Public Awareness and Compliance with Preventive Measures for the Novel Coronavirus (COVID-19) Pandemic in Jazan Area, KSA

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Abstract

Objectives: COVID-19 being one of the significant public health challenges, preventive measures play an essential role in reducing infection rates and the severity of the disease. This study obtained to estimate the general level of knowledge, attitude, and practices regarding emerging COVID-19.

Study design: cross-sectional community based.

Methods: Data collected using a structured self-administered online questionnaire, distributed to Jazan residents, KSA between March to September 2020.

Results: 345 eligible participants were enrolled, among whom the total mean score of the knowledge, attitude, and practice were 19.6 ± 10.8, 34.8 ± 3.4, 32.7 ± 3.4 consecutively, In term of prevention and protection against the virus transmission, only 186 (53.9%) know that hand washing and (54.5%) know that using of the face mask can protects against the virus transmission.

Conclusions: The community was highly significant regarding transmission of (COVID19) and implemented most of the precautionary practices, such as avoiding handshaking and using an alcohol hand rub. Most of the participants obtaining an average level of virus-related information and retaining a positive attitude towards overcoming COVID-19 infection, but they reflect a low to moderate level of awareness of Covid19's clinical manifestation.

Keywords: *COVID-19, public awareness, preventive measures, public compliance, KSA.*

Introduction

COVID-19 was first reported in China in December 2019 when the mortality rate increased worldwide; the World Health Organization (WHO) then called it a pandemic in March 2020 [1,2]. Before the outbreak of COVID 19 in Saudi Arabia, Middle East Respiratory Syndrome-coronavirus (MERS-CoV) was the primary concern in 2012 [3,4]], but it was successfully controlled by restrictive measures, which were made by the government [4].

COVID-19 poses health threats to the population worldwide [3], and the KSA authorities have monitored the COVID-19 situation from its first detection. Plans

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were put in motion to prepare for its suspected outbreak in the Kingdom [5,6,7]. These measures included the closure of schools, universities, public transportation, and all public places as well as the isolation and care of infected and suspected cases [4]. This was in addition to some unprecedented measures related to awareness and prevention to control COVID-19 transmission in the country [8].

The fight against COVID-19 continues globally, and to ensure control, individual adherence to these control measures is essential. Some studies have reported that knowledge and attitudes towards the pandemic disease has contributed to fear and anxiety among the population and complicated endeavors to prevent the spread of the disease [9,10,11].

Awareness creation and changing attitudes are among the public health intervention measures recommended by the WHO. Various studies have shown demographic, social, and technological factors that are known to affect the level of knowledge, attitude, and practices towards the disease and its prevention [12] A descriptive cross-sectional study conducted by Ahmed Abdelhafz et al. to study Egyptian knowledge, perceptions, and attitudes towards the novel coronavirus disease (COVID-19) concluded that the study participants had good knowledge about COVID-19 and had a positive attitude towards using protective measures. Thus, this study aimed to assess the Saudi community's awareness regarding the coronavirus and identifying their Compliance to prevent transmission of the virus.

Methods

This study included a cross-sectional community-based design in Jazan Province, KSA, from March to September 2020. In brief, participants enrolled through a self-administered online questionnaire; the questionnaire was initially designed in the English language and then translated into Arabic to match the local language, which included Arabic terminology used by the general community considering variations among different areas**.** Eligibility criteria included residing in the Jazan region and being between 18 and 60 years of age. Moreover, it included self-assessment of knowledge attitudes and compliance regarding Covid-19. For this analysis, the sample was restricted to participants who completed a baseline survey who were eligible for inclusion in this analysis. Participants completed a self-administered questionnaire, eliciting information connected to socio-demographic characteristics, such as age, gender, marital status, educational level, nationality, occupation, residence, monthly income, medical history, and secondary questions that assessed their knowledge regarding the necessary information of disease, such as clinical presentation, incubatory period, causes, contiguity, and methods of transmission. Third, **attitude questions,** which required answers of "Strongly Agree," "Agree," "Disagree," or "Strongly Disagree regarding the obedience to infection prevention guidelines were answered. Finally, questions about **compliance and practice, which** contained statements that reflected to which extent the respondents comply with the preventive methods of COVID-19 transmissions, e.g., hand washing and shaking, use of alcoholic hand rub, covering the nose and mouth during sneezing or coughing, use of a face mask, throwing used tissues in the trash, health styles, and social distancing. A pilot study was performed on 10% of the study participants to test the tools' reliability and validity. The Cronbach alpha showed that the questionnaire reached acceptable reliability of $\alpha = 0.850$. The respondents included only 345 people. Regarding data management, the collected data were coded and entered SPSS (Statistical package for social sciences) version 26; the data were organized, tabulated, and analyzed using descriptive and inferential statistics. After the analysis, data were presented in tables and figures and expressed using frequencies, percentages, the chi-square test and a regression model. The statistical significance was set as p value of <0.05 with a 95% confidence interval.

The Standing Committee approved the study protocol according to scientific research ethics at Jazan University (HAPO-10-Z-001). Online consent was obtained from each participant who enrolled in this study.

Results

In total, 345 individuals participated, and the majority were female (85.8%). In total, 40% of the participants were of the age group from 18 to 24 years of age, and 60.9% had a bachelor's degree. Saudi nationality accounted for 61.2%. Most of the study participants (71.3%) were urban residents, and the study participant mean monthly income was 2.94 ± 0.973, and 32.5% of them were government employed. The responses of the study participants regarding COVID-19 knowledge are shown in (Table 1) with the total mean score of the questions regarding knowledge being 19.6406 ± 10.80. 98.3% of participants had heard of coronavirus disease and 91.3% and 98% were aware of the causes and the contagiousness of the disease, respectively; the major sources of their information were the MOH website (68.4%), social media and the internet (54.5%), and TV (53.0%).

In terms of prevention and protection against virus transmission, only 53.9% knew that hand washing can protect against virus transmission, and 54.5% knew that using a facemask protects against virus transmission, whereas 49.9% of the study participant were not aware of the protective methods against virus transmission.

The total mean score for positive attitude was 34.8638 ± 3.40255, and 333(96.5) of study participants had a positive attitude with only 12(3.5) of the study participants reflecting a negative attitude response.

The mean score for all items from the study participant's regarding COVID-19 was 32.73, 3.48, and the p value was 0.25. Then, 7.2% of the study participants always avoided hand shaking, whereas 84(24.3%) of them avoided it sometimes; additionally, 20(5.8%) of the study participants were willing to receive a vaccine if it is available.

Table: (1) Responses of participants to knowledge questions (n = 345)

Variable	YES		NO		I do not know	
Statement	N	%	N	%	N	%
Have you ever heard of coronavirus?	339	98.3	4	1.2	2	.6
The cause of coronavirus disease is the COVID-19 virus	315	91.3	14	4.1	16	4.6
Coronavirus is a highly contagious disease	338	98.0	2	.6	5	1.4
Do you know someone who is infected with coronavirus?	199	57.7	137	39.7	9	2.6
Is there a vaccine against coronavirus?	28	8.1	231	67.0	86	24.9
The incubation period for COVID-19 is between 2 and 14 days.	315	91.3	11	3.2	19	5.5
Infection with the virus may be more dangerous for the elderly and those who have chronic illnesses.	336	97.4	3	.9	6	1.7

Cont... **Table: (1) Responses of participants to knowledge questions (n = 345)**

The clinical presentation of COVID-19 includes:					
Fever	179	51.9	166	48.1	
Cough	159	46.1	186	53.9	
Sore throat	159	46.1	186	53.9	
Shortness of breath	181	52.5	164	47.5	
Diarrhea	91	26.4	254	73.6	
Abdominal pain	53	15.4	292	84.6	
Loss of smell	131	38.0	214	62.0	
Loss of taste	131	38.0	214	62.0	
Headache	140	40.6	205	59.4	
Chest pain	120	34.8	225	65.2	
Fatigue	94	27.2	251	72.8	
Could be asymptomatic	96	27.8	249	72.2	
All the above symptoms	188	54.5	157	45.5	
COVID-19 can be transmitted via:					
Coughing and sneezing	181	52.5	164	47.5	
Hand shaking	171	49.6	174	50.4	
Touching surfaces, such as door knobs	155	44.9	190	55.1	
Transmission is increased in crowded places.	71	20.6	274	79.4	
Can be transmitted from animals to humans	53	15.4	292	84.6	
All the above	204	59.1	141	40.9	
Protection and prevention against CORONA virus transmission:					

Cont... **Table: (1) Responses of participants to knowledge questions (n = 345)**

Hand washing protects against virus transmission.	186	53.9	159	46.1	
Using a face mask protects against virus transmission.	188	54.5	157	45.5	
Avoiding contact with infected individuals reduces risk of infection.	186	53.9	159	46.1	
Avoiding touching the nose, mouth and eyes reduces risk of infection.	183	53.0	162	47.0	
There is no evidence that self-quarantine can prevents the spread of coronavirus.	39	11.3	306	88.7	
Isolation and treatment of people who are infected reduce the spread of the virus.	161	46.7	184	53.3	
All the above	173	50.1	172	49.9	
Sources of information:					
TV	183	53.0	162	47.0	
Social media and internet	188	54.5	157	45.5	
Friends/neighbor	91	26.4	254	73.6	
MOH website	236	68.4	109	31.6	
Newspapers	82	23.8	263	76.2	
All the above	4	1.2	341	98.8	
Others	36	10.4	309	89.6	
Knowledge score: mean 19.6406 SD ±10.80555					

Table: (2) Responses of study participants to attitude questions (n = 345)

Statement	Strongly Agree	Agree	Not sure	Disagree	Strongly disagree.
	N %	N %	N %	N %	N %
Washing hand frequently can reduce the risk of COVID-19.	249(72.2)	81(23.5)	12(3.5)	0(0.0)	3(.9)
Face masks can prevent viral transmission.	198(57.4)	123(35.7)	18(5.2)	3(.9)	3(.9)
Travelling across the country is safe during this time.	18(5.2)	14(4.1)	49(14.2)	121(35.1)	143(41.4)
Individuals should avoid going to crowded places and avoid taking public transportation.	311(90.1)	9(8.4)	0(0.0)	2(.6)	3(.9)

Cont... **Table: (2) Responses of study participants to attitude questions (n = 345)**

If I get infected, I will go to a hospital as advised.	261(75.7)	47(13.6)	22(6.4)	6(1.7)	9(2.6)
Social distance is essential for reducing the spread of coronavirus.	319(92.5)	23(6.7)	0(0.0)	0(0.0)	3(.9)
The virus is not a stigma, and I should not hide my infection.	261(75.7)	53(15.4)	17(4.9)	7(2.0)	7(2.0)
I will quarantine/isolate myself if I show symptoms of the disease.	304(88.1)	29(8.4)	3(.9)	6(1.7)	3(.9)
Positive attitude	333(96.5)				
Negative attitude	12(3.5)				
Attitude scores mean 34.8638	SD ±3.40255				

Table: (3) Participant compliance with Covid-19 preventive measures (n = 345)

Statement	Always	Sometimes	Not at all	X2	p
	N %	N %	N %		
I avoid hand shaking	25 (7.2)	84 (24.3)	263(68.4)	206.104	.000
I wash my hands with water and soap regularly for enough time	4 (1.2)	86(24.9)	256(73.9)	284.887	.000
I use an alcoholic hand rub	13(3.8)	103(29.9)	299(66.4)	204.730	.000
I cover my nose and mouth during sneezing or coughing	6(1.7)	45(13.0)	294(85.2)	424.539	.000
I avoid touching my eyes, nose, or mouth as much as I can	13(3.8)	120(34.8)	212(61.4)	172.504	.000
I throw a used tissue in the trash	3(.9)	19(5.5)	323(93.6)	565.426	.000
I maintain healthy eating and health style	51(14.8)	143(41.4)	151(43.8)	53.704	.000
I usually put a face mask when outside	9(2.6)	40(11.6)	296(85.8)	431.496	.000
I stopped attending weddings and social gatherings	14(4.1)	24(7.0)	307(89.0)	481.270	.000
If there is an available lab test for detecting the virus, I am willing to take it	10(2.9)	15(4.3)	320(92.8)	548.261	.000
If there is an available vaccine for the virus, I am willing to get it	20(5.8)	24(7.0)	301(87.2)	451.322	.000
I usually follow the updates about the spread of the virus in my country	7(2.0)	75(21.7)	263(76.2)	305.809	.000
Practice score Mean	32.7304 SD 3.48499				

Table: (4) Comparison of socio-demographic parameters with knowledge attitude and practice score (n = 345)

Variable	N	%	Knowledge score			Attitude score			Practice score		
			Mean	SD	P	Mean	SD	p	Mean	SD	p
Gender											
Male	49	14.2	22.2041	8.68902	.000	13.0612	4.11505	.278	13.0000	3.42174	.295
Female	296	85.8	19.3630	11.07604		13.1781	3.28212		12.7945	2.95422	
Age											
18–24	138	40.0	13.0362	7.81484	.000	13.3696	2.57182	.002	13.4855	2.58077	.000
30–25	39	11.3	17.8462	11.45825		7.680	2.54832		12.8718	3.27815	
40–31	88	25.5	24.5341	9.32423		13.1250	3.41334		12.0114	2.67597	
Over 40 years old	80	23.2	27.4737	8.81888		12.8684	4.85618		12.5395	3.71462	
Marital status											
Single	150	43.5	13.1267	7.29466	.000	13.3800	2.62837	.000	13.2667	2.66890	.000
Married	185	53.6	24.6575	10.37110		12.7569	2.79017		12.3481	2.73970	
Divorced	4	1.2	27.5000	5.19615		12.5000	1.73205		11.5000	.57735	
Widowed	6	1.7	33.3333	1.03280		20.3333	15.24030		17.0000	10.07968	
Education level											
Elementary school	2	.6	27.0000	2.82843	.000	11.5000	.70711	.002	17.5000	.70711	.134
Secondary school	29	8.4	19.4828	10.27348		13.4828	2.89853		12.7931	2.49828	
Bachelor	210	60.9	15.3048	9.24015		13.1286	2.83479		12.9333	2.79188	
Postgraduate	104	30.1	29.0900	7.70294		13.1700	4.52168		12.5100	3.54337	
Nationality											
Saudi	211	61.2	14.3460	8.79441	.000	13.2891	2.93855	.010	13.0616	12.4385	.095
Non-Saudi	134	38.8	28.5769	7.43433		12.9538	4.05937		2.90664	3.17208	
Occupation											
Governmental employee	112	32.5	26.7768	9.14321	.000	13.2411	3.31593	.010	12.3304	2.90507	.000
Private sector	36	10.4	20.0294	9.16345		12.1176	2.10000		11.9118	2.26124	
Healthcare professionals	54	15.7	13.2407	8.88487		12.8519	1.73104		12.9259	2.40951	
Teacher	22	6.4	26.0500	9.70879		12.6000	1.72901		12.7500	2.24488	
Business owner	13	3.8	15.2308	6.67275		13.9231	2.25320		12.7692	1.73944	
Unemployed	108	31.3	15.0741	9.60014		13.5741	4.56562		13.5926	3.66605	
Residence											
Urban	246	71.3	22.1777	10.81442	.000	12.9669	2.90495	.004	12.4669	13.6970	.000
Rural	99	28.7	13.8889	8.23741		13.6364	4.38330		2.64829	3.65182	
Monthly income/SR											
Less than 1000	4	.6	7.0000	.00000	.009	19.0000	.00000	.003	16.0000	.00000	.030
1000–5000	148	42.9	18.8767	10.29824		12.8356	2.62620				
More than 10000	69	20.0	23.4058	10.66374		13.1159	3.66436		12.4521	2.33735	
I do not want to answer	111	32.2	19.3945	11.27273		13.6055	4.20101		12.3043	3.02103	
Other	13	3.8	16.0769	9.58698		12.3846	.96077		12.4615	2.63361	

Discussion

In December 2019, the outbreak of COVID-19 in the urban center of Wuhan, China and its rapid global spread have resulted in one of the largest pandemics in recent times with many devastating and important public health challenges[11]. Given the serious threats posed by COVID-19 and the lack of a COVID-19 vaccine, preventive measures are essential for reducing the incidence of infection and managing the spread of the disease. This suggests the need for public adherence to measures of prevention and control, which are influenced by their awareness, attitudes, and practices (KAP).

Limited published data on population knowledge, attitudes, and practices regarding COVID-19 are available to date, specifically in the Jazan area. Thus, the aim of this study was to estimate the general level of awareness, attitude, and practices towards the emerging COVID-19 disease in communities in Jazan.

To obtain data that could be used to guide the mapping of an awareness campaign and to assess whether the knowledge of people varied based on a specific feature of the target population, different socioeconomic characteristics of the population were analyzed.

Most respondents were female (85.8%), and 60.9% had a bachelor's degree with an overall COVID-19 knowledge of 50.1%, which demonstrated that respondents were moderately aware of the COVID-19 pandemic.

In line with our results, previous studies performed in various countries [12-14] and in Egypt [15] have revealed a high level of COVID- 19 knowledge among the population.

Nearly 4.1% of the participants did not know the etiology of the disease, which is considered to be the first step in patient education. When people know the cause, they will most likely understand how the disease is spread and what the prevention measures restricting its transmission are.

The obtained results indicate that most of the participants in the survey were familiar with COVID-19 and had an average degree of knowledge of the virus.

In the information questionnaire, participants achieved an average score of 19,6406. While 98.3% of the participants have heard of corona virus, only 53.9% and 54.5% know that hand washing and the use of face mask, respectively, will protect against virus transmission.

Most of the participants (68.4%) gained understanding and knowledge of the disease and its transmission from the MOH website, 54.5% – from social media and internet, and 53.0% – from television, which is consistent with other results reported by [17] social media represents the main tool for obtaining information on COVID-19 [18],[17].

In terms of knowledge of the clinical manifestation of the disease, participants had a moderate to low level of understanding of the signs and symptoms of COVID 19 (Figure 5) because their responses were: shortness of breath (52.5%), fever and sore throat (46.1%), fatigue (27%), and diarrhea (26.4%). Thus, intensive public knowledge is needed to prevent and monitor disease spread. This agrees with an Iranian study, which showed that a smaller proportion of the sample population (56.5%) had adequate knowledge of COVID-19 transmission and symptoms [19].

It is important to remember that many government initiatives were made at all levels, including public awareness campaigns which was initiated by the Saudi Arabian Ministry of Health (MOH) and communicated through its website, television, and different social media and COVID-19 guide for providing information and precautionary messages in more than 10 languages. These early steps in prevention and control initiatives, as well as attempts

to fight rumors and disinformation, were essential in raising knowledge and awareness in the community.

This study showed that the majority (96.5%) of participants in the study had a positive attitude towards overcoming the COVID-19 infection (i.e., a total mean score of 34.8638 + 3.40255), while only 3.5% of the participants had a negative attitude response. This result agrees with a China-based KAP study, which reported a high degree of positive attitudes among the participants [12]. These results also support assumptions in previous studies, which observed a correlation between higher awareness levels with higher trust and positive attitudes in health crises [20].

In practice, most study participants follow the measures for COVID-19 transmission prevention such as avoiding hand shaking, using alcohol hand rubbing, and stopping attending weddings and social gatherings. These results are like those in other studies [21], [22], which determined that approximately 90% of the respondents reacted positively when going outside the home. In another KAP study on COVID-19 conducted among the Malaysian population, 51.2% of the participants reported wearing a face mask when they went out in public [23]. This result shows the participants' general ability to make behavioral improvements in the context of the COVID-19 pandemic.

The total score regarding knowledge, attitude, and practice showed a significant relation with some demographic characteristics, such as age [young adults (18–24 years) have the highest score regarding knowledge, attitude, and practice p value (0.000)], marital status [married – p value (0.000)], and monthly income (0.30) [24], [25], and [26], while education level does not have a significant difference in the P value (0.134) in contrast to what has been stated in the literature because educated respondents are more knowledgeable about emerging communicable diseases [27] and [28].

These results also indicate that the intervention in health education will be more successful if it targets, e.g., the abovementioned population groups, specifically those with a low level of education. Finally, the results of this study indicated that health education activities aimed at enhancing awareness about COVID-19 are effective in promoting a positive outlook and ensuring healthy practices.

Conclusion

Since WHO declared on March 12, 2020 that the COVID-19 disease was a pandemic, raising awareness became essential in reducing COVID-19 transmission. While this study concluded that most of the research participants were highly aware of COVID-19 transmission and implemented most of the precautionary practices (e.g., avoiding hand shaking and using an alcohol hand rub), it identified areas of misconceptions and particular groups that should be targeted for COVID-19 education programs.

Recommendation

The obtained results clearly show the importance of improving community knowledge which may also result in improvements in attitudes and practices towards COVID-19.

To increase awareness and achieve adequate information, a comprehensive public health education program is necessary.

Limitations of the study

An opportunity for the participants to provide socially desirable responses. As they filled out the self-administered questionnaire, they may have answered attitude and practice questions positively, according to what they perceive to be expected of them.

The use of the convenience sample technique via social media resulted in the greatest likelihood of bias because the needed community may not have been able to contribute to the survey. Moreover, the sample of the study had an over-representation of 18–24-year-

old women; thus, a methodical inclusive sampling method is needed to obtain better representativeness and generalizability of the results.

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