

Saudi adherence to preventive measures from COVID -19; a survey to assess preventive practices as a basis for general community health education

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SUMMARY

Introduction: Preventive behaviour is vital to the success of any intervention in the control of the COVID-19 pandemic addressing community health.

Objectives: To answer the extent to which the Saudi Population is aware and complies with the preventive measures of COVID-19, and to identify the associated factors.

Methodology: This is a descriptive, community-based survey of the Saudi Population. The data was collected using a self-administered questionnaire that included respondent characteristics, and questions about the preventive behaviour towards COVID-19. The IRB of the University of Bisha, College of Medicine gave the ethical clearance.

Result: A total of 1200 people participated in the online survey. Females were 607 (50.6%) and 593 (49.4%) were males. The majority of the Saudi Population had adequate knowledge of COVID-19 preventive measures (71.4%), adherence to preventive measures of COVID-19 was (47.5%). Factors associated with adequate adherence to the preventive measures of COVID-19 were age, occupation, education level, previous suspicion of COVID-19, and contact with infected persons, and a risk factor (p-value <0.05). Adherence to preventive measures as a daily routine practice was significantly associated with age, residence, occupation, suspected COVID-19, and previous infection (p-value <0.05).

Conclusion: Although most of the Saudi Population has adequate knowledge of COVID-19 preventive measures, adherence to preventive measures was low. Therefore, we recommend increasing the awareness and compliance of the people to the preventive measures of COVID-19.

Key words: COVID-19, adherence, preventive measures, Saudi Arabia

INTRODUCTION

The first case of Coronavirus disease 2019 (COVID-19) was reported in Wuhan, China in December 2019. It spread rapidly worldwide and so was declared public health emergency of international concern. It causes severe illness associated with morbidities and mortalities worldwide. Currently, it is now a pandemic [1-5].

While transmission of COVID-19 is primarily *via* the respiratory tract or contact with infected secretions [2], it can also transmit *via* nosocomial dissemination [6]. The basis for controlling the outbreak of this disease is to implement measures that could reduce transmission, including isolation, quarantine, social distancing, and community containment [7]. Saudi Arabia responded beautifully to the pandemic, and quickly took unprecedented measures to control transmission [5,8].

One of the key factors affecting control of COVID-19 is community compliance with the control measures put in place. Adherence to these measures depends on public knowledge and attitudes towards COVID-19, which have contributed to pandemic management [9]. In addition, assessment of general knowledge helps identify gaps and strengthen on-going preventive measures. Appropriate changes in public behaviour in response to an outbreak can alter the course of infection and lead to better control of the disease [10].

This study aims to answer the extent to which the Saudi Population is aware of and complies with the preventive measures for COVID-19. This study will provide a base data for general community health education programs.

METHODS

This is a descriptive cross-sectional study carried out to answer the extent to which the Saudi Population is aware and complies with the COVID-19 preventive measures. The study was a community-based online survey. The target population comprises the Saudi Arabia population who met the inclusion criteria. The minimum sample size (size calculation) was 384, but all participants who filled the survey form were included.

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The sampling of the participants was done using a non-randomized sampling (convenient sample). Electronic informed consent was obtained from each participant before starting the survey. To assure anonymity, participants' names were not collected. Participants could withdraw from the survey at any moment without providing any justification. Also, ethical approval for this study was obtained from the Institution review board (IRB), University of Bisha (Ref.No. UBCOM/H-06-BH-087(06/14) before it was carried out. Data were collected using a self-administered questionnaire. It included respondent characteristics and questions about the preventive behaviour towards COVID-19. Participants' knowledge was assessed by using ten questions. These questions were related to mask-wearing, hand washing, thermal scanner, using antibiotics in the prevention and treatment of COVID-19, and susceptibility of smokers to infections. Those who answered five or more questions correctly were designated as knowledgeable, and those who answered fewer than five questions correctly were classified as non-knowledgeable. Three out of five questions related to practicing preventive measures assessed adherence to preventive measures of COVID-19. Leaving crowded areas and wearing a mask outside the home were also included. After data collection, the incomplete forms due to withdrawal from the study were excluded. Data were managed and entered into the SPSS version 23. Significant p-value was (0.05 or less).

RESULTS

Of the Saudi population, 1200 people participated in the online

survey. Females were 607 (50.6%) and 593 (49.4%) were males. The majority were from urban areas 820 (68.3%), and students were 653 (54.4%). During the current pandemic, 473 (39.4%) were suspected with COVID-19 infection, 210 (17.5%) were infected, 460 (38.3%) had contact with infected people, and 44.3% had at least one risk factor for developing severe disease. Of the population studied, 857 (71.4%) were knowledgeable, and 343 (28.6%) were unaware. Age, sex, residence, and other risk factors were significantly associated with knowledge level (Table 1).

The majority of the Saudi population had adequate knowledge of COVID-19 preventive measures (71.4%); adherence to preventive measures of COVID-19 was (47.5%). Nevertheless, there was ambiguity regarding wearing masks for healthy individuals and using antibiotics for prevention and treatment COVID-19 (Table 2).

Participants who were adhered to the preventive measures of the Ministry of Health were 901 (75.1%). This study examined the most important preventive measures, such as avoiding crowded areas, wearing a mask outside the home, and other preventive measures in general in the control of COVID-19 pandemic-572 (47.7%). Age, occupation, education, suspicion of COVID -19, contact with an infected person, and presence of a risk factor were significant factors (p-value<0.05). Of the participants, 1049 (87.4%) wore masks when they left the house in the past few days. Mask wearing was significantly associated with age, sex, residence, occupation, presence of an infected person, and

Tab. 1. Characteristics and general sociodemographic data (n=1200)

	Characteristics	Knowledgeable	Not Knowledgeable	Total	p-value
Age	18-29	580	268	848	0.001
	30-40	169	44	213	
	>40	108	31	139	
Gender	Male	467	140	607	0
	Female	385	208	593	
Residence	Urban	606	214	820	0.005
	Rural	251	129	380	
	Employed	244	81	325	
Occupation	Not employed	155	67	222	0.231
	Student	458	195	653	
	Primary school	5	4	9	
Education	Intermediate	19	10	29	0.171
	Secondary school	221	105	326	
	College or university	612	224	836	
Suspected	Yes	327	146	473	0.158
	No	530	197	727	
Infected	Yes	152	58	210	0.733
	No	705	285	990	
Contacted	Yes	320	140	460	0.263
	No	537	203	740	
Risk factor	DM	42	16	58	0.267
	HTN	39	14	53	0.243
	Asthma	60	34	94	0.09
	Smoking	79	36	115	0.247
	Obesity	76	37	113	0.194
	Other	78	21	99	0.052
	Non	300	368	668	0.07

Tab. 2. Participant's response to knowledge questions related to COVID-19 (N=1200)

Knowledge about COVID-19		Yes	No	Not sure
In a healthy person, masks are needed to care for suspected COVID individuals	618	479	103	
Wearing masks in case of coughing or sneezing is a must	927	181	92	
Effectiveness of wearing masks is only possible when hand is clean with disinfectants	709	328	163	
Hands to be cleaned with disinfectants before masking	1006	110	84	
Well applied of the masks and ensuring there is no space is a must	909	149	142	
Touching the mask should be avoided, and use the disinfectants if you feel it	849	181	170	
Mask should not be reused and it should be changed if it becomes damp	1099	52	49	
The thermal scanner can detect an afebrile person	629	344	227	
For the prevention of treatment of COVID-19, antibiotics are effective	296	433	471	
The smoker is at higher risk of COVID-19 than others	732	141	327	

*The bold and underline are the correct answers

Tab. 3. Factors affecting the adherence to the MOH preventive advice of COVID-19 (n=1200)

Variable	Category	Visit crowded areas recently		p-value	Worn a mask outside the house, in near days		p-value	Generally, they are committed to the MOH advises for COVID-19 prevention		p-value
		No	Yes		No	Yes		No	Yes	
Age	18-29	379	469	0.05	120	728	0.01	107	741	0
	30-40	119	94		9	204		6	207	
	>40	74	65		15	124		5	134	
Gender	Male	312	288	0.08	93	507	0.01	48	552	0.06
	Female	256	337		51	542		70	523	
Residence	Urban	391	429	0.98	80	740	0.01	71	749	0.04
	Rural	181	199		64	316		47	333	
Occupation	Employed	150	175	0.01	30	295	0.05	21	304	0.02
	Not employed	135	87		22	200		15	207	
Education	Student	287	366	0.01	92	561	0.54	82	571	0.07
	Primary	9	0		1	8		1	8	
	Intermediate	11	18		6	23		2	27	
	Secondary	173	153		39	287		44	282	
Suspected	university	379	457	0.01	98	738	0.18	71	765	0.03
	Yes	390	337		80	647		61	666	
Infected	No	182	291	0.16	64	409	0.04	57	416	0.01
	Yes	481	509		110	880		88	902	
Contacted	No	91	119	0	34	176	0.25	30	180	0.45
	Yes	417	323		95	645		69	671	
Risk factor	No	155	305	0.04	49	411	0	49	411	0.2
	DM	31	27		12	46		3	55	
	HTN	26	27		10	43		4	49	
	Asthma	44	50		18	76		12	82	
	Smoking	38	77		13	102		14	101	
	Obesity	49	64		20	93		11	102	
	Other	52	47		12	87		7	92	
None	960	908	1115	753	1149	719				

risk factors (p-value 0.05). Preventive measures as daily practice activities were performed by 1082 (90.2%) with significant association with age, residence, occupation, suspected infection, or presence of disease to COVID-19 (p-value=0.05), details in (Table 3).

DISCUSSION

Saudi Arabia's response to the pandemic was quick and effective, and the control strategies were remarkable and innovative. In

addition, this study provided important insights into preventive behaviour among the Saudi Population.

In this study, more than two-thirds (71.4%) of the participants were knowledgeable about COVID-19. The level of knowledge of the Saudi Population about COVID-19 was better than 63.5% in Ethiopia [11], 63% in Iran [12], and 61.6% in a bi-national study in Egypt and Nigeria [13]. However, knowledge level was lower compared to 80.5% in Malaysia [14], and 90% in China [15,16]. Saudi population knowledge about

COVID-19 prevention reflected in this study was significantly better than other parts of the world [17-19]. The possible reason could be adequate access to information. The difference in the knowledge rates may be due to the variation of the assessment tools and methods that were used.

In this study, being 18-29 years old, male, living in urban area, and having a risk factor for contagion significantly impacted knowledge about the COVID-19 pandemic. These results were strongly consistent with studies in the United States [20] and Australia [21]. These data represented the Saudi Population's active groups who had easy access to information, and the channel of information dissemination was on reach. In addition, most of the information was disseminated through mass media, mobile and social media, which were used frequently.

In this study, less than half of the participants (47.5%) adhere to the MOH measures of COVID-19 prevention. There was wide variation in adherence to COVID-19 prevention measures [20] since prevention measures were first introduced to the public [22]. Adherence to preventive measures was unfortunately low compared to different populations, such as Ethiopia (52.7%) [23], America (67%) [24]. The level of adherence was comparable to a study conducted in Jeddah city (Western of Saudi Arabia), where 49% adherence was reported. The low adherence to COVID-19 preventive measures despite sufficient knowledge could be explained by the popularity of the Saudi population's culture, especially in rural areas where social events are more important to them. Also, online learning in most schools and universities contributed to making much time available for social gatherings.

In this study, age, occupation, education level, previous suspicion of COVID-19, contact with infected persons, and presence of a risk factor were the main factors influencing adequate adherence. The predictive factors identified in this study were consistent with recent studies [20,24,25]. The predictive factors of adherence to the preventive measures in Saudi Arabia could be used to design future prevention programs, especially during

the Hajj season when the country receives millions of pilgrims from approximately all over the world annually.

This study indicated that preventive behaviours as a daily routine practice including wearing of mask when leaving home were dependent on age, sex, residence, occupation, infection, or suspected infection with COVID-19. These factors were consistent with previous findings [19,20,25,26]. Avoiding crowded places, wearing masks when leaving the house, and other preventative measures, in general, are essential components for preventing the COVID-19 pandemic. Addressing these issues as part of comprehensive health promotion will help in eliminating infections.

CONCLUSIONS

Although most of the Saudi population has adequate knowledge of COVID-19 preventive measures, adherence to these measures was low. Therefore, we recommend increasing the awareness of COVID-19 preventive measures, and also encourage compliance of the people to these preventive measures. In addition, comprehensive behaviour change education programs will increase community involvement and make the information available.

AUTHOR CONTRIBUTIONS

All the authors contributed to the conception and design of the work, drafting the work, made the final approval of the version to be published, and agreed to be accountable for all aspects of the work.

ETHICAL APPROVAL AND CONSENT

This study was conducted in accordance with the Declaration of Helsinki. Institutional Review Board (IRB) number (Ref. No. UBCOM/H-06-BH-087 (06/14) was obtained from the University of Bisha, Saudi Arabia. Each participant gave Informed consent and then enrolled in the study.

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