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Knowledge, attitude and practice towards covid-19 among Arab nations

Abdullah Alsaihani[1]✉, **Ghadah Alhamed**[1], **Omar Almohsen**[1], **Ahmad Alfawzan**[2], **Nasser Alasseri**[3], **Raul Gaikwad**[4]

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Author Affiliation:
[1]Intern, College of Dentistry, Qassim University, Qassim, Saudi Arabia
[2]Assistant professor, Department of Orthodontics, College of Dentistry, Qassim University, Qassim, Saudi Arabia
[3]Consultant, Department of Oral and Maxillofacial Surgery, Prince Sultan Military Medical City, Riyadh, Saudi Arabia
[4]Assistant Professor, Department of Preventive Dentistry, College of Dentistry, Qassim University, Qassim, Saudi Arabia

✉**Corresponding author**
Intern, College of Dentistry, Qassim University, Qassim, Saudi Arabia
Kingdom of Saudi Arabia
Email: abdullah.alsayhani@qudent.org

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ABSTRACT

Background: At the end of 2019, a new epidemic of an infectious easily transmissible disease is emerged in the world, Coronavirus disease 2019 (COVID-19) is infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), COVID-19 was first recognized in China, and then spread around the world, resulting in the ongoing coronavirus pandemic. *Objectives:* This study aims to investigate knowledge, attitude and practice of Arab population toward COVID-19. *Methods:* A self-administered web-based questionnaire was delivered through multiple social media channels targeting population of Arab countries. The questionnaire consists of 22 questions assessing the general knowledge and preventive measures of respondents toward COVID-19. *Results:* This is the first study to investigate KAP for the COVID-19 outbreak, among the general population of Arabs region. Our findings suggest that Arab residents have adequate knowledge, favorable attitudes, and good practices toward COVID-19. Knowledge of the disease is considered the most important step to any health education activity that is implemented. *Conclusions:* The majority of Arabs world residents are familiar with COVID-19, hold optimistic attitudes, and have appropriate practices toward COVID-19. Health education programs designed to enhance COVID-19 awareness are beneficial for Arab residents to maintain positive attitudes and appropriate practices.

Keywords: COVID-19, Arabs, Pandemic, Outbreak, Public health, infectious disease.

1. INTRODUCTION

During December 2019, the world experienced a new pandemic with the emergence of a readily transmissible disease, Coronavirus 2019 (COVID-19) is a disease caused by a virus called severe acute respiratory syndrome coronavirus 2. The virus had outspread globally all over the world in 2019 when it has been found in the first time in Wuhan, china resulting in this pandemic (Zhong et al., 2020) . The outbreak of COVID-19 gave every community an opportunity to study the use and efficiency of public health informant systems and population health technology to detect and fight this

Pandemic. There are a lot of symptoms associated with (COVID-19) the most commonly seen symptoms are fever, dry cough and fatigue, less frequent symptoms include aches, sore throat, diarrhea, conjunctivitis, headache, loss of smell or taste and rash on skin. If there is difficulty breathing, dyspnea, chest pain and loss of movement it is considered critical symptoms and patients must be hospitalized.

In china, most of the cases 80% were mild to moderate wither pneumonia or non- pneumonia cases, while 13.8% showed sever symptoms and the rest were critical cases (respiratory failure, septic shock, and/or multiple organ dysfunction syndrome) (Pascarella et al., 2020). The incubation period suggested being from 5-6 days but it could be last for 14 days (Backer et al., 2020). A minimum of 14 days is the incubation period according to a recent study (Lauer et al., 2020). 1 to 2 days before the starting of symptoms the virus has been found in the respiratory tract specimens, in moderate cases it may linger to 7-12 days and up to 14 days in severe cases (Woelfel et al., 2020). While in faeces it could be found after 5 days following the onset of the disease and stay for 4-5 weeks in moderate cases. Even in whole blood, serum, saliva and urine the virus could be found (Young et al., 2020; Chang et al., 2020; Huang et al., 2020; To et al., 2020; Peng et al., 2020). The infection has been recognized in asymptomatic patients (Zhou et al., 2020; Jiehao et al., 2020). Severe cases are mostly found on older patients, males, or medically compromised patients such as, diabetic patients, patients with cardiovascular disease, chronic respiratory disease and cancer (Xu et al., 2021; Liang et al., 2020; Chen et al., 2020). The probability to be infected with SARS-CoV-2 is higher if the ACE2 (angiotensin converting enzyme II) is high; it is also shown that it increases as the patient become older, tobacco-use and with the medication used for hypertension (Zhang et al., 2021).

These findings can show the vulnerability of older adults, tobacco users/smokers and those with hypertension; they also highlighted that the importance of recognizing smokers as a possible vulnerable group for COVID-19 (Li et al., 2020). COVID-19 has seriously affected Arab Population. Some extraordinary measures, including the cession of public transport, the closure of public areas, the close management of people and the separation and treatment of contaminated and suspicious cases, have been introduced to regulate the spread of COVID-19 to Arab States. The fight against COVID-19 continues in the Arab world. The adherence of people to these Preventive measures is essential in order to ensure final success, and is mainly determined by their knowledge, attitudes and practices towards COVID-19 in compliance with KAP theory (Ajilore et al., 2017; Tachfouti et al., 2012). Lessons learnt from 2003 SARS outbreak indicate that awareness and behavior towards pandemic infectious diseases are linked to the level of panic within the public, which can further complicate the exerted efforts to prevent the spread of the disease (Person et al., 2004; Tao, 2003). There is an immediate need to understand the public's perception of COVID-19 at this crucial moment in order to promote the preventive of COVID-19 outbreaks in the Arab community. This study aims to investigate KAP of Arab population during its COVID-19 outbreak.

2. METHOD

Study design

This study was a population-based cross-sectional online survey.

Study setting

This study took place among Arab Population.

Study duration

The survey was carried out over a period of two months, from March to May 2020. The original time estimate of two months was extended due to the slow turnaround/response time for the pre-test questionnaires, late responses, and most importantly the large number of responses to the questionnaires.

Pilot study and sample determination

The questionnaire was piloted with 15 participants who had similar characteristics as the study participants, on March 15-16, 2020. In this step, the feasibility and ordering of questions were determined.

Inclusion criteria

Arab citizens among 22 Arab countries aged from 15 to above 45 years old.

Development and validation of questionnaire

A questionnaire was developed and tested for validity and reliability.

Questionnaire Design

The questionnaire was designed in Arabic language and reviewed for consistency. The questionnaire included demographic characteristics of participants, questions related to knowledge about SARS-COV-2, and followed by questions related to attitude and preventive practices toward COVID-19.

Data collection procedure

This cross-sectional survey was conducted based on online-survey. Because it was not feasible to do a community-based population sampling survey during this critical period, we decided to collect the data online. Relying on the authors and data collectors networks with people living among Arab population, a three-page google form questionnaire was posted/reposted through different social media channels such as Twitter, Facebook and Whats App. Persons who were of Arab nationality, were aged from less than 15 years up to 45 years, understood the content of the poster, and agreed to participate in the study were instructed to complete the questionnaire via clicking the link to the next section. Although the questionnaire distributed by local residents among Arab population. Participants had to open the link of the questionnaire to confirm their desire to participate voluntarily. After using the internet to open the received link, the participants were directed to complete the self-report questionnaire.

Measures

The questionnaire was included three parts: demographics, general knowledge and attitude of preventive practices measures. Demographic variables included age, education, and nationality. Regarding to guidelines for community and clinical management of COVID-19 by the world health organization, a COVID-19 knowledge part of the questionnaire was developed by authors. The questionnaire had 22 questions: 5 regarding general knowledge and clinical presentations (1-5), and 17 regarding prevention and control (6-22) of COVID-19. The questions were answered on multiple choice basis. Correct answer assigned 1 point and incorrect/unknown answer assigned 0 points. The total knowledge score ranged between 0 and 22, with a higher score denoting a better knowledge of COVID-19 (Taber, 2018).

Statistical analysis

The recorded data were analyzed by using Statistical Package for Social Sciences software (SPSS). Descriptive statistics (frequency with percentage, cross tab) were used for summarizing the study and outcome variables. Pearson's Chi-square test was used to obtain the differences and odds ratios were used for observing and quantifying the association between categorical outcomes.

3. RESULTS

In this KAP study, a total of 2350 participants have responded to the questionnaire from 22 countries including Arabian Peninsula, African countries, and Levant countries. All the respondents were divided into different age groups in which most of the respondents were falling in age group ranging from 15-25 years; 576(39.8%) of the respondents were belonged to Arabian Peninsula, 365(56.0%) were from African countries and 105(42.2%) of them were from Levant countries, similarly the people from 25-35 years of age; 535(36.9%) were from Arabia Peninsula, 177(27.1%) from African countries and 96(38.6%) were from Levant countries, with the significant difference ($p<0.001$). As far as education is concerned, most of the respondents hold the degrees of Bachelor (B.C) and Secondary i.e., B.C 930 (64.2%) from Arabian Peninsula, 452(69.3%) from African countries and 189(75.9%) from Levant countries, similarly Secondary 334(23.1%) were of Arabian Peninsula, 98(15.0%) from African countries and 23(9.2%) of them were from Levant countries. However, few of them like 24 participants had a primary education, 84 were intermediate, and 203 hold a master degree, while only 13 of the respondents were uneducated, with the significant difference ($p<0.001$) (Table 1).

Majority of the participants i.e., 1126(77.7%) of Arabian Peninsula, 560(85.9%) of African countries and 204(81.9%) of Levant countries, were aware about the new coronavirus with the significant difference ($p<0.001$). When participants were asked about the origin of coronavirus, 1084(74.8%) of Arabian Peninsula, 498(76.4%) of Africans, and 212(85.1%) of Levant countries were aware of it, whereas 373 respondents were given incorrect answer, while 183 persons didn't know about its origin, with the significant difference ($p=0.006$). The question regarding symptoms of the virus, most of the respondents 647(44.7%) from Arabian Peninsula, 292(44.8%) from African countries and 70(28.1%) from Levant's marked on Fever - cough - difficulty in breathing, followed by 791(54.6%) from Arabian Peninsula, 351(53.8%) from African countries and 178(71.5%) from Levant's selected all of the symptoms

mentioned have been observed in some of the patients, as mentioned in the questionnaire, which shows the significant difference ($p<0.001$) among the participants. When asked about the incubation period, most of the respondents marked on the period between exposure to the virus and the first onset of symptoms of the disease, in which 1314(90.7%) were from Arabian Peninsula, 611(93.7%) from African people, and 240(96.4%) were from Levant's, subsequently 47 of them were of the opinion that it is the period between illness and death, however 138 of them did not know. It shows statistically significant ($p<0.001$) among the respondents. (Table-1)

Table 1 Demographic profile of participants

Variable		Arabian Peninsula N (%)	African n (%)	Levant Countries N (%)	p-value
Age	Less than 15y	10(0.7%)	11(1.7%)	3(1.2%)	<0.001
	15-25y	576(39.8%)	365(56.0%)	105(42.2%)	
	25-35y	535(36.9%)	177(27.1%)	96(38.6%)	
	35-45y	179(12.4%)	49(7.5%)	24(9.6%)	
	More than 45y	149(10.3%)	50(7.7%)	21(8.4%)	
Education	Primary	12(0.8%)	10(1.5%)	2(0.8%)	<0.001
	Secondary	334(23.1%)	98(15.0%)	23(9.2%)	
	Intermediate Education	59(4.1%)	21(3.2%)	4(1.6%)	
	B.C	930(64.2%)	452(69.3%)	189(75.9%)	
	Master	109(7.5%)	64(9.8%)	30(12.0%)	
	Uneducated	5(0.3%)	7(1.1%)	1(0.4%)	
What's the new Corona virus?	COVID-2002	4(0.3%)	3(0.5%)	1(0.4%)	<0.001
	COVID-2013	8(0.6%)	4(0.6%)	2(0.8%)	
	COVID-2019	1126(77.7%)	560(85.9%)	204(81.9%)	
	COVID-2020	311(21.5%)	85(13.0%)	42(16.9%)	
What's the origin of the new Coronavirus?					
Related to animal		1084(74.8%)	498(76.4%)	212(85.1%)	0.006
It has no origin		118(8.1%)	42(6.4%)	9(3.6%)	
Related to human		121(8.4%)	67(10.3%)	16(6.4%)	
Don't know		126(8.7%)	45(6.9%)	12(4.8%)	
What are the symptoms of this Virus?					
Fever - cough - difficulty breathing		647(44.7%)	292(44.8%)	70(28.1%)	<0.001
Pain in joints and muscles - diarrhea - sore throat		4(0.3%)	4(0.6%)	0(0.0%)	
Headache - Nausea – Vomiting		7(0.5%)	5(0.8%)	1(0.4%)	

All of the symptoms mentioned have been observed in some of the patients	791(54.6%)	351(53.8%)	178(71.5%)	
What is the incubation period?				
Period between exposure to the virus and the first onset of symptoms of the disease	1314(90.7%)	611(93.7%)	240(96.4%)	<0.001
Period between illness and death	27(1.9%)	18(2.8%)	2(0.8%)	
I don't know	108(7.5%)	23(3.5%)	7(2.8%)	

A significant difference (p=0.006) has also been observed among the respondents, when out of 2350 participants, 1399(96.5%) of the participants of Arabian Peninsula, 617(94.6%) of African countries, and 243(97.6%) of Levant countries, replied that the incubation period for the new corona viruses is 1-14 days, while left over 59 participants were unaware and 32 of them didn't know about it. A statistically significant difference (p=0.003) was observed among the majority of participants, in which 1404(96.9%) of Arabian Peninsula, 611(93.7%) of Africans, and 246(98.8%) of Levant's knew that people who contacted with an infected person should be immediately isolated themselves for a period of 2 weeks (Table 2).

Table 2 Frequency of Knowledge and Awareness towards covid-19

Variable	Arabian Peninsula N (%)	African N (%)	Levant Countries N (%)	p-value
The incubation period for the new CORONA virus is?				
1-5 days	10(0.7%)	12(1.8%)	5(2.0%)	0.006
1-10 days	16(1.1%)	15(2.3%)	1(0.4%)	
1-14 days	1399(96.5%)	617(94.6%)	243(97.6%)	
I don't know	24(1.7%)	8(1.2%)	0(0.0%)	
How is the virus transmitted among humans?				
Coughing, sneezing or contact with infected people without protection	1437(99.2%)	648(99.4%)	248(99.6%)	0.636
It doesn't transmitted between humans	5(0.3%)	3(0.5%)	1(0.4%)	
I don't know	7(0.5%)	1(0.2%)	0(0.0%)	
Can people who are infected transmit the virus to others if they don't have a fever?				
Yes	1291(89.1%)	573(87.9%)	227(91.2%)	0.085
No	20(1.4%)	14(2.1%)	4(1.6%)	
Maybe	113(7.8%)	43(6.6%)	16(6.4%)	
I don't know	25(1.7%)	22(3.4%)	2(0.8%)	
Isolating and treating people with COVID-19 are an effective way to reduce the spread of the virus?				

Yes	1387(95.7%)	625(95.9%)	243(97.6%)	0.582
No	11(0.8%)	7(1.1%)	1(0.4%)	
Maybe	34(2.3%)	15(2.3%)	5(2.0%)	
I don't know	17(1.2%)	5(0.8%)	0(0.0%)	
How can we help preventing the spread of the virus?				
Stay away from traffic and go out only when necessary and constant sterilization	1423(98.2%)	645(98.9%)	246(98.8%)	0.600
Going out without need and contacting people without prevention	14(1.0%)	5(0.8%)	1(0.4%)	
I cannot help	12(0.8%)	2(0.3%)	2(0.8%)	
To prevent covid-19 infection should people avoid going to crowded places such as airports train stations and markets and avoiding public transport?				
Yes	1396(96.3%)	633(97.1%)	243(97.6%)	0.870
No	29(2.0%)	10(1.5%)	2(0.8%)	
Maybe	20(1.4%)	7(1.1%)	3(1.2%)	
I don't know	4(0.3%)	2(0.3%)	1(0.4%)	

Out of 2350 respondents, 1040(71.8%) Arabian Peninsula, 543 (83.3%) Africans, and 213(85.5%) Levant's were given their consent that effective alcohol concentration to eliminate the virus in hand sanitizers should be from 60% to 90%, with the significant difference of ($p<0.001$). As far as wearing of mask inside home is concerned, number of respondents i.e., 749(51.7%) from Arabian Peninsula, 424(65.0%) from Africans, and 176(70.7%) from Levant's had understood the significance of wearing the face mask inside home when an outsider visiting them, while 499 of them disagreed and 502 were not sure, which shows significant difference ($p<0.001$) amongst the respondents.

Moreover, 845(58.3%) from Arabian Peninsula, 375(57.5%) from Africans, and 165(66.3%) from Levant's, responded positively against the question that corona virus is the causative cause of MERS, SARS and COVID19, which shows significant difference ($p=0.022$) amongst the respondents (Figure 1). 1418(97.9%) from Arabian Peninsula, 641(98.3%) from Africans, and 245(98.4%) from Levant's participants chose to isolate themselves in the room for 14 days, with an insignificant difference ($p=0.08$) among all the respondents. Another significant difference ($p=0.007$) was observed among the participants, as most of the respondents were of the view that all elderly, Cardiac, Diabetic and hypertensive patients are vulnerable group to corona virus, in which 1150(79.4%) were from Arabian Peninsula, 510(78.2%) from Africans, and 208(83.5%) of them were from Levant countries (Table 3).

Table 3 Frequency of Attitude towards covid-19

Variable	Arabian Peninsula N (%)	African N (%)	Levant Countries N (%)	p-value
Should people who contacted with infected person be isolated in a suitable place for?				
Two days	16(1.1%)	12(1.8%)	0(0.0%)	0.003
5 days	10(0.7%)	12(1.8%)	0(0.0%)	
10 days	19(1.3%)	17(2.6%)	3(1.2%)	
14 days	1404(96.9%)	611(93.7%)	246(98.8%)	
What is the effective alcohol concentration to eliminate the virus in hand sanitizers				

Alcohol is ineffective to eliminate the virus	223(15.4%)	38(5.8%)	19(7.6%)	<0.001
Less than 60%	186(12.8%)	71(10.9%)	17(6.8%)	
60% - 90%	1040(71.8%)	543(83.3%)	213(85.5%)	
Do I need to wear a mask inside my home when a relative or colleague visiting me?				
Yes	749(51.7%)	424(65.0%)	176(70.7%)	<0.001
No	355(24.5%)	113(17.3%)	31(12.4%)	
Maybe	345(23.8%)	115(17.6%)	42(16.9%)	
When should I stay home?				
When there is a danger and no need to get out	1423(98.2%)	642(98.5%)	247(99.2%)	0.603
No need to stay home	15(1.0%)	6(0.9%)	0(0.0%)	
I don't know	11(0.8%)	4(0.6%)	2(0.8%)	
Is corona virus the causative cause of MERS SARS and COVID19?				
Yes	845(58.3%)	375(57.5%)	165(66.3%)	0.022
No	140(9.7%)	57(8.7%)	28(11.2%)	
Maybe	198(13.7%)	78(12.0%)	22(8.8%)	
I don't know	266(18.4%)	142(21.8%)	34(13.7%)	
What should I do if I start to feel sick?				
Isolate myself in the room for 14 days	1418(97.9%)	641(98.3%)	245(98.4%)	0.038
Sitting with family at home	13(0.9%)	0(0.0%)	0(0.0%)	
No need to do anything	5(0.3%)	7(1.1%)	1(0.4%)	
Don't know	13(0.9%)	4(0.6%)	3(1.2%)	
Who is the most vulnerable group to corona virus?				
Elderly	270(18.6%)	112(17.2%)	39(15.7%)	0.007
Diabetic and hypertension patients	21(1.4%)	24(3.7%)	2(0.8%)	
Cardiac patients	8(0.6%)	6(0.9%)	0(0.0%)	
All of the above	1150(79.4%)	510(78.2%)	208(83.5%)	

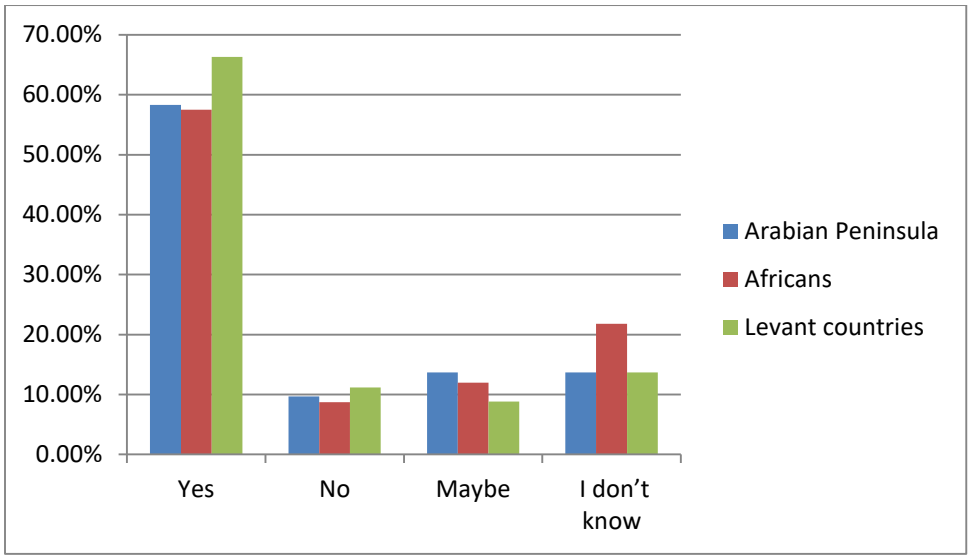

Figure 1 Bar chart shows the knowledge of participants if corona virus is the causative source of MERS SARS and COVID19.

A significant difference (p=0.008) was also witnessed among the participants, when the respondents were asked about the presence of vaccine, medication or treatment for new corona disease, majority were selected "to this day, there is no vaccine, no medicine available", in which from Arabian Peninsula there were 1001(69.1%) respondents, 438(67.2%) were from African countries, and 192(77.1%) were from Levant countries. About wearing face mask to protect themselves, 936(64.6%) respondents from Arabian Peninsula, 388(59.5%) from Africans, and 117(47.0%) from Levant's, responded negatively unless there are symptoms", followed by 673 were responded positively we must wear it all day", while 200 were not exactly sure about it and few of them did not know. In this part of response there was significant difference (p<0.001) was observed among them. It was observed significant difference (p<0.001) among the participants, when 829(57.2%)of Arabian Peninsula, 440(67.5%)of Africans, and 197(79.1%) of Levant's,said "no"against the question about the effectiveness of antibiotics in preventing and treating the new Coronavirus. Upon asking, can the Covid-19 virus be transmitted in areas where the climate is either hot or humid, majority of respondents 821(56.7%) of Arabian Peninsula, 388(59.5%) of Africans, and 145(58.2%) of Levant's responded negatively which shows significant difference (p=0.019) among the participants (Table 4).

Table 4 Practices towards COVID-19

Variable	Arabian Peninsula N (%)	African N (%)	Levant Countries N (%)	p-value
Is there a vaccine medication or treatment for new corona disease?				
To this day, there is no vaccine, no medicine	1001(69.1%)	438(67.2%)	192(77.1%)	0.008
There's a vaccine and a cure	45(3.1%)	11(1.7%)	4(1.6%)	
There's a cure, but there's no vaccine	275(19.0%)	152(23.3%)	41(16.5%)	
Don't know	128(8.8%)	51(7.8%)	12(4.8%)	
Should I wear a mask to protect myself?				
Yes, we must wear it all day	363(25.1%)	203(31.1%)	107(43.0%)	<0.001
No, unless there are symptoms	936(64.6%)	388(59.5%)	117(47.0%)	
Maybe	131(9.0%)	47(7.2%)	22(8.8%)	

Don't know	19(1.3%)	14(2.1%)	3(1.2%)	
How long does the virus survive on the surfaces?				
For a few hours or several days, this may vary depending on the conditions and type of surfaces	1355(93.5%)	608(93.3%)	245(98.4%)	0.072
It doesn't survive on surfaces	18(1.2%)	9(1.4%)	1(0.4%)	
Years or even months	17(1.2%)	11(1.7%)	2(0.8%)	
Don't know	59(4.1%)	24(3.7%)	1(0.4%)	
Are antibiotics effective in preventing and treating new CORONA virus?				
Yes	254(17.5%)	114(17.5%)	31(12.4%)	<0.001
No	829(57.2%)	440(67.5%)	197(79.1%)	
Don't know	366(25.3%)	98(15.0%)	21(8.4%)	
Can the Coved-19 virus be transmitted in areas where the climate is only hot and humid?				
Yes	231(15.9%)	121(18.6%)	55(22.1%)	0.019
No	821(56.7%)	388(59.5%)	145(58.2%)	
Maybe	233(16.1%)	87(13.3%)	31(12.4%)	
I don't know	164(11.3%)	56(8.6%)	18(7.2%)	

4. DISCUSSION

On February 11 of the year 2020, the World Health Organization declared the novel coronavirus outbreak as COVID-19. 1889 (80.4) of our participants seemed knowledgeable about the name of the virus while only 1793 (76.3) of participant had knowledge of its animal origin which in agreement with WHO investigations (Cucinotta et al., 2020.). According to the WHO; 3Cs: spaces that are closed, involve close contact or crowded should be avoided. It was also evident that most of the respondents (57.4%) had a good knowledge of when and whom wearing masks to prevent infection. WHO and CDC recommended that face masks should only be worn by those who are sick or caring for people suspected of having COVID-19 (World Health Organization, 2008).

When participants were asked about whether people who are infected can transmit the virus to others if they don't have a fever, 2090 (89.0) choose yes, which is in agreement with Yan et al numbers being only (88.7%) of COVID-19 patients had fever (World Health Organization, 2008). The majority of the respondents 2207(94.0%) chose the transmission possibility off surfaces is a few hours or several days, this may vary depending on the conditions and type of surface and was according to European Centre for Disease Prevention and Control the survival not yet fully understood but it can live for several days (European Centre for Disease Prevention and Control, 2020). Fever, cough, difficulty breathing, Headache, Nausea, Vomiting, Pain in joints and muscles, diarrhea and sore throat were the initial symptoms 1319 (56.2) agreed upon which is in agreement with National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases (World Health Organization, 2019).

WHO declared that the incubation period for COVID-19 being 14 days which 2258 (96.1) of our participants agreed with (World Health Organization, 2016). Coughing, sneezing or contact with infected people without protection is what 2332 (99.3) of our participants choose when asked regarding transmission mode in the novel COVID-19 which has been confirmed by CDC and WHO (World Health Organization, 2009). WHO recommended 14 days of isolation when persons start feeling sick which seems in agreement with our study's results (World Health Organization, 2009); the most vulnerable are elderly patient, patient with Heart disease, Diabetes and Lung disease, which was chosen as all the above by 1867(79.5%) of the respondents, and 421(17.9 %) respondents thinks only the elderly (World Health Organization, 2014). About the presence of the vaccination the majority of the participants 1630(69.4%) choose to this day, there is no vaccine, no medicine, at that period of time when the questionnaire was distributed from March till May 2020 there was no vaccination or cure.

According to WHO people should wear a mask when they can't maintain at least 1-meter distance like crowded places and poorly ventilated indoor locations or public transport, most of our respondent 1441(61.3%) choose to not use a mask unless there are symptoms, which at that specific period of time during the distribution of the survey between March and May was the

recommendation of WHO by that period of time (World Health Organization, 2020). The virus that causes COVID-19 belongs to a virus family called Coronaviridae as the causes is virus, antibiotic do not work against viruses (WHO), regarding taking antibiotics most of the respondents 1465(62.4%) believe no need for antibiotics, and 485(20.6%) don't know. Most of the respondents 1354(57.6%) think that Covid-19 virus cannot be transmitted in areas where the climate is either hot and humid, which is indifferent from WHO statement that it can be transmitted to all areas even hot and humid climates.

In a study conducted by Piwat Suppawittaya et al., (2020) they stated that self-quarantine is an effective way to reduce spreading of covid-19, in this study 96% of participants were aware by this measure (Suppawittaya et al., 2020). European center for disease prevention and control conduct that the median incubation period is considered to be 5 to 6 days for covid-19, with a range from one to 14 days, our findings indicate that most study participants (96.3%) were knowledgeable in that regard (Backer et al., 2020). Most of participants in our study (98.5%) were aware about preventive measures of covid-19. Coronavirus infections have been documented to be highly contagious among people in close proximity.

In a study conducted by Luigi Cirrincione et al., (2020) 62%–71% alcohol-based hand disinfectant was effective, and our participants had knowledge in that area (Cirrincione et al., 2020). However, most of the respondents were aware that SARS-CoV-2 could spread from person-to-person in close proximity and they should stay away from traffic and go out only when necessary and constant sterilization.

5. CONCLUSION

The majority of Arabs world population are familiar with COVID-19, have optimistic attitudes, and appropriate practices toward COVID-19. Health education programs designed to enhance COVID-19 awareness are beneficial for Arab residents to maintain positive attitudes and appropriate practices. This is considered the first study to investigate KAP for the COVID-19 outbreak, among the general population of Arabs region. Our findings suggest that Arab residents have adequate knowledge, favorable attitudes, and good practices toward COVID-19. Knowledge of the disease is considered the most important step to any health education activity that is implemented. Being aware by the causes and transmission of any disease, will increases the likelihood that people will become aware of the spread of communicable infectious diseases, and preventive measures to prevent their transmission. The results of the study suggest that more emphasis should be placed on less educated, lower income, and older people. The findings may help to identify the targeted population for COVID-19 preventive and health education.

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Author contribution

Abdullah Alsaihani contribute in data collection, analysis, manuscript writing and design
Ghadah Alhamed contribute in data collection, analysis, manuscript writing and design
Omar Almohesn contribute in data collection, analysis, manuscript writing and design
Ahemd Alfawzan contribute in revision and final approval
Nasser Alasseri contribute in revision and final approval
Raul Gaikwad contributes in statistical analysis of collected data.

Ethical approval

This study was approved by Dental Students Research Facilitation Committee and the Dental Ethics Committee at Qassim University, College of Dentistry, and Qassim, Saudi Arabia (Ethical approval code: EA/F-2020-5001) in April 2020.

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Conflict of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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