



Knowledge, Perception, Attitude, Practice, and Barriers towards COVID-19 Infection among Saudi Residents in the Period of Rapid Outbreak of the Disease: A Cross Sectional Survey

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Authors' contributions

This work was carried out in collaboration between both authors. Author MSA designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Author FAO managed the analyses of the study and managed the literature searches as well. Both authors read and approved the final manuscript.

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ABSTRACT

The adherences to protective actions are subjective to knowledge, perception, attitude, practice and barriers towards COVID-19 by Saudi residents. The self-design questionnaires were used as a cross-sectional online survey for assessed their social and behavioral parameters during the agonizing time. The cross-sectional study used data collected via an online self-reported questionnaire from 2216 Saudi residents. SPSS software and chi-square test were applied to analyze and categorize significant differences among sectional variables of the parameters. More than 95% of responders were well aware about the main clinical symptoms of COVID-19 infection and had sufficient knowledge about the protocols of five steps to stop the spread of coronavirus. A positive perception towards COVID-19 was observed, about 55% participants strongly agreed that

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the coronavirus outbreak could impact the global economy and infection could be successfully controlled by imposing lockdown and by staying at home. The majority of respondents had good practices regarding COVID-19 infection. A high percentage of participants favored wearing masks, cleaning hands and frequently using hand sanitizer. A large number of participant (83.2%; n=1844) agreed that misinformation and rumors are spreading more quickly than the current outbreak of the new coronavirus. The findings suggested that Saudi residents are possessed good knowledge, optimistic attitudes, and appropriate practices towards COVID-19 during the rapid rise of the COVID-19 outbreak. Hopefully, under the combined efforts of WHO, Ministry of Health, Saudi Arabia, all Saudi residents surely will win the battle against COVID-19 very soon.

Keywords: COVID-19; knowledge; practice; rapid outbreak and lockdown.

1. INTRODUCTION

The current epidemic of the coronavirus disease 2019 (COVID-19) is a contagious disease caused by severe acute respiratory syndrome coronavirus (SARS-CoVs). Coronaviruses (CoVs) are positive-single stranded RNA viruses with a crown-like exterior, which is shown in an electron microscope because of the existence of spike glycoproteins on the covering. The subfamily *Orthocoronavirinae* of the *Coronaviridae* family (order *Nidovirales*) classified into four genera of CoVs: alpha coronavirus (alpha CoV), beta coronavirus (beta CoV), delta coronavirus (delta CoV), and gamma coronavirus (gamma CoV). Genomic description has revealed that perhaps bats or rodents are the natural sources of alpha and beta CoVs [1]. However, avian species are considered the gene sources of delta and gamma CoVs [2]. Furthermore, reports reveal that 2% of the human populations are healthy carriers of CoVs and these viruses are liable for about 5% to 10% of acute respiratory infections [3].

The World Health Organization (WHO) described this novel coronavirus as the causative agent of the recent disease and named COVID-19. The enormity of the cases of COVID 19 and quick spread of the disease all over the world forced WHO to declare it a pandemic on 11th of March 2020 [4].

Saudi Arabia was one of the leading countries that had taken active measures to minimize the spread of the infections. The COVID-19 diagnoses of all those patients were carried out to all those people who had fever, cough, sore throat, myalgia, and fatigue. The country put 24 hour restrictions with limited access to movement of people and only in a dire situation people are allowed to move out to their houses.

Collaborative efforts to manage the COVID-19 pandemic are needed which includes scientific,

evidence-based and multi factorial approaches. The first step forward to manage COVID 19 is to stop or limit person-to-person contact not only in the community people but also amongst healthcare workers [5]. The exit and entry of the people from and to the country should also be limited to the extent that only thoroughly medically examined people can have access to this facility.

The second step is to incorporate a robust testing policy so that the COVID 19 patients to be identified, isolated, and provided the home or hospital quarantine facility [6]. Subsequently, there is an urgent need to find the animal source from whom the virus jumped to human. However it is not yet clear that the virus jumped from snake source or bat source [7-10]. The other animal which is doubted to be the source is pangolins [11]. In general people working in wild animal facility must be tested routinely for the COVID 19 infection.

Once the COVID 19 individual is identified it is imperative to focus on treatment options. The severity of the disease will decide the course of action as there is no any specific drug identified so far, for the treatment of the COVID 19 infection. As time passes, there is anxiety among the population for complete disruption of their social and economic condition. How long the social distancing to be maintained in the event viral infection does not disappear, this question strikes every individual's mind.

The purpose of this study was to analyze the different social and behavioral parameters of Saudi population during the outbreak of SARS-COV-2 infection. The online survey assessed their knowledge, awareness, perception, attitude and practice during this agonizing time. The study also evaluated the social and economic barriers they faced complying with the guidelines of the health ministry of Saudi Arabia.

2. MATERIALS AND METHODS

2.1 Responders

This cross-sectional survey was conducted from March 28 to April 11, just one week after the curfew was imposed as a potential measure to curb the spread of SARS-COV-2 infection in Saudi Arabia. Since it was not practical to conduct a community-based and countrywide survey, during this exceptional time, therefore, the data was collected through online google form. Posting the link to the responders among Saudi residents throughout the kingdom, a brief description about background, objectives, methodology, and consent of responder, confidentiality and notes for filling the questionnaire were posted on the various social platforms and also to the individual's contact addresses.

Individuals who were residing in Saudi Arabia irrespective of nationality, gender, age group and medical conditions were included for the study by clicking the link in English as well as national language Arabic. The study participants had to answer in "yes", "no" or "can't say" and also by clicking "strongly disagree", "disagree", "neutral", "agree" and "strongly agree" for the respective questions to after showing their keenness to participate voluntarily in the survey.

2.2 Procedures

The questionnaires were prepared in six sections: the demographic profile, knowledge, awareness, perceptions, attitudes, practice, and barrier. The demographic profile included age group, gender, type of family, marital status, education, occupation, crowding, living area, health insurance and food habits.

According to guidelines for COVID-19 clinical and community management by the Saudi center for disease prevention and control, ministry of health, Saudi Arabia, 30 questions were designed on COVID-19 knowledge, awareness, perceptions, attitudes, practice and barrier for prevention and stop the spread of infections. The questions were grouped in 6 sections, each consisted 5 questions to determine the outcomes of the imposed curfew and its impact on prevention of COVID-19 infections during period of cases outbreak.

2.3 Statistical Analysis

Recorded data were analyzed using SPSS software. Demographic statistics were performed

in terms of means and frequencies and also the variables data were noted when it was required. The differences in the sections of responded questionnaires across the study variables for demographic profile, knowledge, awareness, perceptions, attitude, practice and barriers were analyzed. The chi-square test for sectional variables was applied to categorize significant differences among the parameters (significance level set at $p < 0.05$).

3. RESULTS

3.1 Demographic Characteristics of Participants

A total of 2216 Saudi residents were participated in the survey by responding to the questionnaires. Most of the respondents were in the age group 31-45 years ($n=826$, 37.3%), male ($n = 1314$, 59.3%), nuclear type of family ($n=1438$, 64.9%), married ($n= 1571$, 70.9%), education level, for example, bachelor degree ($n=1263$, 57%), having professional occupation ($n=1376$, 62.1%), personal living crowding (5-10 persons in a flat) were ($n=1181$, 53.3%), urban living ($n=1779$, 80.3%), don't have health insurance ($n=1514$, 68.3%) and mixed food habit ($n= 2081$, 93.9%).

3.2 Knowledge of Saudi Residents Regarding COVID-19

The responses obtained under "knowledge" categories of questionnaires were mixed and contained five knowledge based questions. Most of the respondents correctly answered that the coronaviruses are from the family of RNA viruses that cause illnesses ranging from the common cold to more severe diseases same as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). Almost half of the responders, 48.6% ($n=1077$) were aware that the corona viruses are airborne and spread through droplets from one person to another person. More than 95% of responders were well aware about the main clinical symptoms of COVID-19 infection and had sufficient knowledge about the protocols of five steps to stop the spread of coronavirus. And also, it was observed that most of the responders were having incredible knowledge about treatment and management of COVID-19 even though there is no specific treatment and vaccine available for COVID-2019 infection, but early

symptomatic treatment can help patients to recover from the disease.

3.3 Awareness of Saudi Residents Regarding COVID-19

The response of questionnaires regarding awareness included five questions and was mixed. Almost 96.8% (n=2145) respondents marked yes answer for the COVID-19 transmission pathways, respiratory droplets, contact with contaminated surfaces and direct

contact with infected person. The 79.3% (n=1757) of the responders were aware about that the symptoms of COVID-19 similar to pneumonia. More than 95% (n= 2110) of responders were well aware of the COVID-19 infection that can be prevented by washing hands with soaps and water, covering mouth and nose when coughing and sneezing, and avoid close contact of people who have symptoms of a respiratory problem such as breathlessness or difficulty in breathing. A similar type of awareness response was observed regarding

Table 1. Demographic characteristics of the participants under study (n = 2216)

Characteristics	Variables	Number (n)	Percentage (%)	p-Value (χ ² test)
Age (in years)	≤ 14	9	0.4	<0.001
	15-30	649	29.3	
	31-45	826	37.3	
	46-59	60	27.1	
	≥ 60	130	5.9	
Sex	Male	1314	59.3	<0.001
	Female	902	40.7	
Type of family	Nuclear	1438	64.9	<0.001
	Single parent family	778	35.1	
Marital status	Unmarried	574	25.9	<0.001
	Married	1571	70.9	
	Divorce	53	2.4	
	Separated	18	0.8	
Education	Master/Ph.D	461	20.8	<0.001
	Bachelor	1263	57	
	Diploma or post high school	184	8.3	
	High school	253	11.4	
	Primary school	58	2.6	
Occupation	Professional	1376	62.1	<0.001
	Semi Professional	75	3.4	
	Students	392	17.7	
	Shop owner, farm owner	55	2.5	
	Unemployed	317	14.3	
Crowding	2 persons in flat	155	7	<0.001
	3-5 persons in flat	711	32.1	
	5-10 persons in flat	1181	53.3	
	More than 10 person in flat	168	7.6	
Living area	Rural	131	5.9	<0.001
	Urban	1779	80.3	
	Semi urban	306	13.8	
Do they have Health Insurance?	Yes	702	31.7	<0.001
	No	1514	68.3	
Food habit	veg.	44	2	<0.001
	Non veg.	91	4.1	
	Mixed	2081	93.9%	

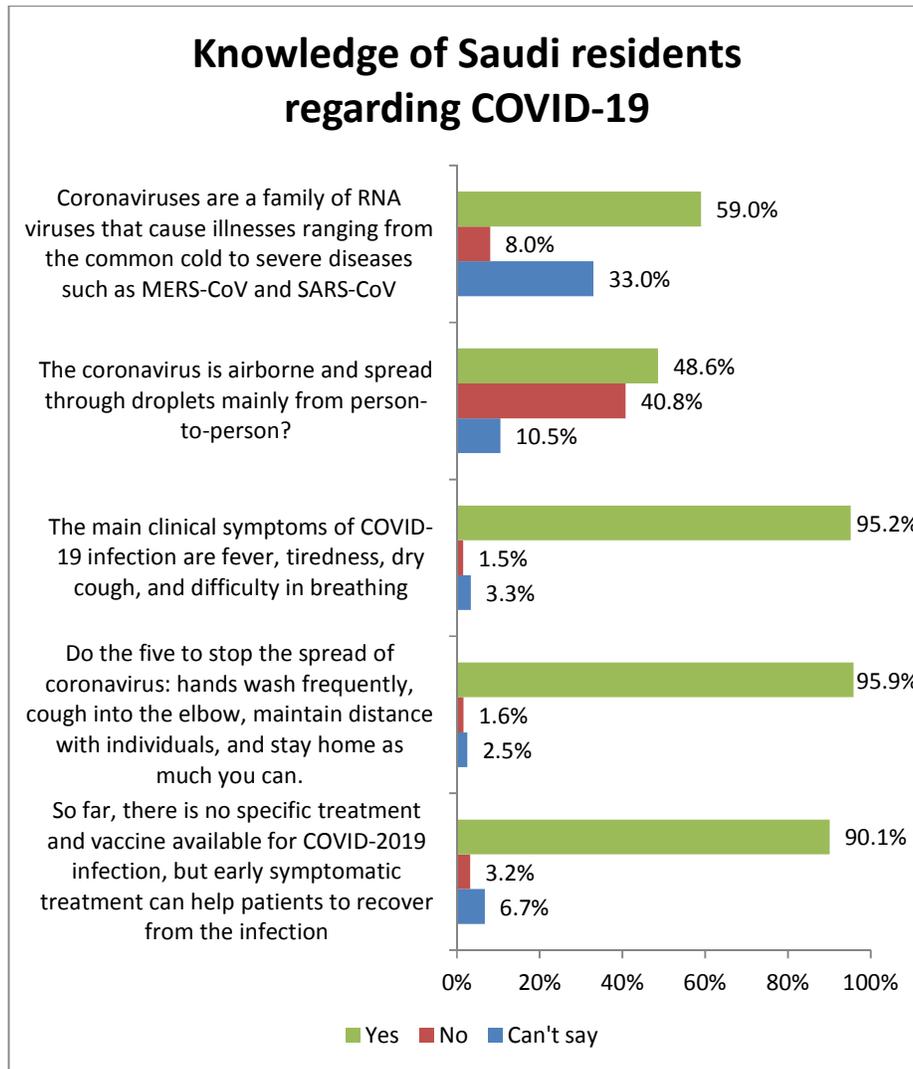


Fig. 1. Knowledge of Saudi residents regarding COVID-19

the instructions, for example, wash hands before, during and after preparing food, before eating, after coughing and sneezing, before and after taking care of an infected person, after using the toilet, after changing diapers, after touching the animals and after touching the trash. Furthermore, it was observed that most of the responders had correct awareness about the belief that sneezing etiquettes helped reduce COVID-19 infection.

3.4 Perception of Saudi Residents towards COVID-19

All the participants responded to all five questions related to their perception of COVID-19. Their answers demonstrated a positive

perception towards COVID-19. About 54.50% (n=208) individuals strongly agreed that the coronavirus outbreak could impact the global economy. A low percentage (13.6%; n= 301) of participants showed strong agreement about their hospital where they have enough infection control staff and they were satisfied. Similarly, a very low percentage (3.3%; n=72) had strongly agreed that coronavirus was due to the ingestion of unprocessed food whereas, 3.4% (n=66) had strongly agreed for the perception that eating or contacting with wild animals only cause COVID-19 infection. A miniscule percentage (2.5%; n=55) of the respondents had strong belief that general masks used by residents was enough to prevent the spread of COVID-19 infection.

Table 2. Knowledge of Saudi residents regarding COVID-19

Questions	Yes N (%)	No N (%)	Can't say N (%)	p-Value (χ ² test)
Do you know that the coronaviruses are a family of RNA viruses that cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV)?	1308 (59)	177 (8)	731 (33)	<0.001
Do you know that the corona virus is airborne and spread through droplets mainly from person-to-person?	1077 (48.6)	904 (40.8)	233 (10.5)	<0.001
Do you know that the main clinical symptoms of COVID-19 infection are fever, tiredness, dry cough, and difficulty in breathing?	2110 (95.2)	33 (1.5)	73 (3.3)	<0.001
Do the five to stop the spread of coronavirus: hands wash frequently, cough into the elbow, maintain distance with individuals, and stay home as much you can.	2125 (95.9)	34 (1.6)	55 (2.5)	<0.001
So far, there is no specific treatment and vaccine available for COVID-2019 infection, but early symptomatic treatment can help patients to recover from the infection.	1997 (90.1)	71 (3.2)	148 (6.7)	<0.001

Table 3. Response towards awareness

Questions	Yes N (%)	No N (%)	Can't say N (%)	P-Value (χ ² test)
COVID-19 transmission pathways are through respiratory droplets, contact with contaminated surfaces and direct contact with infected person.	2145 (96.8)	18(0.8)	51 (2.3)	<0.001
Symptoms of COVID-19 similar to pneumonia. Is the statement correct?	1757 (79.3)	153 (6.9)	308 (13.9)	<0.001
COVID-19 infection can be prevented by washing hands with soaps and water, covering mouth and nose when coughing and sneezing, and avoid close contact who have symptoms of a respiratory problem such as breathlessness or difficulty in breathing. Is the statement true?	2110 (95.2)	31 (1.4)	75 (3.4)	<0.001
Wash hands before, during and after preparing food, before eating, after coughing and sneezing, before and after taking care of an infected person, after using the toilet, after changing diapers, after touching the animals and after touching the trash. Do you know this?	2119 (95.6)	33 (1.5)	64 (2.9)	<0.001
Do you believe that sneezing etiquettes helpful in reduction of COVID-19 infection?	2121 (95.7)	38 (1.7)	58 (2.6)	<0.001

Table 4. Response towards perception

Questions	Strongly Disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)
Coronavirus outbreak can impact the global economy.	58 (2.6)	58 (2.6)	144 (6.5)	747 (33.7)	1208 (54.5)
In our hospital we have enough infection control staff so no need to worry.	299 (13.5)	366 (16.5)	550 (24.8)	700 (31.6)	301 (13.6)
Coronavirus is due to the ingestion of unprocessed food.	499 (22.5)	572 (25.8)	769 (34.7)	304 (13.7)	72(3.3)
Eating or contacting with wild animals only cause of the COVID-19 infection.	654 (29.5)	663 (29.9)	601 (27.1)	222 (10)	66 (3.4)
General masks used by residents is enough to prevent the infection by the COVID-19	581 (26.2)	913 (41.2)	381 (17.2)	286 (12.9)	55 (2.5)

Table 5. Response towards attitude

Questions	Strongly disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly Agree N (%)
COVID-19 infection will be successfully controlled by making lockdown and stay at home.	58 (2.6)	11 (0.5)	1198 (5.3)	864 (39)	1164 (52.5)
The Ministry of Health Saudi Arabia provided enough information about how to win the battle against the COVID-19 infection.	37 (1.8)	47 (2.1)	122 (5.5)	977 (44.1)	1033 (46.6)
COVID-19 will develop to more serious in those who are elderly, have chronic illnesses.	510 (2.3)	42 (1.9)	153 (6.9)	1004 (45.3)	966 (43.6)
If signs and symptoms of COVID-19 infection appear, you should immediately contact the 937 tolls free number.	51 (2.3)	16 (0.7)	47 (2.1)	647 (29.2)	1456 (65.7)
Children and young adults have sufficient immunity so no need to take measures to prevent the infection by the COVID-19.	1197 (54)	734 (33.1)	148 (6.7)	82 (3.7)	55 (2.5)

Table 6. Response towards practice

Questions	Yes N (%)	No N (%)	Can't say N (%)	P-Value (χ² test)
Wear mask, clean hands with soap in every 2 hour, and use hand sanitizer frequently as COVID-19 spreads via respiratory droplets of infected individuals.	1906 (86)	146 (6.6)	162 (7.3)	<0.001
The incubation period of virus is 14days, therefore, if any one gets in direct contact with COVID-19 infected person should stay <i>quarantine</i> for 14 days.	2130 (96.1)	24 (1.1)	62 (2.8)	<0.001
To prevent the spread of COVID-19 infection do you participate in social gathering or function with your family, friend and relatives?	188 (8.5)	1963 (88.6)	64 (2.9)	<0.001
Are you following World Health Organization (WHO) or Ministry of Health, Saudi Arabia guidelines regarding prevention method of COVID-19 infection?	2121 (95.7)	55 (2.5)	40 (1.8)	<0.001
Have you ever asked any query, doubt, questions to toll free number, hashtag and email to ministry of health Saudi Arabia related to COVID-19?	397 (17.9)	1760 (79.4)	60 (2.7)	<0.001

Table 7. Response towards barrier

Questions	Yes N (%)	No N (%)	Can't say N (%)	P-Value (χ² test)
There is no clear cut information about what to do or what not do in regard to the prevention of COVID-19 transmission.	368 (16.6)	1476 (66.6)	375 (16.9)	<0.001
Not sure what are the responsible factors for the spread of COVID-19.	696 (31.4)	1241 (56)	279 (12.6)	<0.001
COVID-19 infection causes so much social stigma; therefore, the patients are not willing to disclose their symptoms at early stage.	1420 (64.1)	463 (20.9)	332 (15)	<0.001
Misinformation and rumors are spreading more quickly than the current outbreak of the new coronavirus (COVID-19).	1844 (83.2)	195 (8.8)	180 (8.1)	<0.001
Global collaborative efforts not taken to prevent COVID-19 cases.	793 (35.8)	853 (38.5)	570 (25.7)	<0.001

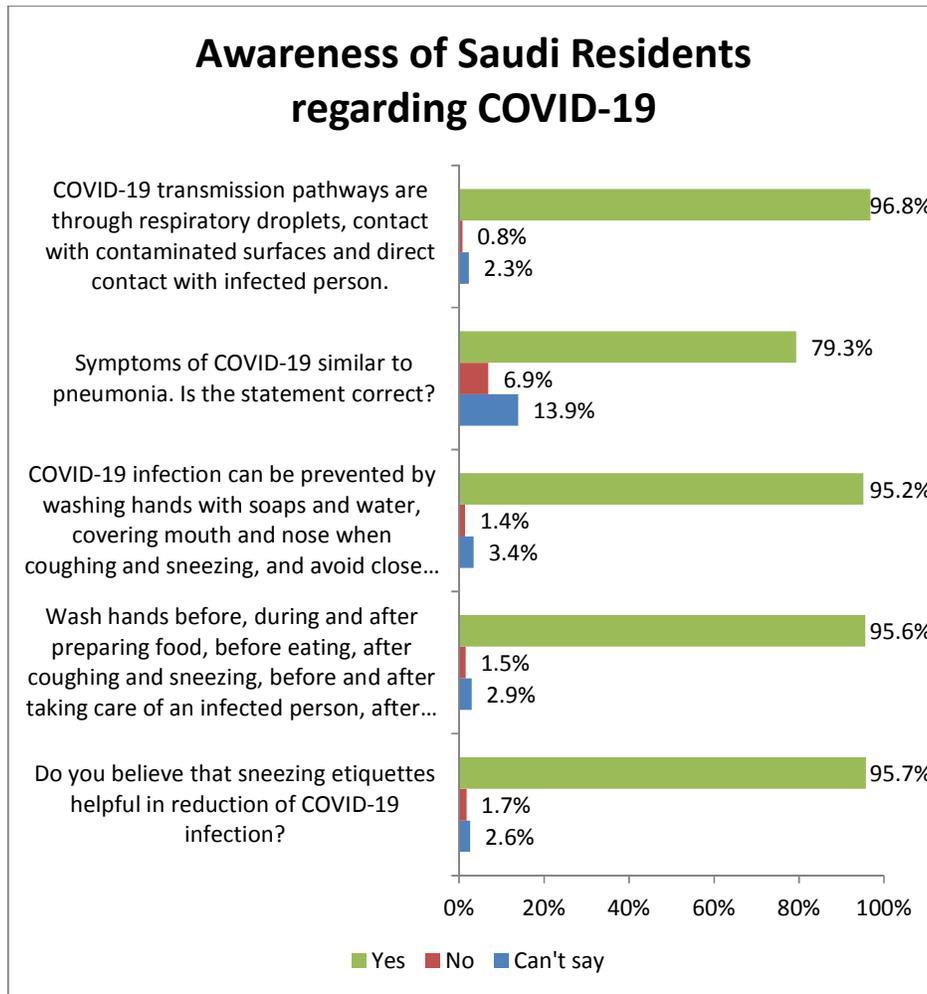


Fig. 2. Awareness of Saudi Residents regarding COVID-19

3.5 Attitude of Saudi Residents towards COVID-19

All the participants responded to all five questions on their attitude regarding COVID-19. Findings demonstrated a highly positive attitude of the Saudi population towards COVID-19. About 52.50% (n=1164) individuals strongly agreed that COVID-19 infection could be successfully controlled by imposing lockdown and by staying at home. More than 46.6% (n=1033) participants were in strong agreement that the Ministry of Health Saudi Arabia provided enough information to win the battle against the COVID-19 infection. Similarly, 43.6% (n=9660) respondents had strong agreement that elderly and comorbid patient could develop COVID-19 infection easily. About 65.7% (n= 1456) participants strongly agreed that if any signs and

symptoms of COVID-19 infection appear, then immediately they should contact the 937 tolls free number provided by the government of Saudi Arabia in response to the management of COVID-19 pandemic. On the other hand, only 2.50% (n=55) responders strongly agreed that children and young adults have sufficient immunity; therefore, they did not need to take necessary measures to prevent the COVID-19 infection.

3.6 Practices of Saudi Residents Regarding COVID-19

In this section of the questionnaire, the majority of respondents had good practices regarding COVID-19 infection. A high percentage (86%; n=1906) of participants favored wearing masks, cleaning hands with soap every 2 hours, and

frequently using hand sanitizer as COVID-19 spreads via respiratory droplets of infected individuals. A very high percentage (96%; n=2130) of responders agreed that the incubation period of the virus was 14days; therefore, if anyone gets in direct contact with COVID-19 infected person should stay quarantined for 14 days. A low percentage (8.5%; n=188) of individuals believed that to prevent the spread of COVID-19 infection, they should participate in social gathering or function

with their family, friend, and relatives. Almost 95.7% (n=2121) had shown their satisfaction with the guidelines issued by the World Health Organization (WHO) or the Ministry of Health, Saudi Arabia, regarding the prevention method of COVID-19 infection. A moderately low percentage (17.9%; n=397) of respondents were in favor of asking queries and doubts on the toll-free number, hashtag, and email to the Ministry of Health, Saudi Arabia, concerning COVID-19.

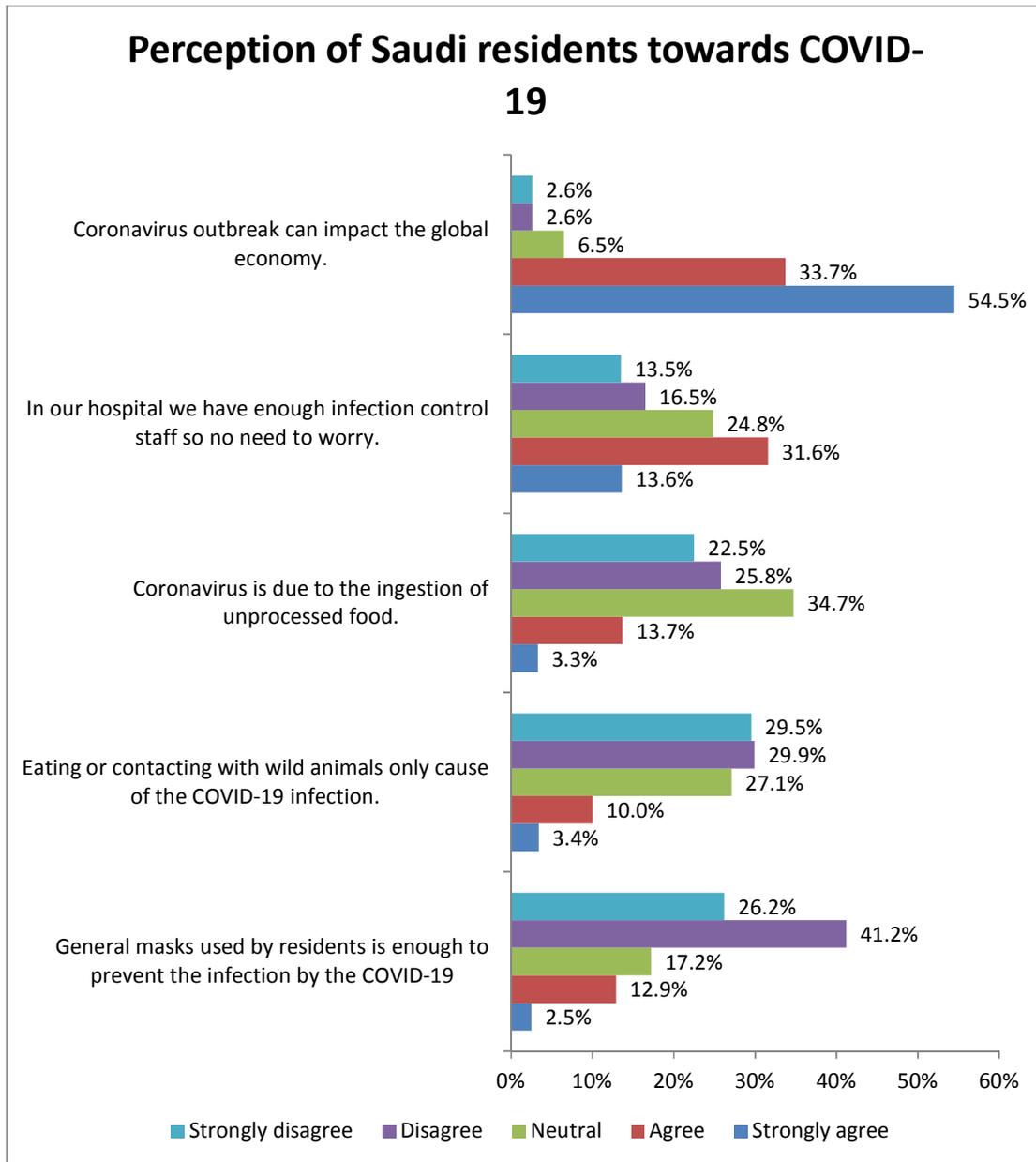


Fig. 3. Perception of Saudi residents towards COVID-19

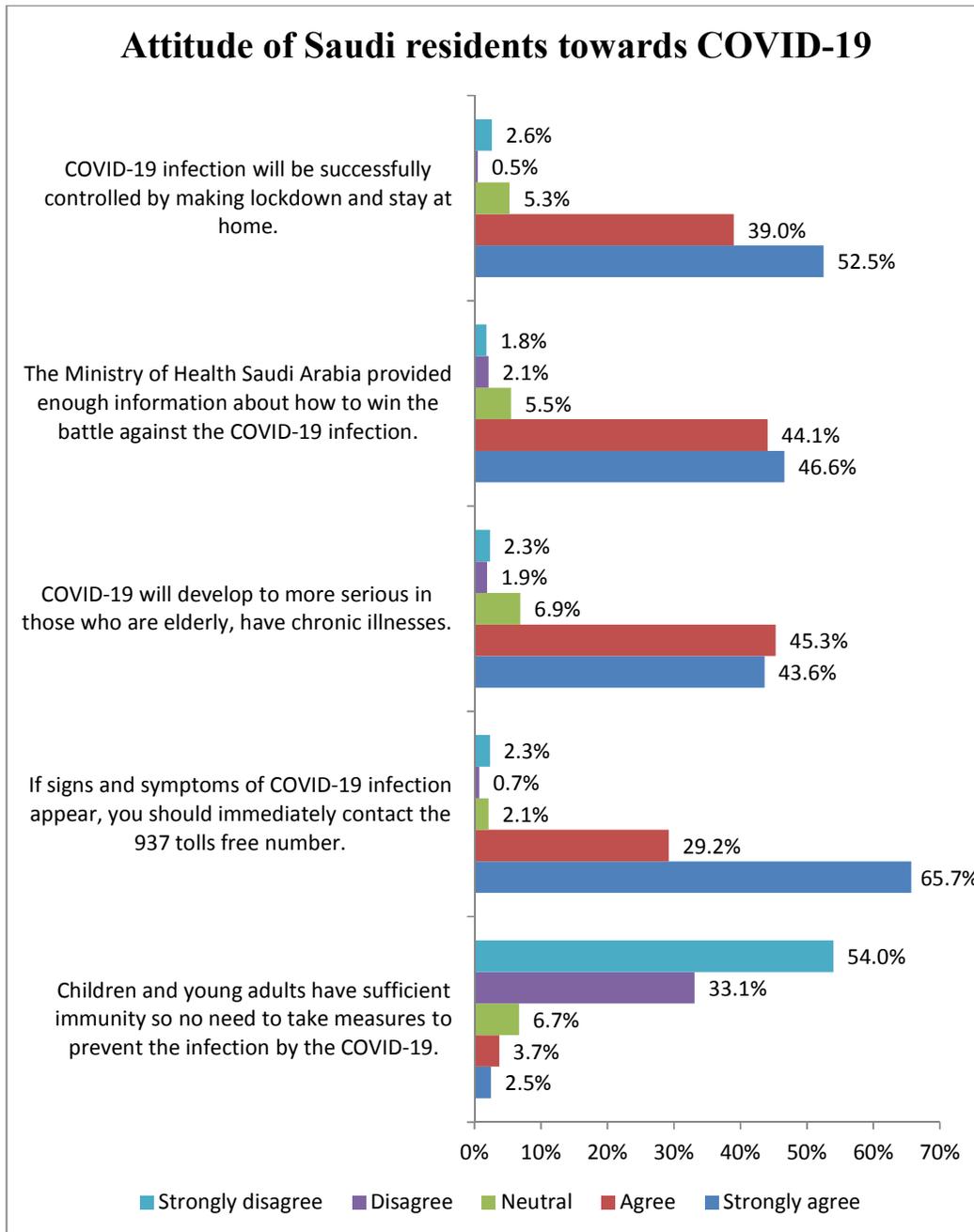


Fig. 4. Attitude of Saudi residents towards COVID-19

3.7 Barriers among Saudi Residents towards COVID-19

Mixed responses were observed by respondents regarding barriers in controlling COVID-19 infection. Of all participant, only 16.6% (n=368) individual presumed that there is no clear cut information about what to do or what not to do

regarding the prevention of COVID-19 transmission, 31.4% (n= 696) agreed that they are not sure what are the responsible factors for the spread of COVID-19. A high percentage of respondents (64.1%; n= 1420) acknowledged that COVID-19 infection causes so much social stigma. Patients are not willing to disclose their symptoms at an early stage, which is one of the

essential barriers in the prevention of COVID-19. The majority of the individuals (83.2%; n=1844) agreed that misinformation and rumors are spreading more quickly than the current outbreak of the new coronavirus (COVID-19). On the other hand, 35.8% (n=793) participants believed that global collaborative efforts had not been taken to prevent COVID-19 cases.

4. DISCUSSION

This study may be the first among all that has thoroughly assessed the knowledge, awareness, perception, attitude, practice, and barrier towards COVID-19 among the Saudi population. The study has highlighted the possible methodologies and healthy practices to prevent the spread of

COVID-19. For individuals, better knowledge, positive sense of awareness, accurate or right perception, affirmative attitude, healthy practices, and least social barriers are fundamental in the effective dealing of COVID-19 pandemic with minimum risks. Furthermore, coronavirus disease's ongoing pandemic nature made it necessary for all individuals to increase their precautionary measures and to put efforts by achieving standards of hygienic and healthy conditions. Findings of this survey demonstrated that demographic responders were in the age group 31-45 years, male, living in the nuclear type of family, married, education gained up to bachelor level or above, professional, living in a crowd of 5-10 persons in a flat, urban dweller, majority of them did not have health insurance,

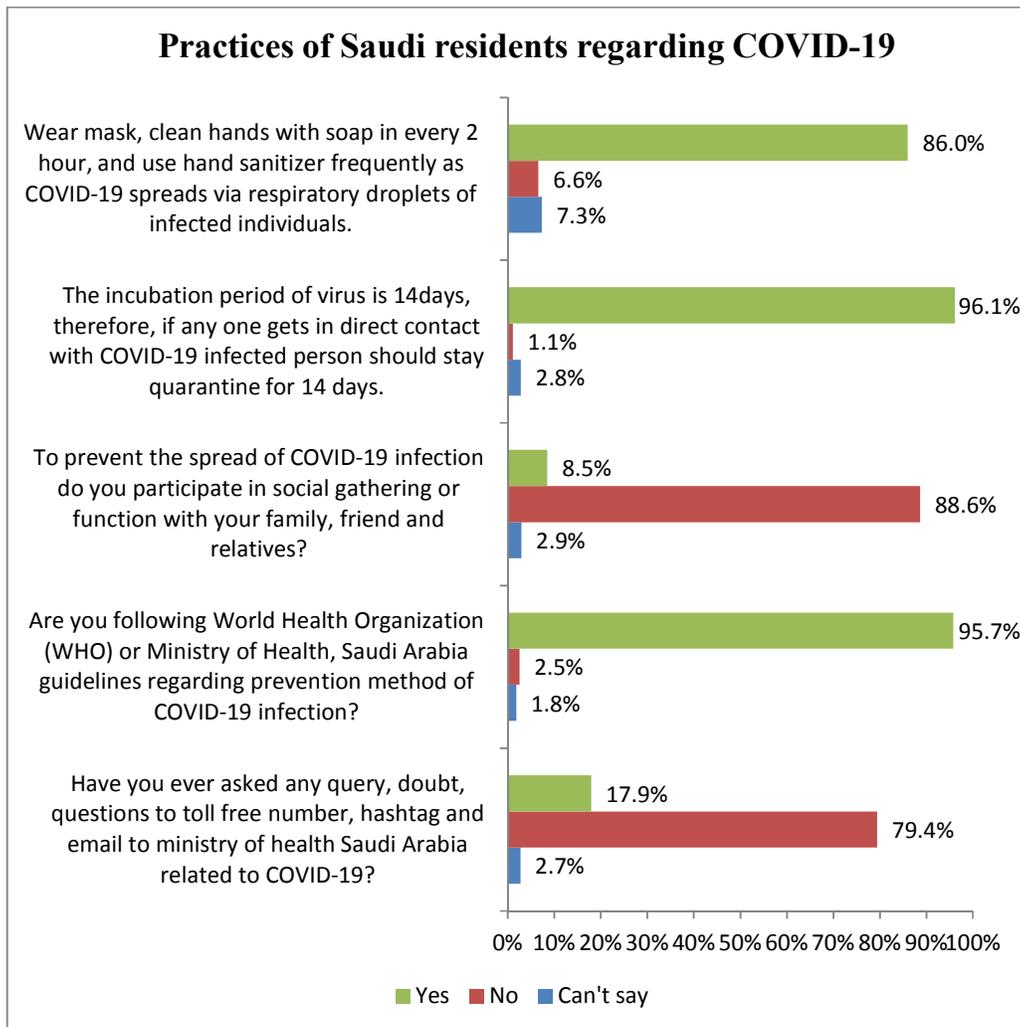


Fig. 5. Practices of Saudi residents regarding COVID-19

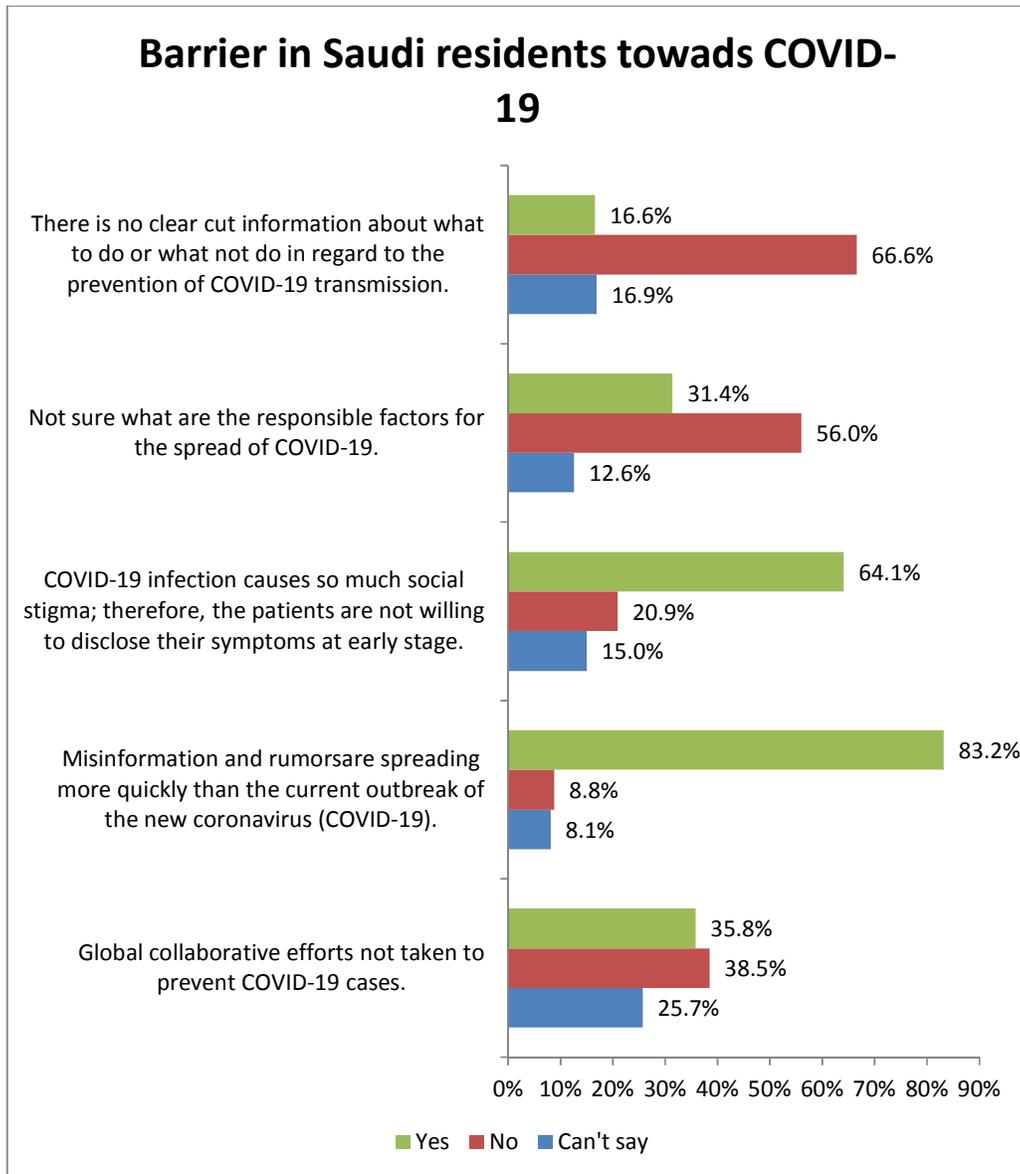


Fig. 6. Barrier in Saudi resident towards COVID-19

and their food habit was mixed. The finding of the study is in agreement with the previously studied report [11]. Furthermore, the current survey established that most Saudi residents acquired a better knowledge in terms of awareness, accurate or right perception, affirmative attitude, healthy practices, and displayed a little bit of barrier towards COVID-19. In continuation of knowledge assessment, the finding showed that most of the participants learnt about the structure of coronavirus, transmission methods, signs, and symptoms of COVID-19, methods to stop the spread of virus and treatment of COVID-19.

A similar study was conducted in Egypt by a group of researchers and findings were in agreement with their observation. Present results provide confidence in the general population, for example, better awareness regarding COVID-19 transmission, symptoms, and preventive measures to halt the spread of COVID-19. This is also amplified by helpful uniform correlation between knowledge and awareness found in current study by Zhong et al. [11]; Abdelhafz et al. [12] also reported that most of participants have affirmative awareness towards COVID-19. The perception about the disease we observed

was mixed with global economic impact, local infection control and treatment, food habit concerning COVID-19, and wearing gloves and masks to prevent the infection. A Similar study was conducted by Jordanian team among health care professional and found almost same outcomes [12]. In this study, participants showed a positive general attitude towards measures that can be followed to prevent the transmission of the disease. More than two-thirds of participants agreed that COVID-19 infection could be successfully controlled by imposing lockdown and stay at home policy, a measure taken by the ministry of health, Saudi Arabia. Older people having chronic diseases are more prone to COVID-19 infection.

The practices to control the spread of COVID-19 showed positive results; most residents generally used masks, cleaned hands with soap every 2 hours, and frequently used hand sanitizer. The incubation period of the virus is 14 days; therefore, if anyone gets in direct contact with COVID-19 infected person, stay quarantined for 14 days. Avoid social gathering or function with family, friend, and relatives and ask the query, doubt, questions to the toll-free number, hashtag and email provided by the ministry of health Saudi Arabia related to prevention of COVID-19 [11]. The findings demonstrated that majority of participants perceived that no clear cut information about what to do or what not to do in regard to the prevention of COVID-19 transmission, social stigma about COVID-19 infection and willing to disclose their symptoms in early stage, misinformation and rumors are spreading more quickly than the current outbreak and Global collaborative efforts have not been taken efficiently to prevent COVID-19 case [13].

5. CONCLUSIONS

In summary, the findings suggested that Saudi residents of a relatively high socioeconomic status possessed good knowledge, optimistic attitudes, and appropriate practices towards COVID-19 during the rapid rise of the COVID-19 outbreak. Besides, good COVID-19 related knowledge instilling optimistic attitudes and encouraging healthy practices towards COVID-19 are suggested. Health education programs aimed at improving COVID-19 knowledge help encourage optimistic attitudes and maintain safe practices. Hopefully, under the combined efforts of WHO, Ministry of Health, Saudi Arabia, all Saudi residents surely will win the battle against COVID-19 very soon.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

The research and ethics committee of College of Pharmacy, Shaqra University approved this study protocol and methodology of survey.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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