RESEARCH ARTICLE

Knowledge and awareness regarding spread and prevention of COVID-19 among the young adults of Karachi

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Abstract

Objective: To measure the awareness of COVID-19 infection among the general population following the outbreak in China.

Methods: This descriptive cross-sectional study was carried out during January and February 2020 amongst the general population of Karachi, Pakistan. A pre-tested, self-administered questionnaire was used among 399 young adult participants. The questionnaire was developed keeping in view of the already published study on severe acute respiratory syndrome (SARS) and the available literature on COVID-19. It included sociodemographic information, assessment of knowledge, beliefs regarding coronavirus and the perception of precautionary measures taken by an individual. Chi-square test was used for categorical variables and $p<0.05$ was used as statistically significant.

Results: There were more females 299 (75%) than male participants 100 (25%). The mean age was 20.9 ±2.30 years and 232 (58%) had graduate degrees. There is lack of knowledge and awareness about coronavirus as 226 (56.6%) participants claimed that coronavirus is actually the most dangerous virus in the world, and 171 (43%) did know that the common flu virus is potentially more lethal than coronavirus. Although a large majority of participants correctly identified sources of transmission, measures and precautions to be taken for coronavirus, their knowledge for symptom identification was deficient. The most pursued platform for information for coronavirus was found to be social media, followed by television and print media.

Conclusion: The study highlighted the level of awareness of coronavirus among young adults in Karachi, Pakistan. The study further pointed out the public knowledge gaps for the authorities concerned to help them develop more effective and successful awareness campaigns using preferred channels.

Keywords: Coronavirus, Pakistan, Pandemic, Awareness, Preparedness, COVID-19. (JPMA 70: S-169 (Suppl. 1); 2020)

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Introduction

Infectious diseases pose a significant risk to the global population.[1] In the early week of December 2019, multiple cases of pneumonia of obscure aetiology were reported in Wuhan, Hubei province, China which rose serious concerns not only in China but also globally.[2-4] It includes early-stage viral respiratory disease, ranging from mild upper respiratory infection (URI) to a rapidly progressing pneumonia, acute respiratory distress syndrome (ARDS) and multi-organ failure. On January 7 2020, the Chinese Centre for Disease Control and Prevention (CDC) isolated a novel coronavirus (2019-nCoV) from the throat swab sample of a virus-infected patient and the condition was subsequently named coronavirus disease (COVID-19) by the World Health Organisation (WHO). Coronaviruses are enveloped, non-segmented, positive-sense RNA viruses belonging to the Coronaviridae family and widely distributed in humans and other mammals.[2] Among the several human-pathogenic coronaviruses, most are associated with mild clinical manifestations with two notable exceptions: severe acute respiratory syndrome coronavirus (SARS-CoV) and the Middle East respiratory syndrome coronavirus (MERS-CoV) first identified in Guangdong, Southern China, 2002 and Saudi Arabia in 2012.[5] With these illnesses, the death rate was 10% and 37% respectively.[2] Treatment for COVID-19 infection is not yet available.

On March 11, 2020 WHO, declared COVID-19 a pandemic and it has impacted more than 195 countries worldwide. Till the date this article was written, more than 1,696,588 cases have been confirmed diagnosed with COVID-19, with 105,952 deaths worldwide, mainly involving people who are elderly, have recent travel history, have co-morbid diseases, are healthcare workers, and immunocompromised individuals; the European countries in total being the most affected by COVID-19 while the United States is the single country with currently the highest number of cases.[6]

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In Pakistan, the first case of COVID-19 was confirmed on February 26, 2020.[7] Within a span of 9 weeks, it rose to more than 5000 confirmed cases and 93 reported COVID-19 deaths.[8] Pakistan also shares its trade and border with Iran, and the number of virus cases is increasing, led by pilgrims returning from Iran. As Pakistan shares its borders with Iran and China, the threat of transmission of the virus was established when virus cases were doubled by pilgrims returning from Iran.[9]

The symptoms of 2019-nCoV can appear in as early as two days or as long as 14 after exposure.[10] In most situations, distribution from person-to-person occurs within close contact, about 6 feet. The spread is thought to occur mainly through respiratory droplets produced when an infected person coughs or sneezes, such as the spread of influenza and other respiratory pathogens.[10] Such outbreaks have been linked to overcrowding, close-contact environments, slow detection and inadequate infection control practices.[11] Public awareness of infectious diseases helps to control infection, although a lack of inadequate information leads to low detection rates, delayed care, discrimination and stigma.[12] Additionally, evaluating public awareness during an outbreak is essential because adequate civic action during an outbreak is driven by a public understanding of disease transmission, availability of vaccines and successful medical treatment.[13] In case of failure to comply with preventive measures, as well as a lack of adequate healthcare facilities and infrastructure, the danger multiplies manifold in developing countries like Pakistan. In general, there are limited studies on awareness and attitudes among Pakistanis towards infectious diseases, especially during outbreaks such as coronavirus.[11] The present study aimed to measure the awareness of COVID-19 infection among the general population following the outbreak in China.

Subjects and Methods

This descriptive cross-sectional study was carried out during January and February 2020 among the general population of Karachi, Pakistan. A pre-tested, self-administered questionnaire was used to assess knowledge and beliefs towards COVID-19. On the assumption of 50% of the population possessing knowledge of coronavirus, 95% confidence interval with an error bound of 0.05, a sample size of 384 was obtained. A total of 425 persons were approached, and 402 people filled the questionnaire. However, 3 incomplete questionnaires were rejected, and 399 participants were included in the study. Agreement to fill the questionnaire was taken as consent and anonymity of the participants were maintained. Ethical approval was obtained by Hamdard College of Medicine and Dentistry, Karachi.

Young people belonging to different walks of life present in shopping malls, and public places such as out-patient hospital units, and parks in different geographical areas of Karachi were approached. Individuals under 18 years of age or unable to understand the English language were excluded.

The questionnaire was developed keeping in view of the already published study on SARS and the available literature on COVID-19.[11,14,15] It included sociodemographic information, assessment of knowledge, beliefs regarding coronavirus and the perception of precautionary measures taken by an individual. The term 2019 n-CoV was replaced by "coronavirus infection" as it is commonly used and understandable by the local community.

Data was entered in SPSS version 22, and the descriptive analysis was performed with frequency and percentage calculations. Chi-square test was used for the study of categorical variables and $p<0.05$ was taken as statistically significant.

Results

Out of the total 399 participants, two-thirds were females. The majority of the participants (n=392; 98.2%) were between 18 to 25 years of age with a mean of 20.9±2.30 years. All participants were educated, with a majority of 232 (58%) qualified as graduated. Slightly less than half (n=190; 48%) reported a family income between 51,000 to 1,59,400 Pakistani Rupees (PKR), while only 9 (2,3%) reported to earn less than PKR 13,000 per month. Table-1

Table-1: Socio-demographic characteristics of the participants.

Variable	N = 399	%
Sex		
Male	100	25.1
Female	299	74.9
Age (in years)		
18-20	192	48.1
21-25	200	50.1
25-30	7	1.8
Mean Age ± Standard Deviation (years)	20.9 ±2.30	
Educational status		
Up to Intermediate	167	41.9
Graduate / Postgraduate	232	58.1
Family Income (in Pakistani Rupees)		
< 13,000	9	2.3
13,001 - 51,000	76	19
51,001 - 1,59,400	190	47.6
> 1,59,400	124	31.1

Table-2: Cross tabulation of participant's response to questions by sex and educational status. (N = 399).

Questions	Sex		p-value#	Educational status		p-value#
	Male n(%)	Female n(%)		Up to Intermediate n(%)	Graduate/ Postgraduate n(%)	
Heard of corona virus*						
Yes	94(94.0)	296(99.0)	0.004	160(95.8)	230(99.1)	0.02
No	06(6.0)	03(1.0)		07(4.2)	02(0.9)	
Coronavirus is currently the most dangerous virus to exist						
Yes	68(68.0)	158(69.3)	NS	117(70.1)	171(73.7)	NS
No	32(32.0)	70(30.7)		50(29.9)	61(26.3)	
Novel corona infection was first identified in						
China – 2019	91(91.0)	273(91.3)		155(92.80)	209(90.1)	
Saudi Arabia – 2012	02(2.0)	12(4.0)	NS	05(3.0)	09(3.9)	NS
United States of America – 2019	06(6.0)	10(3.3)		06(3.6)	10(4.3)	
Novel corona virus is synonym for MERS and SARS corona virus						
Yes	32(32.0)	95(31.8)	NS	45(26.9)	82(35.3)	NS
No	68(68.0)	204(68.2)		122(73.1)	150(64.7)	
Common flu kills 60 times more people annually than coronavirus						
Yes	62(62.0)	166(55.5)	NS	94(56.3)	134(57.8)	NS
No	38(38.0)	133(44.5)		73(43.7)	98(42.2)	
Coronavirus infection presents in a patient						
Without symptoms	04(4)	01(0.3)		03(1.8)	02(0.9)	
As a mild disease	22(22)	92(30.8)	0.005	49(29.3)	65(28.0)	NS
As a severe disease	22(22)	04(14.4)		20(12.0)	45(19.4)	
Varies from patient to patient	52(52)	163(54.5)		95(56.9)	120(51.7)	
Cases of coronavirus cluster more in a health care setting						
Yes	78(78.0)	263(88.0)	0.01	138(82.6)	203(87.5)	NS
No	22(22.0)	36(12.0)		29(17.4)	29(12.5)	
Overcrowding, delay in diagnosis and poor infection control practices are all common causes for the spread of coronavirus						
Yes	90(90.0)	287(96.0)	0.02	156(93.4)	221(95.3)	NS
No	10(10.0)	12(4.0)		11(6.6)	11(4.7)	
There is no specific vaccine or treatment currently available for coronavirus						
Yes	74(74.0)	246(82.3)	NS	142(85.0)	178(76.7)	NS
No	26(26.0)	53(17.7)		25(15.0)	54(23.3)	
Current fatality of coronavirus infection is						
2%	28(28.0)	71(23.7)		48(28.7)	51(22.0)	
10%	32(32.0)	108(36.1)	NS	51(30.5)	89(38.4)	NS
30%	33(33.0)	114(38.1)		60(35.9)	87(37.5)	
Not fatal	07(7.0)	06(2.0)		08(4.8)	05(2.2)	
Immunocompromised people (diabetic, renal failure, chronic lung disease patients) are more likely to have severe disease						
Yes	86(86.0)	238(94.6)	0.005	152(91.0)	217(93.5)	NS
No	14(14.0)	16(5.4)		15(9.0)	15(6.5)	
Less likely to get corona infection are						
Adults	21(21.0)	39(13.0)		21(12.6)	39(16.8)	
Children	22(22.0)	28(9.4)	< 0.001	22(13.2)	28(12.1)	NS
Both have equal changes to get infected	57(57.0)	232(77.6)		124(74.3)	165(71.1)	
Coronavirus outbreak is highly misinformed*						
Yes	62(62.0)	209(69.9)	NS	115(68.9)	156(67.2)	NS
No	38(38.0)	90(30.1)		52(31.1)	76(32.8)	
Incubation period of coronavirus is						
24 hours	22(22.0)	64(21.4)		34(20.4)	52(22.4)	
2 - 10 days	62(62.0)	185(61.9)	NS	104(62.3)	143(61.6)	NS
3 weeks	14(14.0)	40(13.4)		22(13.2)	32(13.8)	
More than 5 weeks	02(2.0)	10(3.3)		07(4.2)	05(2.2)	

Italic = Correct answers. *Subjectively answered.

# P < 0.05. NS = Not significant. MERS = Middle East Respiratory Syndrome. SARS = Severe Acute Respiratory Syndrome.

Table-3: Knowledge regarding various aspects of coronavirus (N = 399).

Options	Frequency	% of Cases
Symptoms of Coronavirus identified*		
Fever	211	52.9
Cough	219	54.9
Difficulty in respiration	212	53.1
Diarrhoea	7	0.9
All of the above	157	39.3
Sources of transmission of infection identified*		
Animals	20	5.0
Infected family members	39	9.8
Infected patients	32	8.0
All of the above	338	84.7
Precautions are taken to avoid being infected by a coronavirus*		
Practising hand hygiene especially after coughing, sneezing and toilet use	67	16.8
Covering mouth and nose with a handkerchief while coughing/sneezing	70	17.5
Avoid touching mouth/hands before washing hands	29	7.3
Avoid raw meat or unpasteurized milk	34	8.5
All of the above	312	78.2
Step to be taken when dealing with a suspected coronavirus patient*		
Use of gloves, gown, N-95 masks	73	18.3
Patients undergoing aerosol-generating procedures require negative pressure rooms.	20	5.0
Disposable devices should be used whenever available	38	9.5
Proper hand hygiene and cough etiquette should be maintained	58	14.6
Eye protection with goggles and face shield is essential	20	5.0
All of the above	291	73.1
Get to know first about coronavirus by*		
Print media (Newspaper article/brochure)	33	10.1
Television	127	39.0
Friends/family	103	31.6
Social media (e.g. Facebook, WhatsApp, Twitter etc)	244	74.8
Any other (e.g. research papers)	39	12.0

* Multiple options selected.

demonstrates the socio-demographic characteristics of the participants.

Table-2 shows the results of the answers to the questions posed among the participants and were compared against sex and level of education. Response frequencies and percentages in each group and their p-values were obtained using a Chi-square test. The vast majority of females compared to male participants, and postgraduates than undergraduates were aware of the virus ($p<0.01$). Furthermore, 226 (56.6%) participants claimed that coronavirus is actually the most dangerous virus in the world, and 171 (43%) did not agree that the common flu virus is potentially more lethal than the coronavirus. While 364 (91%) participants correctly identified China as the first country in which coronavirus was identified, information on aspects related to its prevalence, disease history and fatality among participants was found to be lacking. For example, there were statistically significant differences in the responses between gender when asked about the presentation of the disease, its transmission, the population at risk and its vulnerability ($p<0.01$).

There was a lack of awareness when asked to identify the signs of coronavirus. Just 157 (39.3%) participants were able to correctly identify all symptoms although slightly more than half reported atleast one symptom. More than two-thirds of the participants correctly identified sources of infection transmission, steps to be taken to avoid infection, and measures to be implemented when dealing with a suspected coronavirus patient. Social networking applications such as Facebook, WhatsApp, and Twitter were the most open information platform regarding the coronavirus, as declared by 244 (75%) participants. Print media was the least tapped source of information recognised by just 33 (10%) participants. Table-3 highlights the knowledge regarding the various aspects of coronavirus as answered by the respondents.

Discussion

COVID-19 is currently the topic of discussion both in the media and among the general public. The present study highlighted the analysis of data of the general population during the initial days of the coronavirus outbreak in December 2019, in the largest metropolis of Pakistan. Since only one study related to awareness of coronavirus among health professionals from Pakistan is published recently,[16] this study is therefore an unprecedented approach to document the level of awareness in our local population. The finding may be useful when planning health education programmes about emerging infectious diseases.

In the present study, the knowledge level of the respondents was suboptimal, especially regarding the presentation of the disease, incubation period, fatality rate and symptoms of the disease. However, their levels of awareness related to the routes of infection and contagiousness of the disease was appreciable. The respondents might likely have overestimated the gravity of the situation, especially among females and postgraduates. Although an overwhelming majority 364 (91%) of the respondents were aware of the initial coronavirus epidemic in China, almost two-thirds of the participants reported that the current outbreak was highly misinformed and could create an awareness and information gap.

It is surprising to find that 80% of the participants correctly identified the lack of vaccine availability at present. This result was significantly lower among Saudi University students in 2017 regarding MERS-CoV; only 32% gave the correct answer.[11] The comparison between sex and level of education showed little variation in the present study; females were slightly more likely to have better knowledge than their male counterparts about the disease but also were more prone to overestimate the danger and fatality rates of coronavirus. These findings are paralleled with previous researches carried out in Saudi Arabia.[17,18] According to our study, females have demonstrated more awareness in knowledge-seeking behaviours. On the other hand, while undergraduates were marginally more likely to be educated about the disease, postgraduates appeared to overestimate the fatality rates. It may be due to a slightly higher degree of anxiety in the relatively older population that falls into the postgraduate group.

In order to identify any disease, it is vital to have a proper understanding of the symptoms in order to seek early medical help and increase chances of better recovery and minimise the high risk of spread. However, it is alarming to find that only 39% of the participants identified all significant symptoms of the coronavirus, i.e. fever, cough and difficulty in respiration. Although fever, cough and myalgia are the most frequently reported symptoms among patients infected with 2019 novel coronavirus in Wuhan, China,[19] 3% also suffered diarrhoea which was also a possible symptom among patients with MERS-CoV.[14]

The level of information regarding origins of transmission of infection and the precautionary steps to be taken was comforting, as 338 (84%) and 312 (78%) responders correctly identified, respectively. The knowledge regarding the latter can be further strengthened as it is meant to be the most critical preventive measures to prevent the spread of infection. One of the significant findings of our study was that two-third of the respondents deemed social media as the primary source of their information followed by television. The least used resource was print media, including newspapers and brochures. A recently published study among healthcare professionals in Pakistan identified the internet followed by social media, as the most sought-after source of coronavirus.[16] Similar to our results, the first sources of information on COVID-19 among Iranian nurses were social applications and the media.[20] This showed the shift in patterns in a decade when the internet was the least sought-after source of information in Pakistan.[21] However, this information would be of great benefit to the public health authorities concerned regarding the spread awareness; they will take extraordinary measures to ensure that any information shared online is reliable, appropriate and error-free.

In the case of an infectious outbreak, it is better to pay more attention to prevention than to identification and response.[22] Raising awareness would not only allow the at-risk community to defend themselves but would also seek early medical attention.[23] The comparative analysis of the MERS outbreak between Saudi Arabia and South Korea showed that access to information was crucial to better control of the epidemic, while the lack of public knowledge further aggravated it.[1] Hence, the rapid distribution of any new information on the virus is, therefore of utmost importance for disease control and prevention.[24] However, it should be assured that any data circulated online is reliable in order to debunk any misconceptions and avoid the spread of fear and paranoia in the vulnerable population.

Some of the drawbacks of this research include the fact that the study was performed in a particular population, and the results may be subject to recollective bias. Also,

within an urban population with better access to the internet and therefore disease information, the level of knowledge of coronavirus may differ from that of other regions of the country, especially the rural population.

Conclusion

This study not only recorded the level of awareness among Pakistan's young adult population but also highlighted the public knowledge gaps for the authorities concerned to help them develop more successful deficit awareness campaigns. The study further pointed out the main channels from which the public derived its knowledge, which could be further used to spread awareness of infectious diseases other than coronavirus in the same population.

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