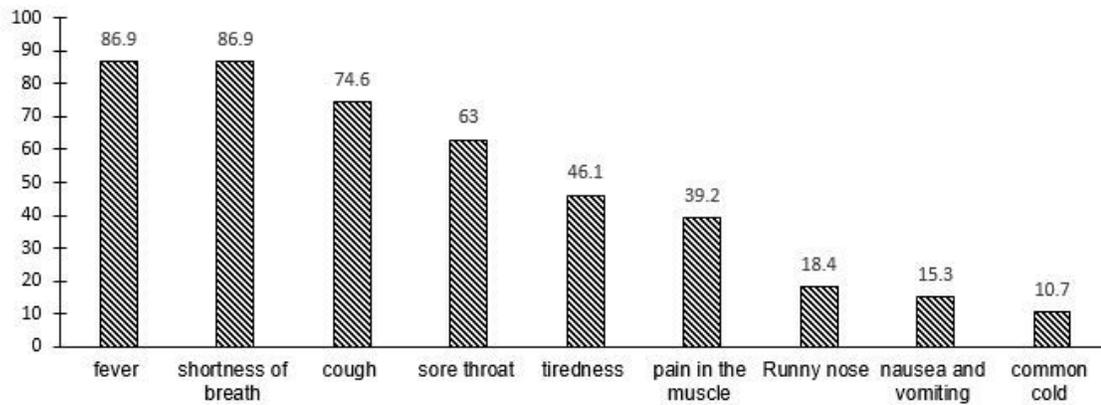Percentage of different responses to who are the high risk groups?



**Figure 7**

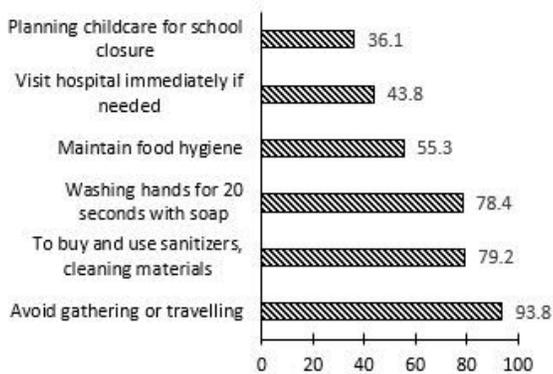Percentage of different responses to what is the mode of COVID 19transmission?

## Figure 8

Percentage of different responses to what are the long term complications of COVID 19?



## Figure 9

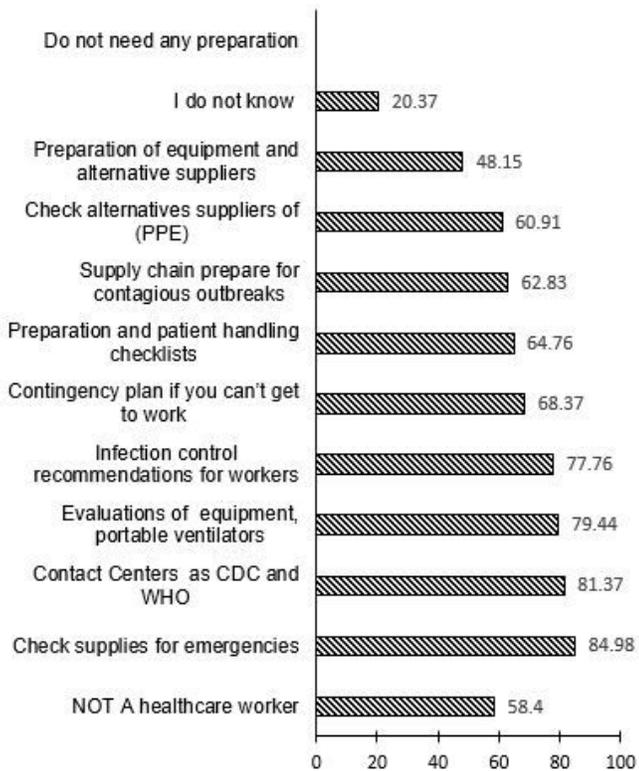Percentage of different responses to what are the symptoms of COVID 19 infection?



## Figure 10

Percentage of different responses to how to prevent the spread of COVID 19?
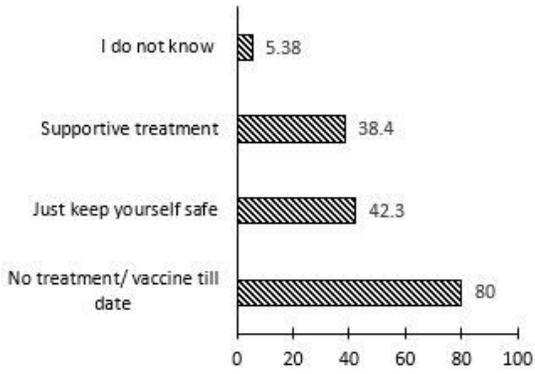
**Figure 11**

Percentage of different responses to what preparation to fight COVID 19?



**Figure 12**

Percentage of different responses to what preparation against COVID 19 should medical workers consider?



**Figure 13**

Percentage of different responses to what treatment is available against COVID 19?