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Research Article

Knowledge and Awareness of Saudis towards COVID-19

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Abstract

Background: The behavior of the general public in Kingdom of Saudi Arabia (KSA), may have an important effect on the spreading of corona virus disease 2019 (COVID-19) as epidemic. Most likely human behavior is influenced by people's knowledge and awareness.

Objective: To determine the knowledge and awareness of COVID-19 among the public in Riyadh / KSA

Method: Cross-sectional online survey conducted between April 2nd and May 12th, 2020. A sample of 183 adults in Riyadh/Kingdom of Saudi Arabia who were representative of the population in the capital of KSA responding to 23 survey questions.
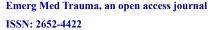
Introduction

Corona viruses are a big family of viruses which may cause diseases in animals or humans. In humans, corona viruses are causing respiratory infections ranging from the common cold to more severe respiratory diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).

On the 2nd of March, a Saudi citizen coming from Iran through Bahrain tested positive for COVID-19 and was immediately isolated and reported by the Ministry of Health as the first case in the Kingdom of Saudi Arabia [2]. Although the virus originates from the same corona virus family as the Middle East Respiratory Syndrome are not fully understood. Known for their animal-to-human transmission of viruses, bats are potential reservoirs of the COVID-19 virus with higher rates of infectivity [3, 4]. Since then, the infection has spread across China and then to numerous countries around the world [2-4]. By the end of March 2020, more than 735,276 confirmed new cases were reported, with more than 34,813 deaths attributed to the corona virus infection

[5]. This novel virus was declared a public health emergency of international concern by the World Health Organization (WHO) on January 30, 2020 [6]. The disease caused by the novel corona virus was identified by WHO on February 12, 2020 as corona virus Disease 2019 (COVID-19).

Early studies have documented a correlation between a single local fish and wild animal market and most infection cases, suggesting possible animal-to-human transmission, an increasing number of studies have demonstrated human-to-human transmission of COVID-19 via droplets or direct contact [5]. In addition, according to one study, 41 per cent of patients were suspected of being infected by COVID-19 via hospital-related transmission [9]. Add to COVID-19's high transmission capacity, the extent and intensity of global travel can further increase and accelerate its spread around the world [6].

The severity of the disease seems variable due to distinct demo-graphic features, comorbidities and immune system responses among different populations. Pneumonia might be the most frequent manifestation that can progress to Acute Respiratory

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Distress Syndrome (ARDS) [8]. Other serious complications have been reported, including arrhythmias, septic shock, and multi-organ failure [9,10].

As the COVID-19 virus is spreading fast, scientists are working to find solutions that can successfully treat the virus, with different clinical trials being performed across the world. Remdesivir and chloroquine have been shown to be effective in controlling COVID-19 in vitro [6]. Chloroquine phosphate, an established malaria prevention drug, was reported to be an effective and acceptable protection against COVID-19-related pneumonia [7].

Refer to most studies the absence of approved vaccines effective against COVID-19, remain the non-pharmaceutical approaches key to deal with the virus. When the situation shifts to a much wider community transmission across multiple countries, may be the WHO containment strategy for elimination need to be changed.

Moreover, in order to control the spread of the disease, knowledge and awareness of the virus should be disseminated among the public from official sources, including WHO. Reliable and authoritative information will be vital in preventing and suppressing this disease. Hence, in this study we measure the knowledge and awareness of this disease within the Saudi community.

Method

Sampling participants

The survey used a questionnaire written in both Arabic and English. The questionnaire consisted of 23 questions divided into three sections.

In the first section, the following socioeconomic variables were included: gender, age, occupation, marital status, employment status and educational level. The second and third sections consisted of a set of multiple-choice questions relating to the Saudi population's knowledge and awareness of COVID-19. The questions in the second section asked participants about their knowledge of COVID-19, and the questions in the third section were designed to measure the extent of community awareness of the preventive measures and proper procedures in relation to the COVID-19 virus.

Data collection

Between April 1st and May 12th, 2020, the online survey was distributed via social media networks in order to gain a random sampling of Riyadh / Kingdom of Saudi Arabia (KSA) population. Data collection took place during the aforementioned period, since information about COVID-19 was then at the forefront of media attention in KSA.

A total of 183 people across the country participated voluntarily in the online survey. Once data were collected, all questionnaires were exported to Microsoft Excel. Double entry

verification was performed on randomly selected questionnaires (n = 50).

Data analysis

The data from each of the returned questionnaires were coded and entered in the Statistical Package for the Social Sciences (SPSS, version 21, Chicago, IL, USA) software, which was used for statistical analysis. Descriptive statistics, including percentages and frequency distribution, were calculated for each of the questions. A descriptive and univariate correlation analysis with the Pearson correlation coefficient (r) was used to find the correlation at the 5% significance level. A p-value of <0.05 represented a significant difference.

Results

A total of 183 participants completed the survey questionnaire; nearly one third of respondents were female (29.5%), with male respondents making up just over two third (70.5%). Most study respondents were aged 19-35 years (51.37 %), 36-55 years (32.24%) and 56 old and above (16.39%). Approximately half of the respondents had a bachelor's degree (49.2%) and (24.6%) % had a postgraduate degree. Almost a quarter (24.6%) of the study sample were employees in non-healthcare sectors, while (13.7%) worked in a health field and (24.0 %) were unemployed. More than half (56.3%) of the sample were married and (40. 4 %) were single. Most of the study sample lived in Riyadh, the capital of Kingdom Saudi Arabia, with the rest living in other areas of Saudi Arabia (Tables 1.1, 1.2, 1.3, 1.4 and 1e).

Characteristics of the study sample

Gender

Gender	Frequency	Percent
Female	54	29.5
Male	129	70.5
Total	183	100

Table 1.1: Presents the data on the gender of the respondents. The data shows that out of 183 respondents, 129 or 70.5 percent are male while 54 or 29.5 percent are female.

Age of the Respondents

Age of the Respondents	Frequency	Percentage
19-35 years old (Young Adulthood)	94	51.37
36-55 years old (Adulthood)	59	32.24
56 years old and above (Maturity)	30	16.39
Total	183	100

The table 1.2 Presents the data about the age of the respondents. The data is grouped based on the psychosocial developmental stages of Erickson. The findings of the study shows that out of 183 respondents, 94 or 51.37 percent are within the 19-35 years old age

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group interpreted as young adult. Fifty-nine or 32.24 percent are within the age range of 36-55 years old interpreted as adult while 30 or 16.39 percent are within the age range of 56 years old and above interpreted as matured individuals.

Nature of Work

Nature of Work	Frequency	Percent
Work in a non-medical field	45	24.6
Unemployed	44	24
Other specialist not mentioned above	33	18
Work in a medical field	25	13.7
Student in medical specialist	23	12.6
Student in scientific or engineering specialist	13	7.1
Total	183	100

Table 1.3: presents the data as to the nature of work of the respondents. The findings of the study show that 45 or 24.6 percent of the 183 respondents work in a non-medical field, 44 or 24 percent are unemployed, 33 or 18 percent are other specialist not mentioned above, 25 or 13.7 percent are work in medical field, 23 or 12.6 percent are students in medical specialist and 13 or 7.1 percent are students in scientific or engineering specialist.

Marital Status

Marital status	Frequency	Percent
Married	103	56.3
Single	74	40.4
Widowed/Divorced	6	3.3
Total	183	100

The Table 1.4 presents the data on the marital status of the respondents. The findings of the study shows that out of 103 or 56.3 percent are married, 74 or 40.4% are single and only six (6) or 3.33 percent are either widowed or divorced.

Educational Attainment

Educational Attainment	Frequency	Percent
Bachelor	90	49.2
Postgraduate	45	24.6
Secondary	24	13.1
Diploma	20	10.9
Pre-secondary	4	2.2
Total	183	100

The Table 1.5 presents the educational attainment of the respondents. The result of the study shows that 90 or 49.2 percent out of 183 respondents are bachelor's degree holder, 45 or 24.6 percent are post graduate, 24 or 13.1 percent are diploma holder, and only four (4) are pre-secondary graduate.

Participants' knowledge regarding COVID-19

The Source of COVID-19 as Perceived by the Respondents

Table 2.1 presents the data on the knowledge of the respondents regarding the source of COVID-19. The result of the study shows that out of 183 respondents, 92 or 50.27 percent believed that it comes from animals. Eighty-five (85) or 46.45 percent from genetically modified viruses in the laboratory; 49 or 26.78 percent from humans; and only 13 or 7.10 from other sources.

Sources of Covid 19	F	Percentage	Rank
Animals	92	50.27	1
Genetically modified viruses in the laboratory	85	46.45	2
Humans	49	26.78	3
Others	13	7.10	4

Main Source of Information on COVID 19

Table 2.2 presents the data as to the main source of information on COVID 19 of the respondents. The result of the study shows that majority or 95 or 51.91 percent acquired their information from media. Eighty-one (81) or 44.26 percent from government awareness campaigns; 77 or 42.08 from social media; 48 or 26.23 percent from medical care providers, either a doctor, pharmacist or nurse; 16 or 8.74 percent from family or friends; and only 12 or 6.56 percent from other sources.

As cited in the study of Ali and Bhatti (2020) public health awareness is key to minimize casualities, and librarian and information professional can play a vital role to disseminate the information with health care workers, society, and communities. These information channels play a vital role in informing and updating public health information to the general public and health care professionals.

Main Source of Information on Covid 19	F	Percentage	Rank
The media	95	51.91	1
Government awareness campaigns	81	44.26	2
Social media	77	42.08	3
Medical care providers, either a doctor, pharmacist or nurse	48	26.23	4
Family or friends	16	8.74	5
Other sources	12	6.56	6

Main Symptoms of COVID 19 as Perceived by the Respondents

The Table 2.3 presents the data on the main symptoms of

COVID 19 as perceived by the respondents. The findings of the study show that out of 183 respondents, 175 or 95.63 percent believe that fever is one of the main symptoms of COVID 19. It is followed by shortness of breath, 168 or 91.80 percent; and dry cough, 146 or 79.78 percent.

Among the least perceived main symptoms of COVID 19 are: stomachache with 9 or 4.92 percent; cough with sputum, 11 or 6.01 percent; and vomiting & diarrhea with 24 or 13.11 percent.

The result of the reaffirms the article published by Medscape (June 2020) that most patients with confirmed COVID-19 have fever and or symptoms of acute respiratory illness (eg: cough, difficulty breathing).

Main Symptoms of Covid 19 as Perceived by the Respondents	F	Percentage	Rank
Fever	175	95.63	1
Shortness of breath	168	91.8	2
Dry cough	146	79.78	3
Diarrhea	24	13.11	4
Vomiting	24	13.11	5
Cough with sputum	11	6.01	6
Stomachache	9	4.92	7
Other	1	0.55	8

Mode of Transmission as Perceived by the Respondents

The table 2.4 shows the data on the mode of transmission of COVID 19 as perceived by the respondents. The data shows that majority of the respondents, 169 out of 183 or 92.35 percent believed that droplets from sneezing or coughing is the best mode of transmission. This is followed by contaminated surfaces with 152 or 83.06 percent; others with 21 or 11.47 percent. While, the least perceived mode of transmission of COVID 19 are: domestic pets (9 or 4.92 percent) and breathing (20 or 10.93 percent).

Mode of Transmission of Covid 19 as Perceived by the Respondents	F	Percentage	Rank
Droplets from sneezing or coughing	169	92.35	1
Contaminated surfaces	152	83.06	2
Others	21	11.47	3
Breathing	20	10.93	4
Domestic pets	9	4.92	5

Life span of Corona Virus outside the Host as Perceived by the Respondents

Table 2.5 presents the data on the life span of Covid 19

outside the host as perceived by the respondents. The data shows that 81 or 44.26 percent of the respondents perceived that the Covid 19 can only survive 1-12 hours outside the host body. Forty-two (42) or 22.95 percent believed that it could survive within 2-4 days. Twenty-four (24) or 13.11 percent perceived that it can last within 13-24 hours. Twenty-one (21) or 11.47 percent believed that is could survive more than nine days, while only fifteen (15) or 8.20 percent perceived that Covid 19 could only survive 5-9 days outside the host body.

According to WHO, there is no confirmed timeline how long a COVID-19 virus survives in surfaces. However, most likely it behaves like other corona viruses. Studies cited by Gray (2020) published by researchers at Imperial College London showed that viral DNA left on a hospital bed rail in an isolation room had spread within ten hours to 18 other surfaces, including door handles, chairs in a waiting room, children's toys and books in a play areas. This shows that the corona viruses can survive on surfaces for a few hours up to several days depending on varied conditions (e.g. type of surface, temperature or humidity of the environment).

Another study cited by Machamer and Volkin (March, 2020), published in *the New England Journal of Medicine,* the SARS-CoV-2, the causative agent of COVID 19 is viable for up to 72 hours on plastics, 48 hours on stainless steel, 24 hours on cardboard, and 4 hours on copper. It can be detected on air for 3 hours

Life span of Corona Virus outside the host	F	Percentage
1-12 hours	81	44.26
13-24 hours	24	13.11
2 - 4 days	42	22.95
5 - 9 days	15	8.20
more than 9 days	21	11.47
Total	183	100

People with High Risk of Complications as Perceived by the Respondents

Table 2.6 presents the data on the people with high risk or complications as perceived by the respondents. Among the group of people considered high risk of complications, the elderly (more than 65 years) is ranked 1 with 150 or 81.97 percent. They are followed by people with low immunity, with 148 or 80.87 percent; and heart or diabetic patient with 99 or 54.10 percent. On the other hand, children (52 or 28.41 percent) and pregnant women (59 or 32.24 percent) are considered least.

This reaffirm the result of the study of Medscape journal (June, 2020) that older persons aged 65 years and above and/or have the following serious underlying medical conditions may be at a higher risk of severe COVID-19. In addition, people who live in a nursing home or long-term care facility are also considered high risk.

Perceived People with High Risk of Complications	F	Percentage	Rank
The elderly (more than 65 years)	150	81.97	1
People with low immunity	148	80.87	2
Heart or diabetic patient	99	54.10	3
Pregnant women	59	32.24	4
Children	52	28.41	5

The extent of community awareness of the preventive measures and proper procedures toward COVID-19 virus

Perceived Appropriate Procedure in Case of Suspected Covid 19 (whether on the personal level or surrounding people)

The Table 3.1 presents the data on the perceived appropriate procedure in case of suspected Covid 19 (whether on the personal level or surrounding people). The findings of the shows that out of 183 respondents, 131 or 71.6 percent perceived that it is best to follow the domestic isolation, then follow sterilization and safety procedures, and in case of symptoms worsening, go to the nearest hospital. This is followed by the statement "going directly to the nearest hospital or medical center", with 49 or 26.8 percent. Only one (1) or 0.5 percent is rated on the statements "follow the activities of daily life", "Take a break and drink plenty of hot fluids" and "others".

Perceived Appropriate Procedure in Case of Suspected Covid19 (whether on the personal level or surrounding people)

Perceived Appropriate Procedure in Case of Suspected Covid19 (whether on the personal level or surrounding people)	Frequency	Percent
Follow the domestic isolation, follow sterilization and safety procedures, and in case of symptoms worsening, go to the nearest hospital	131	71.6
Going directly to the nearest hospital or medical center	49	26.8
Take a break and drink plenty of hot fluids	1	0.5
Follow the activities of daily life	1	0.5
Others	1	0.5
Total	183	100

The Respondents' Perception Regarding the Cure Rate of Covid 19

Table 3.2 presents the data on the respondents' perception regarding the cure rate of Covid 19. The data shows that 51 or 27.89 percent perceived that the cure rate of Covid 19 is 96 % and above. This is followed by 48 or 26.23 percent, with 81% - 95% cure rate and 29 or 15.85%. While 11 or 6.01% perceived that the cure rate is 51% - 65%; 12 or 6.56 with 21% - 35% cure rate; and 15 or 8.20% with cure rate of 36%-50%.

The Respondents' Perception Regarding the Cure Rate of Covid 19	Frequency	Percent
20% and below	17	9.29
21% - 35%	12	6.56
36% - 50%	15	8.2
51% - 65%	11	6.01
66% - 80%	29	15.85
81% -95%	48	26.23
96% and above	51	27.87
Total	183	100

The Respondents' Perception Regarding whether a Person who seems Healthy, can be a Carrier for the Virus

Table 3.3 presents the respondents' perception regarding the question as to whether a person who seems healthy, can be a carrier for the virus. The result of the study shows that out of 183 respondents, 164 or 89.6 percent answered "yes"; while 15 or 8.2 percent answered "I don't know"; and only four (4) or 2.2 percent answered "no".

If a person seems healthy, can they be a carrier for the virus?	Frequency	Percent
Yes	164	89.6
I Don't Know	15	8.2
No	4	2.2
Total	183	100

Perceived main preventive measures of a healthy person

The table 3 presents the data on the perceived main preventive measures of a healthy person. The result of the study shows that avoiding crowds ranked one (1) with 170 or 92.90 percent among the preventive measures. This is followed by avoid touching mouth, nose and the eyes with 169 or 92.35 percent; the use of hand sanitizers with 145 or 79.23 percent; and wearing of masks with 72 or 39.34 percent; drink plenty of hot fluids and take vitamins with 67 or 36.61 percent. While the preventive measures rated least like other methods with 11 or 6.01 percent; hand washing with water and soap with 18 or 9.84 percent; and hand washing with water only with 60 or 32.79 percent.

The perceived main preventive measures of the respondents coincide with the Center for Disease Control (CDC) guidelines on how to protect against COVID 19. This includes: To clean and

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disinfect every surface that many people come in contact with; Wash your hands often with soap and water for at least 20 seconds immediately when you return home from a public place such as the bank or grocery store; When in a public space, put a distance of six feet between yourself and others; and Most importantly, stay home if you are sick and contact your doctor.

Table 3.4

Perceived Main Preventive Measures of a Healthy Person

Perceived main preventive measures of a healthy person	F	Percentage	Rank
Avoid crowds	170	92.90	1
Avoid touching mouth, nose and the eyes	169	92.35	2
The use of hand sanitizers	145	79.23	3
Wearing of masks	72	39.34	4
Drink plenty of hot fluids and take vitamins	67	36.61	5
Hand washing with water only	60	32.79	6
Hand washing with water and soap	18	9.84	7
Other methods	11	6.01	8

Respondents' Best Way to Control the Spread of COVID 19

Table 3.5 shows the respondents' perceived best way to control the spread of COVID 19. The result of the study shows that curfew, prevent people from going out unless necessary and isolation of the infected person got 165 or 90.16 percent making it ranked 1 among the perceived best way to control the spread of the virus. This is followed by isolation of the people to an infected patient with 149 or 81.42 percent; isolation of people coming from an infected area with 25 or 13.66 percent; and others with 13 or 7.10 percent.

Table 3.5

Respondents' Best Way to Control the Spread of Covid 19

Respondents' Best Way to Control the Spread of Covid 19	F	Percentage	Rank
Curfew	165	90.16	1
Prevent people from going out unless necessary	165	90.16	1
Isolation of the infected person	165	90.16	1
Isolation of the people close to an infected patient	149	81.42	2
Isolation of people coming from an infected area	25	13.66	3
Others	13	7.10	4

Perceived most appropriate method of sterilization to eliminate virus from contaminated surfaces

The data presented in Table 3.6 shows the respondents' perceived most appropriate method of sterilization to eliminate virus from contaminated surfaces. The data further shows that the respondents ranked alcohol as the most appropriate accounting to 149 or 81.42 percent. This is followed by chlorine with 78 or 42.62 percent; sterilization extracted from natural sources, 18 or 9.84 percent, and ten (10) or 5.46 percent.

Table 3.6

The Respondents' Perceived Most Appropriate Method of Sterilization to Eliminate Virus from Contaminated Surfaces

Perceived most appropriate method of sterilization to eliminate virus from contaminated surfaces	F	Percentage	Rank
Alcohol	149	81.42	1
Chlorine	78	42.62	2
Sterilization extracted from natural sources	18	9.84	3
Others	10	5.46	4

Respondents' Predictions as to when the Covid 19 Pandemic will End

The table 4.1 shows the data on the respondents' predictions as to when the Covid 19 Pandemic will end. The data shows that majority or 113 out of 183 accounting to 61.75 percent perceived that the pandemic will end after the discovery of the vaccine. This is followed by the statement, "in the beginning of summer", 73 or 39.89 percent; "others", 36 or 19.67 percent; "at the end of the current year" with 30 or 16.39 percent; and the statement, "after 60% of the population are infected".

Respondents' Predictions as to when the Covid 19 Pandemic will End

Predictions as to when the Covid 19 Pandemic will End	F	Percentage	Rank
After the discovery of the vaccine	113	61.75	1
In the beginning of summer	73	39.89	2

Others	36	19.67	3
At the end of the current year	30	16.39	4
After 60% of the population are infected	21	11.47	5

Societies' Awareness in Facing Covid 19 Pandemic

Table 4.2 presents the society's awareness in facing the corona pandemic. The result of the study shows that 72 or 69.4 percent answered yes, 57 or 31.1 percent are unsure while, 54 or 29.5 percent are not.

Table 4.2

Societies' Awareness in Facing Covid 19 Pandemic

Societies' awareness in facing Covid 19 pandemic	Frequency	Percent
Yes	72	69.4
Not Sure	57	31.1
No	54	29.5
Total	183	100

Respondents' Anxiety to Covid 19 Virus

Table 4.3 presents data regarding the anxiety of the respondents regarding Covid 19 virus. The data shows that out of 183, 127 or 69.4 percent are worried and only 56 or 30.6 percent are not worried.

Table 4.3

Respondents' Anxiety to Covid 19 Virus

Respondents' Anxiety to Covid 19 Virus	Frequency	Percent
Yes	127	69.4
No	56	30.6
Total	183	100

Interestingly, most of the study participants thought that COVID-19 is either a virus that had been came from animals (50.27 %) and (46.45%) thought that came from genetically modified in a laboratory. There was no significant association (p-value > 0.05) between education level or residential level and knowledge regarding the source of COVID-19.

When participants were asked about the main source of information about COVID-19, almost half of the participants (51.91%) were responded that media was their main information source, followed by Government awareness campaigns 44.26 % and 44. 08% who identified social media as their primary source for information. Analysis of whether the selection of information source might be affected by a participant's age found no significant difference.

Almost all participants (95.63%) reported that COVID-19 had fever. Nearly (92 %) of the sample shortness of breath, and (79.78 %) were selected dry cough. while (13.11%) equally added diarrhea and vomiting to these symptoms. Participants responded when asked about virus transmission methods: (92. 35 %) reported that the virus can be transmitted by droplets from sneezing or cough, with (87.06 %) answering that COVID-19 is transmitted via contaminated surfaces, while (10.93 %) added the breathing process to those transmission methods while (11%) reported that transmission related others. About half of the study population (44.26%) reported that the virus can remain alive outside the host for 1-12 hrs. followed by (22.93 %) who thought the virus can survive for 2-4 days. Just (13.11%) of respondents stated that the virus can remain alive outside the host for 13-24 hr. In more detail: 81.97 % of respondents confirmed that high-risk people are the elderly and 80.87% people with weak immune systems, 54.10% added those with heart problems and diabetic patients to this high-risk category, and 32.24% indicated pregnant women as a high-risk group in addition to 28.41 % for children. Furthermore, about a third of the study participants reported that the rate of recovery rate from COVID-19 is 0-20%, just over a third (35.8%) stated that the recovery rate is 21–50%, and 16.2% reported that the recovery rate is more than 95%. Most participants (82.3%) agreed that a healthy person can be a carrier of the virus. In suspected cases of corona virus, 75.5% reported that they should go into domestic isolation, follow sterilization and safety procedures and, if symptoms worsened, go to the nearest hospital. Almost a quarter (24.0%) of participants stated that they would go directly to the nearest hospital or medical center. Education level (p-value = 0.007) and residential area (p-value = 0.000) had an effect on the level of the information about what to do if COVID-19 virus is suspected.

Discussion

On the 2nd of March, a Saudi citizen coming from Iran through Bahrain tested positive for COVID-19 and was immediately isolated and reported by the Ministry of Health as the first case in the Kingdom of Saudi Arabia [1]. As a precautionary measure, the Saudi government imposed a public quarantine on March 16, 2020 Kingdom's government decides to suspend attendance at workplaces in all government agencies for period of (16) days except for health, security, military and electronic security center, https://www.spa.gov.sa/viewstory.php?lang=en&newsid=2047989   This step was taken in order to suppress the spread of the virus, but it can only work with public cooperation. The knowledge and awareness of the Saudi population about this disease is essential for this cooperation.

Our study finds that approximately 46.45% of the participants thought that COVID-19 resulted from the genetic modification of a virus in a laboratory, which contradicts studies that have found COVID-19 to be 96% the same at the whole‐genome level to

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a corona virus detected in bats from Yunnan province in China. While 50.27% finds that resulted from animal. Nevertheless, the Saudi public is in possession of some accurate information about COVID-19. Almost all of the participants knew that COVID-19 has many symptoms, and 95.63% of them had chosen at least one of the symptoms of dry cough, fever and shortness of breath, while only a few of participants thought that diarrhea and vomiting may be symptoms of COVID-19. This aligns with studies that have found fever and cough to be the dominant symptoms and gastrointestinal symptoms to be uncommon. Most participants agreed that healthy people can be carriers of the virus. In addition, more than three quarters of participants 81.97% thought that the elderly and people with underlying health conditions (low immunity, diabetes and/or heart problems) are at an especially high risk of death from COVID-19, and that children are at low risk of death from COVID-19; these views correspond with what is currently believed to be the case about mortality risks from COVID-19.

Our study finds that participants in Saudi Arabia expect a large number of people will not recover from COVID-19. This finding explains why more than half of them were worried about a corona virus outbreak (only 16.2% of the sample believed that the recovery rate is more than 95%. Two thirds (66.6%) reported that they are worried about an outbreak of COVID-19).While the case fatality rate is currently believed to be 1-2% among reported cases but this figure might be substantially lower if there are many unreported and/or asymptomatic cases. Fortunately, the fatality rate of COVID-19 appears to be lower than that of other recent infectious disease outbreaks, such as Ebola severe acute respiratory syndrome corona virus SARS-CoV; and Middle East respiratory syndrome corona virus MERS‑CoV; suggested that more than 80% of patients with COVID-19 have a "mild disease and will recover" and that only 2% would die from COVID-19.

It is also important to note that while the general public appears to be well informed regarding the common symptoms of COVID-19, only about 20% of the population had excluded the role of wearing masks as a preventive method that would protect them from catching a COVID-19 infection; however, WHO do not recommend wearing masks for the general population unless they are in direct contact with a person who is suspected of having a COVID-19 infection or they are coughing and/or sneezing.

On the other hand, participants' responses indicated a good awareness of how the virus is transmitted, since approximately half of them confirmed that COVID-19 can be transmitted via droplets from sneezing or coughing and from contaminated surfaces. Moreover, more than half of the participants believed that COVID-19 can survive outside the body for days, which accords with the findings of a recent study. In addition, participants believed that using chlorine and alcohol can be appropriate for sterilizing and eliminating the virus from contaminated surfaces. Indeed, this awareness of using chlorine and alcohol to reduce the spread of the disease is in line with the recommendation of the Center for Disease Control and Prevention (CDC) to use chlorine and alcohol on different surfaces for sterilization purposes.

Moreover, most of the participants believed in domestic isolation followed by sterilization and safety procedures as the best way to suppress the spread of the disease. Importantly, in cases where symptoms worsen, there was a satisfactory awareness of the need to seek help from professional care givers by going to the nearest hospital. Half of the participants stated that Jordanian society was sufficiently aware to face the corona virus pandemic. In addition, more than half believed that the crisis would be over in Jordan by the beginning of summer or after a new treatment or vaccine had been developed. To date, there is no drug or vaccine proven to treat or prevent COVID-19 [12].

The epidemic could result in a large number of cases, which could put pressure on the health system. Actions and measurements should be taken by the government and the general public in order to reduce the transmission of COVID-19 and to save many lives. In this study, we have investigated the extent of the knowledge and awareness of the Jordanian population toward COVID-19. Importantly, these results will help with the campaign to implement important preventive measures and proper procedures to deal with COVID-19, and a vital part of this campaign will be its dissemination via the media and social media. More than a quarter of the participants reported that these medias were their main sources of information.

Conclusion

The general public in KSA- Riyadh appears to have satisfactory information about COVID-19. Government agencies May need to organize information campaigns to correct misinformation and misunderstanding, and they should use media and social media platforms to target this information. This will ensure that the Saudi population is well informed about COVID-19, which will help lessen unnecessary anxiety, contribute to the efforts to reduce transmission of the virus, and ultimately, therefore, help to save lives.

Conflicts of interest

All authors declare that they have no conflicts of interest.

Authors contributions

All authors state that they had complete access to the study data that support the publication.

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