COMMUNITY AWARENESS OF THE 2019 CORONAVIRUS DISEASE (COVID-19) IN TABUK, SAUDI ARABIA

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ABSTRACT: *Community awareness is an essential factor in the control and prevention of communicable diseases, especially the 2019 coronavirus disease (COVID-19). This study investigates the level of COVID-19 awareness in Tabuk, Saudi Arabia in the areas of signs and symptoms, mode of transmission and prevention. A descriptive correlational, cross-sectional study design was used. The researcher-devised questionnaire was validated and was found reliable with Cronbach Alpha of 0.92. The majority of the 501 participants who responded to the questionnaire were extremely aware of COVID-19 in terms of signs and symptoms, modes of transmission and preventive measures. YouTube, Television and WhatsApp were the main sources of information regarding COVID-19. The awareness level about COVID-19 in Tabuk was exceptional based on the questionnaire scores, and the source of information reflected the concern of the studied population.*

KEYWORDS: COVID-19, Public Awareness, Source of Information.

INTRODUCTION

On January 9, 2020, the coronavirus was officially identified as the cause of an outbreak of viral pneumonia in Wuhan, China (WHO, 2020). Wuhan is a large city of more than 11 million people located in central China, around 1,200 km south of Beijing. In early 2020, 440 confirmed COVID-19 infections were reported in 13 provinces and municipalities in mainland China and five other countries and regions overseas (Peng Wu, 2020). WHO's International Health Regulations Emergency Committee reported on January 30, 2020, that the 2019 novel (new) coronavirus (COVID-19) pandemic outbreak was a public health emergency of international concern. February 11, 2020, the World Health Organization (WHO) announced that COVID-19 was a pandemic disease affecting more than 118,000 people in 110 countries and territories around the world, and there was a risk of further spread (WHO, 2020). Globally, COVID-19 has infected about 50 million people and caused one million deaths (Alwan, 2020). The Ministry of Health (MOH) in Saudi Arabia have documented a total of 287,262 positive cases, with a total of 3,130 deaths (Adly, 2020) To date, a total of 367,023 confirmed cases and 6,363 deaths have been recorded. (worldmeter.com, 2021)

According to the National Foundation for Infectious Diseases (2020), the 2019 coronavirus causes upper respiratory tract infection and sore throats. Coronaviruses, including the one causing COVID-19, are beta viruses originating in bats that cause disease with symptoms ranging from those of the common cold to severe respiratory tract infections, such as the Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS). (National Foundation for Infectious Disease, 2020) Coronaviruses are zoonotic, which means that animals and people transmit them. Detailed investigations found that SARS was transmitted from civet cats to humans, and MERS spread from dromedary camels to humans (WHO, 2021). COVID-19 is a new strain previously unseen in humans. Several known coronaviruses are circulating and predominant in animals and have not yet infected humans (WHO, 2019). Many of the patients of the COVID-19 outbreak in Wuhan, China, had some exposure and link with the consumption of seafood and exotic animals in markets. However, a large number of patients allegedly had no connection to the animal markets, suggesting that the disease had already been spreading from person to person at that time. Chinese officials indicated that there was a continuous person-to-person spread in China. Since the discovery of the virus, the person-to-person spread has been reported outside of China, including in the United States and other countries (Allam, 2020). Community transmission in many countries may have been associated with inadequate information regarding transmission and prevention of spread.

Community awareness regarding any disease has a significant impact on the prevention and its further spread (McIntyre, 2020). Accordingly, there were considerable studies conducted in Saudi Arabia to assess community awareness about communicable diseases. For instance, Al Mohaissen (2017) studied the level of awareness of MERS among 1,541 participants at a Saudi Arabian university following an outbreak and revealed that out of the 78.9% who recognised the typical symptoms, only 67.1% recommended preventive hygiene practices. Moreover, it was noted that the awareness of the disease epidemiology, severity, fatality rate, and treatment was deficient. Similarly, Hussain et al. (2015) study revealed that 68% of respondents had good knowledge about the mode of transmission, 82% were aware of the seriousness of the infection, and 51% knew about the unavailability of curative treatment or vaccine concerning MERS-COV. In the same study, it showed that 74% of the participants understood the modes of prevention, and 93% believed that the government efforts to contain the virus were successful.

Of the respondents, 41% considered MERS a severe risk during Hajj or Umrah. Government media, the Saudi MOH posters, radio, television and social media were the primary sources of information among young adults and older participants. These findings suggest that there is considerable evidence to show that community awareness may relate to the following disease epidemiology of transmission, cure and prevention.

The COVID 19 as a health crisis may require an understanding of how the disease can be transmitted and prevented to further escalate in numbers. The level of awareness of the general public may provide an initial understanding of the public's ability to utilize information critical to its transmission and prevention. This study aimed to determine the relationship between elected profiles of respondents and their level of awareness of COVID-19 disease transmission, cure and prevention. The study had involved selected general public respondents of the Province of Tabuk in Saudi Arabia. The study delved into the respondents' selected profiles and their level of awareness of COVID-19 from the epidemiological components of the signs and symptoms, mode of transmission, the ways of preventing transmission and reliable sources of information about the disease. To determine the level of awareness of the general public on COVID-19 in the Province of Tabuk in Saudi Arabia, the following questions were answered:

- What are the socio-demographic characteristics of the respondents?

- What is the primary source of information that the respondents use to learn about COVID-19?

- What is the level of respondents' awareness regarding the signs, symptoms, modes of transmission and prevention of COVID-19?

- Is there a significant relationship between the respondents' socio-demographic characteristics and their level of awareness of COVID-19?

The null hypothesis posited that there is no significant relationship between the respondents' level of awareness of the signs and symptoms, modes of transmission and the prevention of COVID-19 when grouped according to their socio-demographic characteristics.

METHODOLOGY

Ethical approval was obtained from the Ethics Review Council (ERC) of the University of Tabuk (# UT-117-22-2020) to investigate the level of awareness on COVID 19 signs and symptoms, transmission and prevention. Using a cross-sectional descriptive correlational design, data were collected through a researcher devised questionnaire that was floated among the general public in the Province of Tabuk, Saudi Arabia. Respondents were purposively selected using the following inclusion criteria: a) must be 18 years old or older, and b) able to read and write. The exclusion from the study are those individuals who are employed in any healthcare field as their experience and prior knowledge as to the disease epidemiology may have a biased influence on the results of the study. The sample participants were computed based on the World Statistical Data. The total population of the Province of Tabuk city was recorded at 657,000 for the year 2020 (https://populationstat.com/saudi-arabia/tabuk). Considering a confidence interval of 95% and 0.5 margins of error, the sample needed was to

be at least 384 participants. Therefore, questionnaires were distributed to 549 respondents with the expected 30 % attrition rate.

Instrument

The researcher-devised questionnaire with information adopted from WHO and CDC guidelines about the disease were utilized in the final version of the questionnaire as validated by experts in communicable disease from the MOH. The first part of the survey questionnaire consisted of the respondents' socio-demographic characteristics, including age, gender, social status, educational level, occupation and source of information on COVID-19. The second part has addressed the respondents' levels of awareness of COVID-19 regarding signs and symptoms, modes of transmission and prevention. The questionnaire was anchored on the five-point-Likert scale with responses "extremely aware," "moderately aware," "somewhat aware," "slightly aware" and "not at all aware" was used to determine the respondents' levels of awareness. To make it easier for the respondents to understand the questionnaire, it was translated into Arabic; the instrument did not require back translation as all of the concepts relating to the awareness of transmission and prevention were available in Arabic on WHO and CDC websites. The instrument underwent content validity and reliability testing. Content validity was done and determined by five experts: two nurses from the infection control unit, two physicians from the Neonatal intensive care unit and one physician from the emergency unit of the MOH government hospital. The content domain, the adequacy of the items in the questionnaire, and the internal consistency of the questionnaire were assessed, and yielded a Cronbach's alpha level and was found to be adequate at 0.92, indicating high reliability.

Data Analysis

The gathered data were tallied and analysed using statistical software SPSS version 24 (IBM Corp, Armonk, New York). Percentages and frequencies were used to describe the respondents' demographic profiles as well as their sources of information on COVID-19. The mean was utilised to determine the public's levels of awareness of COVID-19 in the Province of Tabuk, Saudi Arabia. Finally, Pearson's correlation coefficient was used to determine the significant relationship between the respondents' demographic profiles and their levels of awareness of COVID-19; alpha levels were set at a .05 level of significance.

RESULTS AND DISCUSSION

Out of 549 survey questionnaires, a total of 501 questionnaires were retrieved with a 91.2% response rate. Table 1 presents the frequencies and percentages of respondents' socio-demographic profile which includes gender, age, social status, education and occupation. A total of 68.1% of the participants were female, and 31.9% were male. The predominance of female respondents may be attributed to the sampling technique of the study and the relative presence of the gender during the data collection. The majority of the sample was between 21 and 30 years old. About half of the sample were single, and the other half were married. Regarding educational level, the majority of the participants had a bachelor's degree and may be attributed to the predominance of the young adult sample size, followed by secondary degrees and then diplomas. For occupation, more than half of the sample had no occupation which may be attributed to age group under the work age bracket of 15-20.

Table 1. Sample socio-demographic characteristics (n = 501)

Variables	Profile	Frequency	Per cent
Gender	Male	160	31.9
	Female	341	68.1
Age	15–20	117	23.4
	21–30	223	44.5
	31–40	102	20.4
	41–50	44	8.8
	51 and above	15	3.0
Social status	Single	250	49.9
	Married	217	43.3
	Divorced	24	4.8
	Widowed	9	1.8
	No response	1	.2
Education	Primary	22	4.4
	Intermediate	42	8.4
	Secondary	139	27.7
	Diploma	54	10.8
	Bachelor's	225	44.0
	Degree	13	2.6
	Master's Degree	5	1.09
	Doctoral Degree	1	0.2
	None		
Occupation	Teacher	46	9.2
	Employee	30	6.0
	Soldier	29	5.8
	Customer	75	15
	Service Job	31	6.2
	Admin Staff	13	2.6
	Businessman	17	3.4
	Other	260	51.9
	None		

Table 2 presents the frequencies and rankings of the possible sources of information about COVID-19 from which the participants obtained information about the disease. More than half of the sample used YouTube as their primary source of information relating to COVID 19. This may be attributed to the predominant use of mobile phones that are readily accessible to the general public. This is followed by television, a more common household utility available to the majority. WhatsApp application is the third-highest source of information regarding COVID 19 as it may be related to the recent incorporation of the application in the internet market. The least used sources were Instagram an application where useful information such as this health crisis may not be appealing to the general public as it is a personal account of daily happenings. This is followed by health brochures which may be related to the predominance of applications that are easily and readily downloadable using mobile phones and other electronic gadgets, making it less appealing for a paper-based health brochure. The

last rank is Facebook with a minimal number of users which may be related to some individualized content of the application making it less accessible not to everyone.

Table 2. Sources of information on COVID-19

Sources of Information	Frequency	Rank
YouTube	345	1
Television	189	2
WhatsApp	147	3
Friend	119	4
Internet website	104	5
Hospital and health centre	85	6
Family member	79	7
Radio	67	8
School	60	9
Newspaper	41	10
Instagram	36	11
Health brochure	32	12
Facebook	31	13

Table 3 shows the level of awareness of COVID-19 signs and symptoms, methods of transmission and preventive measures. The respondents were extremely aware of the different signs and symptoms, which is evidenced by the computed mean of 4.33. From the signs and symptoms presented, fever and cough were rated to be high and suggesting that the general public is aware that these symptoms are predominant manifestation when the infection sets in. The difficulty of breathing and shortness of breath were rated almost similar. This suggests that the general public associate difficulty in breathing with gasping for air or air hunger. All these findings were supported by the studies of Nie et.al., Xie. et.al; Alalli et.al (2020) that difficulty in breathing and shortness of breath are symptoms associated with the COVID 19, and people's awareness of this symptom is vital in determining who may be afflicted and immediate consultation may be recommended. As to the level of awareness of the mode transmission, the highest rating was noted to be similarly high in direct contact and droplet infection. This may suggest that the general public has associated direct contact and droplet as the same. This finding may be an area to be considered as a basis for further educating the public. As to the methods of transmission of COVID-19, the results showed that the respondents were extremely aware of the following routes of transmission: respiratory droplets when an infected person coughs or sneezes, with a mean of 4.53; and direct contact with the patient, with a mean of 4.60. This likewise suggests that the general public may have a wrong notion that direct contact is similar to droplet infection and may have affected their ratings of the mode of transmission. The difference in the mean may appear to be relatively small but it shows that the highest rating given to direct contact may corroborate with the initial findings on the rating made on droplet infection. However, it has been noted that the respondents showed moderate awareness of the possibility of transmission from infected bats, with a weighted mean of 3.52. This shows that the respondents were adamant in understanding this information because this may not be a fact, but only a fallacy. However, the overall mean for awareness of the transmission of COVID-19 was 4.22, or extremely aware. This suggests that the general public may have the awareness

but may have been confused as to direct contact as the leading mode of transmission of the disease. The level of awareness of the respondents on the methods or ways to prevent COVID-19 was rated as extremely aware with a mean of 4.71. From the identified methods of preventing the disease acquisition, avoiding close contact with people who are sick and covering one's mouth when coughing both rated 4.86 and has a descriptive interpretation of "extremely aware". This finding suggests that close contact was similarly viewed as direct contact as to the mode of transmission of the disease. This means that the general public might have associated direct contact as close physical contact with someone who has the disease and may mistakenly consider the condition as "not respiratory" in nature. This becomes an area where further education may be provided to correct the misunderstanding of both the mode of transmission and the means to prevent the spread. Moreover, the respondents were also noted to be extremely aware of the following: using a tissue when coughing or sneezing, with a mean of 4.84. This may suggest that the general public has associated droplet infection as a mode of transmission. Interestingly, washing of hands with soap and water for at least 20 seconds, with a mean of 4.71 was third in the rank among the means to prevent the spread. This may suggest the misnomer association with the mode of transmission rating provided by the respondents as being the highest. Again, this is an area where further education may be provided in order to improve the knowledge base. The avoidance to touch the eyes, nose, and mouth with unwashed hands, with a weighted mean of 4.63 may likewise be corroborating the earlier findings of a misnomer association with the mode of transmission as direct or physical contact. The use of an alcohol-based hand sanitiser with at least 60% alcohol if soap and water are not readily available was rated second to the last with a mean rating of 4.57 as extremely aware supports the handwashing rating of the general public as a means to prevent the spread of the virus. Lastly, staying at home when sick, with a mean of 4.53 likewise interpreted as extremely aware, supports the finding on the mode of transmission as direct contact.

Table 3. Level of awareness of COVID-19 signs and symptoms, methods of transmission and preventive measures

Signs and symptoms	Mean	Interpretation
Fever	4.39	Extremely aware
Cough	4.37	Extremely aware
Difficulty of breathing	4.28	Extremely aware
Shortness of breath	4.27	Extremely aware
Weighted mean	4.33	Extremely aware
Mode of transmission		
Respiratory droplet when an infected person cough or sneeze	4.53	Extremely aware
Direct contact with the patient	4.60	Extremely aware
Possibility of transmission from infected bats	3.52	Moderately aware
Weighted mean	4.22	Extremely aware

Ways to prevent COVID-19		
Wash hands with soap and water for at least 20 seconds.	4.71	Extremely aware
Use an alcohol-based hand sanitiser with at least 60% alcohol if soap and water are not readily available.	4.57	Extremely aware
Avoid close contact with people who are sick.	4.86	Extremely aware
Avoid touching your eyes, nose, and mouth with unwashed hands.	4.63	Extremely aware
Stay at home when you are sick.	4.53	Extremely aware
Cover mouth when coughing.	4.86	Extremely aware
Use a tissue when coughing or sneezing.	4.84	Extremely aware
Weighted Mean	4.71	Extremely aware

The awareness of the signs and symptoms, mode of transmission and means to prevent disease acquisition has significant impacts on disease proliferation. When one is aware of the signs and symptoms, they can distinguish if they may have been COVID positive or not. Which in turn may prevent them from transmitting the disease. Likewise, the person experiencing signs and symptoms may likely seek medical consultation immediately. By being informed of the signs and symptoms, individuals can make the intelligent decision to engage with professional medical experts to protect their health.

In general, the respondents were extremely aware of all awareness parameters under signs and symptoms, mode transmission and means to prevent the spread of the disease. The level of awareness may have been influenced by the different modalities by which information are shared and made available. Ali and Bhatti (2020) emphasized that health awareness is related to disease prevention. The availability of this information to the general public may have provided them with critical information to utilize daily and may generally affect the rate of spread of the disease. Likewise, the level of awareness may also be attributed to the variable of education level as this may provide a strong contention that as the educational level progresses, general awareness improves. This may similarly be attributed to the low number of confirmed COVID-19 cases in Tabuk as compared to the other regions of the Kingdom, wherein there has been a surge of cases.

Table 4 presents the correlations of selected socio-demographic characteristics and level of awareness on COVID-19

Table 4. Pearson Product of Moment correlations of selected socio-demographic characteristics and COVID-19 level of awareness

Variable		Gender	Age	Status	Education	Occupation
Signs and symptoms	Fever	-.04	.17	.11	.14	-.09
	Cough	.08	.03*	-.00	.02*	-.09
	Difficulty breathing	.06	.11	.09	.05*	-.18
	Shortness of breath	.04*	.08	.06	.07	-.09
Mode of transmission	Respiratory droplets	.00*	.08	.07	.05*	-.05
	Direct contact	-.05	.02*	.06	.00*	-.03
	Possibility of transmission	.02*	.04*	.07	.00*	-.05
Preventive measures	Washing hands	.02*	.09	.06	-.06	-.03
	Use of alcohol	-.00	.08	.06	-.06	-.02
	Avoiding close contact	.03*	.08	.02*	-.04	-.04
	Staying at home	-.04	.09	.10	-.01	-.06
	Covering mouth	-.03	.12	.09	-.00	-.08
	Using a tissue when coughing	-.03	.09	.05*	.04*	-.03

$p < .05$ = significant

The level of awareness of COVID-19 could be beneficial in preventing the spread of infection and subsequent reduction in the cases of infection.

Age, gender and education are significantly correlated with the level of awareness and the signs and symptoms of cough, difficulty in breathing and shortness of breathing. (r=0.3; r=0.3; r=0.5; r=0.4) This means that age, gender and education are related to the awareness of the specific symptoms of cough, difficulty in breathing and shortness of breath. The finding suggests that

as age and education progresses, the level of awareness of the respondents also improves. There is likewise a bias towards the female population to be more aware of the signs and symptoms of COVID 19. This finding was contradicting with the study of Jammal et.al., 2020, that fever is a symptom of COVID-19 correlated with age, civil status, education and occupation. As to this result, it can be deduced that older people are more aware of the signs and symptoms of COVID-19. This may be related to the association of age with maturity and improved perception as to symptoms of the disease. Likewise, female respondents were more conscious of the signs and symptoms of COVID-19. This explains likewise why females are more adherent to instructions of disease prevention. The higher level of awareness among the female population is the maternal instinct of protecting their siblings and their family in general. Moreover, there is evidence to suggest that a higher level of education can contribute to a greater understanding of the signs and symptoms of COVID-19. This becomes relevant in improving awareness and knowledge base because education provides people with a better understanding of the current situation and make relevant decisions based on their critical processing.

Furthermore, age, gender and education were all significantly correlated with the level of awareness and mode of transmission of the disease particularly in the respiratory droplet and direct contact as mode. (r=0.00; r=0.02; r=0.05) (r=0.04; r=0.00; r=0.00) These findings suggest that as age and education progress, the level of awareness of the respondents as to the mode of transmission also improves. The findings as to the level of awareness on the mode of transmission related to age and education are likewise corroborated with the findings on signs and symptoms correlation. The bias towards the female population to be more aware of the mode of transmission of COVID 19 was likewise noted and corroborating the findings on signs and symptoms. As to this result, it can be deduced likewise that older people are more aware of the mode of transmission of COVID-19. This may be attributed to the association of age with maturity and improved perception as to the mode of transmission of disease. Likewise, female respondents were more aware of the modality of COVID-19 transmission than male counterparts. This justifies likewise why females are more adherent to instructions on disease prevention. The higher level of awareness among the female population is the maternal instinct of protecting their siblings and their family in general. Moreover, there is evidence to suggest that a higher level of education can contribute to a greater understanding of the signs and symptoms of COVID-19. (Tripathi, 2020) This becomes relevant in improving awareness and knowledge base because education provides people with a better understanding of the current situation and make relevant decisions based on their critical processing.

As to preventive measures, there are significant correlations with Gender, Status and Education and prevention using handwashing, avoiding contact and using tissue as the means. (r=0.02; r=0.03; r=0.02; r=0.05; r=0.04) Female respondents were more aware of the most effective means to prevent acquiring COVID-19 than male counterparts, which is handwashing. This suggests that female may have a high level of awareness than male. Avoiding contact was likewise correlated with gender, this similarly suggests a high level of awareness among female respondents. As to Civil Status, the correlation between the level of awareness and avoiding close contact as a means to prevent the spread of infection suggests that married respondents are more aware than single respondents as to its prevention. The use of tissue when coughing as a means to prevent the spread of infection was correlated with education. This suggests a higher level of education can contribute to an understanding of the means to spread COVID-19. The awareness that covering the mouth can prevent the spread of the disease was closely

related to educational attainment. In a study by Esposito et al. (2020), covering the mouth when coughing was identified as a preventive measure of COVID-19 spread. This has been further supported by the studies of Desai and Aronoff (2020), who agreed that wearing masks or face coverings limits the spread of COVID-19.

CONCLUSION

The COVID-19 health crisis has provided people with the opportunity to learn more about the disease, consider how to prevent its transmission, and work towards its eventual elimination. This is an opportunity for all humankind to collaborate in destroying the disease into oblivion. The research presented here offers the crucial insight that respondents of all ages, genders, and education are incredibly aware of the presence of COVID-19 in our society. Social media plays an important role in providing updated information necessary to prevent the disease's spread. The Saudi government is mounting all reasonable logistical efforts and mechanisms to make the public aware of their educational campaign for increasing the public's awareness of COVID-19 toward its eventual prevention. This study provided a glimpse of how citizens of Saudi Arabia understand COVID-19, and it may be replicated in other cities and regions in the Kingdom of Saudi Arabia.

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