



Level of Awareness among Staff and Students of Academic Institutions towards Covid-19 in Western and Central Regions of Saudi Arabia

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ABSTRACT

CORONA (COVID-19) is a viral disease that leads to progressive mild fever, respiratory inflammation, which could result in critical respiratory complications, severe cardiovascular problems, and death. The objectives of the survey are to analyze the level of awareness among academic institutions including students and staff of medical and non-medical backgrounds. A pilot cross-sectional online survey was conducted among academic institutions including consenting students and staff from 26 March-2020 to 27 April 2020 to assess the level of awareness about COVID-19 using a self-administered questionnaire. A total of 374 participants responded by taking the self-administered questionnaire. Among those who had poor awareness, the majority was non-medical (95.7%). This study also shows that social media is the most common platform for seeking information among participants. There is a need to implement periodic awareness campaigns and training programs on the management of COVID-19 across all academic institutions.

Key Words: COVID-19, Awareness, Medical students, Saudi Arabia.

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INTRODUCTION

COVID-19 in humans is caused by Coronavirus (CoV-2), which belongs to the Coronaviridae family of viruses [1, 2]. The symptoms of COVID-19 disease are similar to MERS-CoV-Middle East Respiratory Syndrome and SARS-CoV-1 Severe Acute Respiratory Syndrome; like cold, mild fever, headache, and some other respiratory complications, including death in severe conditions. Camels, bats, and civet cats are known natural hosts for this virus and also transmit to humans [3, 4]. This disease was detected in humans and came into light in late December 2019 with a person in Wuhan city of China. The virus has reported much closer to SARS-CoV-1, which was responsible for many deaths in 2002 in the Middle East. The current virus also has caused many deaths of humans

worldwide [5]. Many studies suggested the potential role of repurposed drugs and their ability to control the disease. However, these are still experimental, including the therapeutic approach, developed until now to manage the disease [6].

Moreover, human to human transmission is continuously infecting a more significant number of people, and more deaths are also continually reported worldwide. Early preventive measures, diagnosis, and treatment play a vital role in the prognosis and management of the disease. Awareness about preventive hygiene, including physical distancing of the population, helps in minimizing the spread of illness and efficient handling and control of the healthcare crisis.

Early diagnosis using the immunological antigen-antibody test as well as the RT-PCR analysis, a molecular technique,

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and appropriate possible treatment play pivotal roles in the management of this pandemic disease. Screening of highly prone areas, quarantine of infected person, and adequate treatment, for the high risk, have significant benefits to maintain public health in a better and effective way [7]. Moreover, transmission awareness, educational programs, social distancing, regular sanitization of exposed surfaces, and proper utilization of the available health care facilities potentially contribute to the control of the disease. Thus, this survey aimed to evaluate the level of awareness among academic institutions staff and students toward COVID-19, in the western and central region of Saudi Arabia.

MATERIALS AND METHODS

This cross-sectional, self-administered survey was circulated online through email and social media among 800 potential staff and students at academic institutions including health sciences, community colleges, and technical and engineering colleges in the western and central regions of Saudi Arabia. A digital questionnaire (<https://tinyurl.com/yd3nozxf>) was designed on google forms and validated based on crucial information shared by the World Health Organization (WHO) and the Ministry of Health Saudi Arabia. A sample size of 298 was estimated using Raosoft software (Raosoft.Inc., USA, 2011) based on 0.82 Cronbach's alpha coefficient with a 5% margin of error. The Biomedical Ethics Research Committee at King Abdulaziz University (Reference No 63/14) approved the study-related documents. Anonymous responses were recorded after the consent of participants from 26 March-2020 to 27 April 2020 to assess the level of awareness about COVID-19 using a self-administered questionnaire. The distribution of responses was presented as frequencies and percentages. Sub-group analysis of responses was based on medicine-related courses and non-medicine courses.

STATISTICAL ANALYSIS

The received responses were tabulated in Excel (Microsoft Excel 2010, USA) chi-square test was calculated using GraphPad (website <https://www.graphpad.com/quickcalcs/chisquared1/?For mat=> (accessed on 10 June 2020). $p < 0.1$ was considered statistically significant.

RESULTS AND DISCUSSION

Demographic distribution of respondents

A total of 374 people participated in the study. Demographic distribution of respondents was segregated based on age, educational qualification, profession, and monthly income groups, and responses were observed accordingly as represented in Figure 1A-D.

Age range

Percentage distribution of various participants based on age was 36-45 years 39%, 18-25 years 38%, 26-35 years 16%, 46-55 years 4%, and from 56 years and above age group was 3% (Figure 2A).

Qualification

Among participants, a majority of respondents were Ph.D. (35.04%) while the rest included diploma (5.11%), high school (20.44%), bachelors (20.44%), and masters (18.89%) (Figure 2B).

Professional role

The professional role of the participants completing the survey included students (44.36%) and faculties (58.65%) (Figure 2C).

Socioeconomic profile

The socioeconomic profile participant completing the questionnaire based on their monthly earnings in SAR, 1000-2500 (31.39%), 3000-5000 (13.87%), 5000-8000 (20.44%), 8000-15000 (27-74), and above 15000 (6.57%) (Figure 2D).

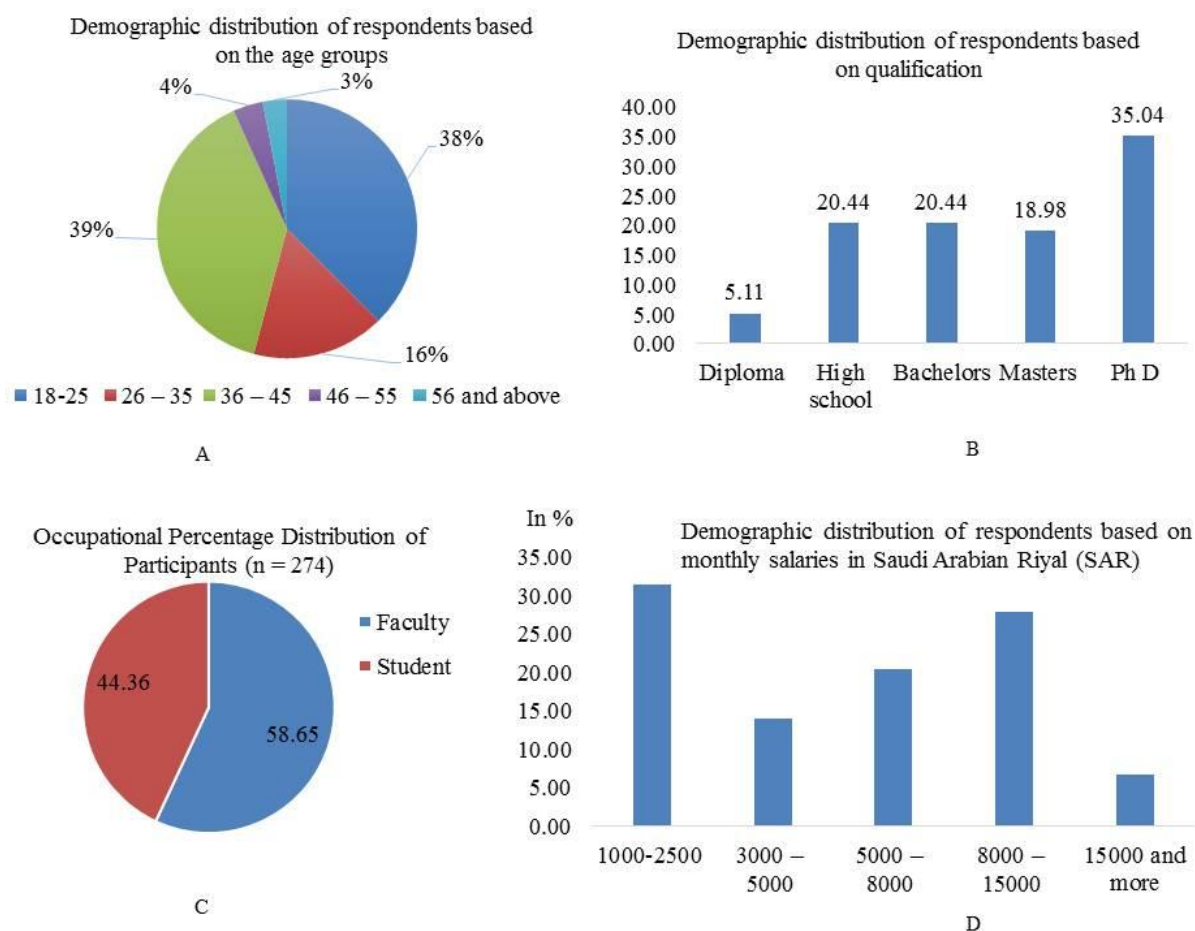


Figure 1: A) Demographic distribution of respondents based on age; B) Demographic distribution of respondents based on qualification; C) Occupational distribution of participants; D) Demographic distribution of respondents based on monthly salaries

Table 1: Response of the Medicine and Non-Medicine study participants regarding COVID-19

Questions	Answers	Responses (%)		P-value
		Medicine	Non-Medicine	
What was your source of information?	Ministry of Health website	4.39	0	0.30003
	Social media	68.13	84.21	
	Local newspaper	4.39	2.63	
	University/College	5.49	7.89	
	Television	16.48	5.26	
	Other	1.09	0	
What is the main reason for the spread of COVID-19 in various parts of the world?	Lack of public awareness	23.22	20.58	0.3801
	Lack of hygiene/cleanliness	16.10	10.78	
	Physical interaction	15.73	16.66	
	Food	3.74	2.94	
	Animal contact	7.11	5.88	
	Patient contact	17.97	16.66	
	Infected surfaces	15.35	23.52	
Is the disease contagious?	I don't know	0.75	2.94	0.0506
	Highly contagious	92.30	84.44	
	Moderately Contagious	4.39	11.11	
	Contagious to a limited degree	3.29	0	
What is the treatment?	Non- Contagious	0	4.44	0.148330195
	Rest and sleep	26.82	27.65	

	Keep warm	22.86	21.276	
	Drink plenty of liquid	24.69	19.14	
	Take a hot shower	22.56	24.82	
	Flu vaccine	2.13	2.83	
	Antiviral drugs	0.60	2.83	
	Chloroquine I think	0	1.41	
	I think no treatment	0.30	0	
Which groups are most at risk for COVID-19?	Elderly with other illness (Chronic lung disease, Renal failure Immunodeficiency)	74.78	62.71	0.03162
	Young (30-60 years)	7.56	18.64	
	Females	0.84	3.38	
	Male	2.52	5.08	
	Children	14.28	10.16	
What are the preventive measures for COVID-19?	Wash your hands regularly for 20 seconds, with soap and water or alcohol-based hand rub	26.83	27.66	0.1483s
	Cover your nose and mouth with a disposable tissue or flexed elbow when you cough or sneeze	22.87	21.28	
	Avoid close contact (1 meter or 3 feet) with unwell people	24.70	19.15	
	Stay home and self-isolate from others in the household if you feel unwell	22.56	24.82	
	Do not touch your eyes, nose, or mouth if your hands are not clean	2.13	2.84	
	Take antibiotics daily to avoid getting infected	0.61	2.84	
	Wipe down groceries with antibiotics	0.00	1.42	
	Social distancing	0.30	0.00	
What are the typical symptoms of COVID 19?	Fever, cough, shortness of breath	46.15	36.95	0.7402
	Fever, cough, trouble breathing, body pain, confusion	37.36	41.30	
	Fever, Vomiting, headache	2.19	2.17	
	Diarrhea, Abdominal pain, Fever, cough, shortness of breath	14.28	19.56	
What is the incubation period (time from infection to symptom onset)?	1-14 days	94.50	95.65	0.7191
	1-10 days	1.09	2.17	
	1-5 days	4.39	2.17	
In your opinion where do infected cases cluster most?	Social setting	60.43	58.69	0.3265
	Healthcare setting	28.57	36.95	
	Commercial setting	10.98	4.34	
What precautions should be taken to avoid getting infected by COVID-19?	Avoid eating raw meat, liver, and raw or unpasteurized milk	23.50	23.74	0.9996
	Avoid touching your mouth, nose, and eyes before washing your hands	27.81	27.33	
	Use a handkerchief when coughing or sneezing to cover your mouth and nose	23.50	23.74	
	Wash hands with water and soap or other disinfectants, especially after coughing, sneezing, and using toilets	25.16	25.17	
Is it safe to consume raw or insufficiently cooked animal products, including dairy products and meat?	Yes	14.28	23.91	0.1615
	No	85.71	76.08	
	Yes	4.39	13.04	0.0661

Is it safe to visit the workplace, markets, or entertainment venues?	No	95.60	86.95	
Is there a vaccine against COVID-19?	Yes	3.29	8.69	0.0034
	No	96.70	91.30	
Is there a Medicine against COVID-19?	Yes	12.08	34.78	0.0016
	No	87.91	65.21	

All responses were collected and redistributed for subset analysis based on medical and non-medical participants, it was observed that social media is the primary source of information sought by participants for awareness about the COVID-19 disease. The overall received for social media was 96.6% (Table 1). The observed responses for social media by medical participants were 68.13% and 84.21% from non-Medicine. On the other hand, medical participants followed other sources of information including television (16.48%), Ministry of Health website (4.39%), University/College (5.4%), the local newspaper (4.39%), and other (1.09%). Similarly, other sources of information followed by non-medical participants were television (5.26%), Ministry of Health website (0.0%), University/College (7.89%), Local newspaper (2.63%), and Other (0.0%) (Table 1). These observations were not statistically significant.

When asked about the main reason for COVID-19 spread, more than 60% of the respondents, 23.22% medical and 20.58% non-medical participants, agreed that the lack of public awareness is the preliminary cause of COVID-19 spread. The other responses about public awareness and COVID-19 spread from medical participants were 16.10% lack of hygiene/cleanliness, 15.73% physical interaction, 3.74% food, 7.11% animal contact, 17.97 patient contact, 15.35% infected surfaces, and 0.74% I don't know. In contrast, the responses of non-medical participants for the same question considered infected surfaces (23.52%) as the preliminary, physical interaction (16.66%), patient contact (16.66%), lack of hygiene/cleanliness (10.78%), animal contact (5.88%), food (2.94%), and I don't know (2.94%).

Both medical and non-medical groups responded significantly correct and they considered the disease highly contagious. The total responses received were 89.8%, while the observed responses from medical respondents for the contagious nature of disease were 92.30% and 84.44% responded from non-medical also suggested for the same. Moreover, the other reasons responded by the medical group did not consider the disease to be non-contagious, while 4.44% of non-medicine participants considered it to be non-contagious (4.44%).

The majority of medical (26.82%) and non-medical (27.65%) participants agreed that rest and sleep is the best treatment of the disease. Less than 5% of the participants

in both groups considered flu vaccine, antiviral drugs, and chloroquine as potential treatments and no other treatment is available.

Both medical and non-medical groups thought that elderly with other illnesses (chronic lung disease, renal failure, immunodeficiency) are at maximum risk of infection with recorded responses of 74.78% and 62.71%, respectively.

The other risk groups considered by medicine colleges were children (14.28%), youth (30-60 years) (7.56%), and male (2.52%). The non-medical participants considered other risk groups to be youth (30-60 years) (18.64%), children (10.16%), male (5.08%), and female (3.38%). The observed responses were insignificant ($p = 0.09$).

Hand hygiene was considered by medical and non-medical respondents washing hands regularly for 20 seconds with soap and water or alcohol-based hand rub; 26.83% and 27.66% highly rated preventive measure followed by avoiding close contact (1 meter or 3 feet) with infected patients 24.70%; 19.15%, staying in home and self-isolation (22.56%; 24.82%), Covering nose and mouth with a disposable tissue or flexed elbow when coughing or sneezing (22.87%; 21.28%), touching eyes, nose, or mouth if your hands are not clean, taking antibiotics, wiping down groceries with antibiotics and social distancing contributed to less than 5% responses.

46.15% of medical and 36.95% of non-medical participants considered correct symptoms fever, cough, and shortness of breath as the primary symptoms of COVID-19 disease. 37.36% of the participants responded to fever, cough, trouble breathing, body pain, and confusion as the common symptoms of the disease, and 14.24% of the medical participants responded to diarrhea, abdominal pain, fever, cough, and shortness of breath as the common symptoms. 41.30% of the non-medical group responded to fever, cough, trouble breathing, body pain, and confusion, and 19.56% responded to diarrhea, abdominal pain, fever, cough, shortness of breath group as the common symptoms of the disease, which were incorrect. Almost 2% of the medical and non-medical participants considered fever, vomiting, headache group as the common symptoms of the disease. Overall the considerations were statistically insignificant.

To a large extent, 1-14 days incubation period of COVID-19 in humans was rightly considered by medical participants (94.50%) and non-medical participants

(95.65%). 91.8% of the overall correct responses were received for 1-14 days. The responses of medical participants for the places where the infection clustered most were Social setting (60.43%) > Healthcare setting (28.57%) > Commercial setting (10.98%). Similarly, the responses of non-medical participants for the same question were Social setting (58.69%) > Healthcare setting (36.95%) > Commercial setting (4.34%).

13% of medical participants responded safely to consuming raw or insufficiently-cooked animal products, including dairy products and 78% of them denied safety. Similarly, 11% of non-medical participants responded that it is safe to consume while 35% of them did not agree.

Only 4% of medical participants considered it is safe to visit the workplace, markets, or entertainment venues, while 86% responded it is not safe to visit these places. In contrast, 60% of non-medical participants suggested visiting the workplace, markets, or entertainment venues although 40% of respondents did not agree.

Only 3.29% of medical professionals thought that a vaccine is available for COVID-19. However, 96.70% correctly responded that no vaccine is available for COVID-19. Comparatively, only 8.69% of the total responses of non-medical participants said that the vaccine is available, while 91.30% agreed to no vaccine is available.

12.08% of the incorrect responses of the medical participants suggested medicine is available to treat the viral infection while 87.91% correctly responded that no medicines are available. Although a higher percentage (34.78%) of non-medical participants stated that medicine is available for the treatment, 65.21% responded that no medicines are available for COVID-19.

DISCUSSION

Since the outbreak of pandemic COVID-19, WHO and CDC have issued guidelines for containing the spread of the disease. Awareness tools and treatment/preventive guidelines include a wide range of resources online, and offline training is developed and distributed to tackle the disease by agencies like WHO, Saudi Ministry of Health at regular intervals [8, 9]. Academic institutions share the responsibility of partnering in the management of pandemics. Therefore, it is vital to verify the state of the institutions to strengthen the processes by identifying the weaknesses and correcting them at regular intervals [10, 11]. This study suggested that 81.8% of responses can recognize the symptoms and indicate the right level of awareness for the disease among the medical and non-medical respondents from Saudi Arabia. Only a few reports are available on the level of awareness and knowledge on COVID-19.

Empowering knowledge and awareness are critical factors among the population of the country to the control of the disease. The level and nature of education have been reported to increase the knowledge and awareness of the disease. The present study observed that the responses from the medicine and allied institutions were better than non-medical. Recently, reports from India suggest that level of education, age, and income are correlated with the outbreak of the disease among the population and concluded that medical group and high income could help to manage the COVID-19 pandemic transmission by communicating and managing information correctly to non-medical professionals [12].

Among these responses, the medical and non-medical participants responded maximum and nearly equal to rest and sleep (26.82;27.65%) followed by taking a hot shower and keeping warm to treat the disease. 74.78% of responses from the medical and 62.71% of the non-medical participants suggested that the elderly with other illnesses group are most at risk for the disease. It was also previously described that senior citizens are incredibly vulnerable than the different age groups, and chances of the disease were reported to increase with age up to 14% [13].

Moreover, the immune-compromised, cardiac and diabetic patients are prone to high mortality with this disease [12, 14]. Both groups also responded that females were at least risk of the disease, and were aware of handwashing up to 20 seconds, with soap and water or alcohol-based hand rub protects against COVID-19. These findings are further in confirmation with Goswami 2020 [15].

Participants from medicine and allied institutions were relatively more aware of the primary symptoms compared to the non-medical participants. The medical and non-medical respondents have found to be a significant level of awareness about the incubation period of the disease. From the data analysis of responses for a place where infected cases cluster most from the medical and non-medical group of participants, it has observed that social setting among these is also the primary source for clustering of COVID-19 infection. Both medical and non-medical participants found to have correct knowledge about the non-availability of the vaccine and medicine for this pandemic. Although, medical and allied institutions were marginally better informed about the available treatments and vaccine as compared the non-medical respondents.

CONCLUSION

Staff and students of academic institutions showed adequate awareness and prevention of COVID-19 with an overall 86 percentage of correct responses. A higher percentage of correct responses were from Medicine and allied staff & students as compared to non-medicine colleges. This study shows that social media is the most

common platform for seeking information among all. There is a need to implement periodic awareness campaigns and training programs on the management of COVID-19 across all academic institutions.

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