



Knowledge, Awareness, and Practices among Pakistani Population regarding COVID-19: An Online Survey-Based Study

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Abstract

Aim The study aims to analyze the knowledge, awareness, and practices among the Pakistani population.

Study Method This is an online survey-based study conducted in July 2020 among the general public of Pakistan. Pretested and structured self-administered questionnaire, designed on Google Forms Inc., was used to collect data. The questionnaire included sociodemographic and measurable coronavirus disease 2019 (COVID-19) knowledge data. Assessments on participants' attitudes and practices toward COVID-19 included questions on transmission, symptoms knowledge, and preventive measures.

Results Among the survey completers ($n = 962$) 61% ($n = 590$) were male and 39% ($n = 372$) were female. The majority of participants is aged 18 to 25 and belonged to Punjab. The participants had moderate knowledge regarding disease origin, clinical features, symptoms, and prevention. A vast majority of participants had good knowledge of symptoms and prevention measurements. A good number of participants were also practicing precautionary measures. The majority of participants utilize media and government authorities as authoritative sources of information. The population was also satisfied with the information given by the government.

Conclusion Participants have moderate knowledge regarding the COVID-19 pandemic, reflected by a positive attitude and safe practices. There are gaps in knowledge of the virus, its origin, and transmission. Rumors affect the psychology of people, which may lead to the worst situation of panic conditions.

Keywords

- ▶ COVID-19
- ▶ SARS-CoV-2
- ▶ knowledge
- ▶ prevention
- ▶ public awareness

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Introduction

In the current scenario of coronavirus disease 2019 (COVID-19), Pakistan is also facing a hard challenge in the rising number of COVID-19 cases. The rapid increase in the number of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) cases is due to the substantial delay in the implementation of precautionary measures and preventive strategies. National Action Plan for COVID-19 by the Ministry of Health Services, Regulation and Coordination, Government of Pakistan, and media campaigns initiated for generating awareness and protecting from panic situations. However, it remains unclear that to what extent the public is aware of COVID-19 and how they practice preventive measures. Survey-based study helps to identify the knowledge, attitude, and practices (KAP) of the public. Therefore, the goal of the present research is designed to assess the current status of information, attitude, and practices of the Pakistani population regarding COVID-19. Furthermore, this study will also highlight the awareness level of the public about the cause, spread, and cure through a well-designed multistage questionnaire. Investigating public awareness toward COVID-19 could help to formulate further strong recommendations and effective control policies. Consequently, to reduce and control the spread of the COVID-19 outbreak. Increasing public awareness increases the practices of precautionary measures, hence reducing the risk of virus spread.

Materials and Methods

Design and Sampling

A cross-sectional survey-based questionnaire study was conducted in July 2020. Due to strict lockdown, to implement social distancing, and to reduce the virus spread, investigators followed an online survey method for data collection. The form of sampling based on the questionnaire was a multistage random sampling. The questionnaire was created on Google Forms Inc., and the generated link was shared on WhatsApp groups and investigators' personal and accessible contacts.^{1,2} The survey started on July 10, 2020, and response acceptance was closed on the 26th of July when the target number of 962 responses achieved. The purpose of the survey was written on the questionnaire. Participants were informed that their participation was voluntary, and they can opt-out of participating. The final questionnaire was thoroughly discussed by the authors, and then an online link was shared with the participant for their response. Respondents from all parts of Pakistan, above the age of 18 years, were eligible. The respondents from abroad or out of Pakistan were excluded, to ensure the awareness of the Pakistani population.

Data Collection and Measurement Model

For data collection, both English and Urdu forms, including close-ended and multiple-choice questions, were used. The questionnaire consists of five parts. The question of the questionnaire was designed, to assess sociodemographic characteristics such as age, gender, education, occupation, and location. However, participant's personal information,

such as personal name, address, or emails, were not asked to make the response anonymous. The questionnaire also includes question regarding disease knowledge, transmission, symptoms, prevention, treatment, attitude, practices, and information source. The possible responses on the question of COVID-19 knowledge were "Yes," "No," and "Maybe" or "Don't know." To assess the expected knowledge of the general public, 1 point was given on the correct answer, while no point was given on the incorrect, maybe, or don't know. The participants were grouped into five categories according to the level of their knowledge: excellent (26–30 points), good (21–25 points), moderate (16–20 points), fair (11–15 points), and poor (0–10 points). Questions regarding rumors and myths, listed in the World Health Organization (WHO) Web site under the section "Myth Buster," were also included.³

Statistical Analysis

Data entry and statistical analysis were performed by Microsoft Excel. Descriptive statistics, such as percentages, means, and standard deviations, were calculated.

Results

A total of 962 responses were included in the final study, including 590 (61.3%) male and 372 (38.7%) female (►Table 1). More than half of the respondents (53.6%; $n = 516$) were 18 to 25 years old and 54.6% ($n = 525$) were students. The respondents were from six different regions, with the highest number of responses 63.7% ($n = 613$) from Punjab. Forty percent ($n = 386$) were aware of past coronavirus outbreaks. Many of the respondents 54.6% ($n = 525$) were students, out of these ($n = 525$) students, 79.4% ($n = 417$) were from medical and related background. However, medical-related and other fields related professionals were almost equal, with 50.3% ($n = 144$) and 49.9% ($n = 143$), respectively. Additionally, the majority of participants 65.2% ($n = 627$) belongs to medical and related fields, the remaining 34.8% ($n = 335$) had studied other subjects.

The overall knowledge of participants regarding COVID-19 is reported in ►Table 2. According to the score of respondents' information regarding COVID-19, the majority of participants 55.9% ($n = 538$) had moderate knowledge and were from the age group of 18 to 25 years. A considerable number of participants 28.2% ($n = 271$) possessed good knowledge, 14% ($n = 135$) had fair knowledge, 1.9% ($n = 18$) had excellent knowledge, while there was no participant with poor knowledge. The main source of information was government officials (53.6%), including television or newspaper, and 66% agreed that the government was providing them sufficient information.

The data in ►Table 2 shows the knowledge of disease among participants. Note that 74.7% thought that COVID-19 is a coronavirus and originated from an animal source (30%). The majority (70%) of participants was aware that COVID-19 is a contagious and fatal disease. The participants knew that the virus takes 2 to 14 days to shows its first symptom (90%) and affects the respiratory system (88%). Forty percent of the participants responded that SARS-CoV-2 affects anyone,

Table 1 Sociodemographic characteristics of the study sample

		Total	Male	Female
Sociodemographic characteristics		Number (percentage, %)	Number (percentage, %)	Number (percentage, %)
Age	18–25	516 (53.6)	315 (32.7)	201 (20.9)
	26–35	263 (27.3)	164 (17)	99 (10.3)
	36–45	126 (13.1)	79 (8.2)	47 (4.9)
	46–55	38 (4)	22 (2.3)	16 (1.7)
	56 and above	19 (1.9)	11 (1.1)	8 (0.8)
Qualification	Under matriculation	45 (4.7)	24 (2.5)	21 (2.2)
	Under graduation	344 (35.8)	211 (21.9)	133 (13.8)
	Graduation	191 (19.9)	108 (11.2)	83 (8.7)
	Postgraduate	382 (39.7)	245 (25.5)	137 (14.3)
Occupation	Student	525 (54.6)	327 (34)	198 (20.6)
	Laborer	374 (38.8)	246 (25.6)	128 (13.3)
	Not stated	63 (6.6)	15 (1.6)	48 (5)
Medical and related field	Student	417 (43.4)	251 (26.1)	166 (17.3)
	Laborer	147 (15.3)	104 (10.8)	43 (4.5)
	Unemployed	42 (4.4)	27 (2.8)	15 (1.6)
	Not stated	21 (2.2)	12 (1.3)	9 (0.9)
Other subjects related field	Student	109 (11.3)	76 (7.9)	31 (3.2)
	Laborer	143 (14.9)	91 (9.5)	52 (5.4)
	Unemployed	42 (4.4)	26 (2.7)	16 (1.7)
	Not stated	41 (4.3)	4 (0.4)	37 (3.9)

Table 2 Relation between sociodemographic data and COVID-19 knowledge

Sociodemographic data		Fair knowledge	Moderate knowledge	Good knowledge	Excellent knowledge
		N (%)	N (%)	N (%)	N (%)
Age	18–25	90 (9.4)	294 (30.6)	126 (13.1)	6 (0.6)
	26–35	25 (2.6)	142 (14.7)	89 (9.3)	7 (0.7)
	36–45	14 (1.5)	80 (8.3)	30 (3.1)	2 (0.2)
	46–55	2 (0.2)	10 (1.04)	24 (2.5)	3 (0.3)
	55+	4 (0.4)	12 (1.3)	2 (0.2)	–
Gender	Male	94 (9.8)	340 (35.5)	148 (15.4)	10 (1.3)
	Female	41 (4.3)	198 (20.6)	123 (12.8)	12 (1.3)
Occupation	Student	80 (8.3)	296 (30.8)	143 (14.9)	6 (0.6)
	Professionals	42 (4.4)	212 (22.04)	107 (11.1)	10 (1.04)
	Prefer not to say	13 (1.4)	30 (3.2)	18 (2.1)	2 (0.2)
Subject	Medical related	93 (9.7)	352 (36.6)	176 (18.3)	6 (12)
	Other subjects	42 (4.4)	186 (19.4)	95 (9.9)	12 (1.3)

Abbreviation: COVID-19, coronavirus 2019.

35.5%, and 18% responded that older person and those who have comorbidities are at high risk of catching the virus.

The majority of the participants agreed that maintaining hygiene, social distance, and practicing precautionary measures protects from the disease. The participants' knowledge

regarding washing hands with soap and/or sanitization (97%), covering the face while sneezing or coughing (90%), and strengthen the immune system (80%) was excellent. The participants were agreeable to wear a face mask (59%) and avoid close contact with others (92%).

The majority (61%) of the participants was very concerned from being infected by the COVID-19 virus and 96% had a positive attitude for SARS-Cov-2 prevention (►Table 3). The data obtained from ►Fig. 1 suggests that a good number of participants were practicing precautionary measures. About 28% of participants responded that the Pakistanis were not following precautionary measures provided by the government and WHO.

Discussion

Pakistan is still fighting against the COVID-19 epidemic. To ensure success, people should have to take preventive measures. The purpose of this study was to measure the KAP of the general Pakistani public with regard to the recently emerged

outbreak of COVID-19 infection. This study demonstrated that the outbreak of COVID-19 infection had an emotional impact, and also gain the public's concentration on preventive and precautionary measures and their knowledge about the disease. The self-designed questionnaire was shared with people via WhatsApp, to obtain awareness regarding the origin, spread, transmission, symptoms, treatment, and preventive measures of COVID-19 viral infection. The various sociodemographic characteristics (such as age, gender, qualification, occupation, and region) of the population were also explored to measure the degree of knowledge and awareness with the demographic difference. The current study revealed that the knowledge and awareness level among the Pakistani population was generally moderate (56%) and good (28%) with good practicing of preventive measures. The findings of

Table 3 Responses to the questionnaire on knowledge of COVID-19 disease, origin, transmission, symptoms, treatment, and precautionary measures

		N (%)
Knowledge of etiology of the disease		
COVID-19 is due to	Coronavirus	719 (74.7)
	SARS-CoV-2 ^a	155 (16.1)
	Worst form of flu (influenza virus)	47 (4.9)
	Don't know	41 (4.3)
Knowledge of the transmission of the virus		
The cause or origin of COVID-19 is	Animal origin ^a	291 (30.3)
	Bioterrorism	183 (19)
	Man-made (Mistakenly formed and spread in laboratories)	128 (13.3)
	Modification or mutations in any preexisting virus	207 (21.5)
	Don't know	153 (15.9)
Knowledge of the communicability of the disease		
COVID-19 infection is	A contagious disease and leads to death ^a	676 (70.3)
	A contagious disease and doesn't leads to death	181 (18.8)
	A noncontagious disease and to death	82 (8.5)
	A noncontagious disease and doesn't leads to death	23 (2.4)
Knowledge of the transmission routes of the disease		
Do the person released from Quarantine is at risk of spreading the virus?	Yes	266 (27.7)
	No ^a	259 (26.9)
	Maybe	437 (45.4)
Transmission from blood	Yes	188 (19.6)
	No ^a	573 (59.6)
	Maybe	201 (20.9)
Transmission from mosquitoes	Yes	49 (5.1)
	No ^a	804 (83.6)
	Maybe	109 (11.3)
Transmission from respiratory particles (sneeze, cough, etc.)	Yes ^a	907 (94.3)
	No	39 (4)
	Maybe	16 (1.7)
Knowledge of the incubation period of the disease		

(Continued)

Table 3 (Continued)

		N (%)
What is the incubation period of SARS-CoV-2	2–5 d	58 (6)
	2–14 d ^a	867 (90.1)
	2–19 d	17 (1.8)
	2–27 d	20 (2.1)
Knowledge of symptoms of the disease		
COVID-19 affects which parts of body:	Respiratory system ^a	849 (88.3)
	Brain	5 (0.5)
	Gastrointestinal	65 (6.8)
	Kidneys	20 (2.1)
	Don't know	23 (2.4)
Knowledge of COVID-19 risk		
Who is at more risk to get infected by the COVID-19 virus?	Anyone	385 (40)
	Children	8 (0.8)
	Young	4 (0.4)
	Old people ^a	341 (35.5)
	Those who have symptoms of any other diseases ^a	175 (18.2)
	To specific group of people	49 (5.1)
Knowledge of symptoms of the disease		
Infected persons suffer from:	Runny nose ^a	569 (59.2)
	Sore throat ^a	423 (44)
	Shortness of breath ^a	832 (86.5)
	Ache and pain ^a	311 (32.3)
	Diarrhea and vomiting ^a	184 (19.3)
	Fever and illness ^a	655 (68.1)
Knowledge of disease treatment		
What type of weather kills SARS-CoV-2?	Hot temperature	425 (44.2)
	Cold temperature	33 (3.4)
	Temperature or weather do not affects virus ^a	504 (52.4)
Could antibiotics treat or prevent COVID-19?	Yes	228 (23.9)
	No ^a	734 (76.3)
Vaccine against COVID-19 is:	Available and under use	24 (2.5)
	Available, but not under use	49 (5.1)
	Not available, but under development ^a	88 (92.4)
Do you think that Garlic and Onion are effective to cure against COVID-19?	Yes	103 (10.7)
	No ^a	515 (53.5)
	Maybe	344 (35.8)
Do you think that inhaling water steam treats COVID-19?	Yes	355 (36.9)
	No ^a	223 (23.2)
	Maybe	384 (39.9)
The disease can be treated through:	Supportive treatment at home	368 (38.3)
	Hospitalization ^a	303 (31.5)
	Intensive care unit (ICU)	85 (8.8)
	Ventilators	200 (20.8)
	Yes ^a	771 (80.2)

Table 3 (Continued)

		N (%)
If a person has fever or cough, should he/she seek medical attention?	No	70 (7.3)
	Maybe	121 (12.6)
Knowledge of preventive measures of disease		
Prevention from COVID-19 is possible through	Hand washing with soap ^a	943 (98)
	Using alcohol-based hand sanitizers ^a	937 (97.4)
	Cover nose and mouth when sneezing ^a	863 (89.7)
	Boost our immune system by exercise and healthy diet ^a	775 (80.6)
	There are no preventive measures	18 (1.9)
Wearing mask is necessary	Yes ^a	569 (59.2)
	No	32 (3.3)
	It may depend on the area, whether they are cases of disease or not	361 (37.5)
What you'll prefer?	Wearing disposable mask ^a	783 (81.4)
	Wear cloth cover ^a	140 (14.6)
	Prefer not to cover face	40 (4.2)
Should we have to maintain Social distance?	Yes ^a	888 (92.3)
	No	10 (1)
	It may depend on the area, whether they are cases of disease or not	62 (6.5)
Attitude toward COVID-19		
What do you think about preventive measures against COVID-19?	Stay home, maintain social distance, and practice preventive measures	925 (96)
	Whatever has to happen, will happen even if we stay at home.	4 (37)
Are people obeying official precautionary measures?	Yes	265 (28)
	No	466 (48)
	May be	231 (24)
How much you're concerned of catching COVID-19	Very concerned	591 (61.4)
	Not much concerned	265 (27.6)
	Not concerned at all	106 (11)

Abbreviations: COVID-19, coronavirus 2019; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

^aCorrect answer(s).

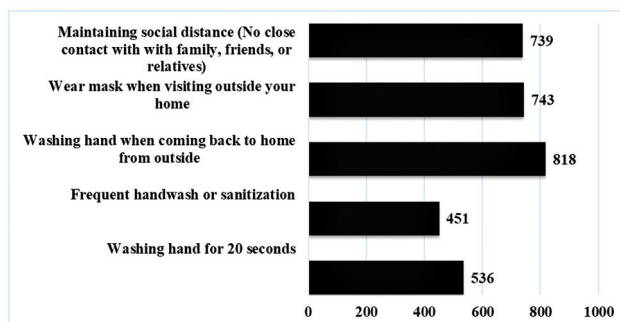


Fig. 1 The frequency of preventive measure practices among participants.

this research show that the participants were aware of the origin (30%), communicability (70%), transmission routes (53%), the incubation period (90%), symptoms (52%), and preventive measures (73%). That was due to the efforts of media and government, as 53% of participants reported government and media as a source of knowledge for them, and 66% were satisfied with the information given by the government authorities. Nearly similar, Waheed et al reported 51% and Bhagavathula et al reported that 60% of people used social media as a source of knowledge.^{4,5} The study conducted by Hussain and colleagues indicates that 29% of participants were strongly satisfied, and 47% were satisfied with the government awareness campaigns.⁶ The

studies done on health care professionals (HCPs) indicated that television (46%) and social media (88%) were sources of information for HCPs.⁷ Our findings were consistent with other findings that reported the use of social media as a source of COVID-19 information.⁷⁻⁹

Our study aimed to thoroughly analyze the level of COVID-19 disease information and its clinical manifestations in the population of Pakistan. The researchers noticed that the population was less knowledgeable regarding the etiology of COVID-19. The majority of participants (75%) reported COVID-19 as coronavirus, and only 15% were aware that SARS-CoV-2 causes COVID-19. SARS-CoV-2 belongs to the family of coronavirus.¹⁰ Our findings demonstrated that the public did not know much about the origin of COVID-19. The data obtained from responses reports the mixed answers on COVID-19 origin. Note that 13 and 21% state COVID-19 as created in laboratory or mutations in preexisting influenza viruses, respectively. Eighteen percent reported COVID-19 as bioterrorism which was far less from the data provided by Mirza et al (55%).⁶ However, COVID-19 is reported to originate from an animal source, possibly from bats.¹¹⁻¹³ The data from responses shows that population knowledge and attitude regarding virus transmission was good, which aligns with the findings of Waheed et al,⁵ Saqlain et al,⁷ and Reuben et al.¹⁴ A good number of respondents knew that COVID-19 cannot be transmitted through mosquitoes (83%) and blood (59.6%), but from respiratory droplets (94%). Studies have shown that blood transfusion did not transmit COVID-19.¹⁵⁻¹⁷ Moreover, fewer participants (30%) were aware that persons released from quarantine or isolation were not carriers of COVID-19, and the majority (45%) were not sure about the risk of spreading the virus from them. The majority of participants knew about the incubation period (90%), symptoms (86%), and development of the vaccine. Ninety-two percent of participants knew that currently there were no vaccines available for infection, which was nearly equal to the response rate by Hussain and colleagues (97%) and Mirza et al (88%).^{7,18} Respondents were also mindful that COVID-19 affects the respiratory system and affects anyone (40%), especially old people (35.5%), and those who had preexisting symptoms of any other disease were at more risk (18%).^{10,12} However, the study by Waheed et al stated that 49.6% participants responded that patients with underlying chronic disease are at more risk of infection.⁵ The responses on the question of symptoms indicate that a vast majority of the participants had knowledge regarding cough, sore throat, shortness of breath, and fever as the signs and symptoms of infection. We measure that 86% of participants knew that shortness of breath as a symptom in COVID-19, which was similar to Hussain and colleagues (86%) but different from Mirza et al (98%).^{6,18} As the vast majority of participants knew the symptoms of COVID-19, therefore we can presume that the population would know when to seek medical assistance.

Participants were also familiar that antibiotics (76%), garlic, and onion (53%) do not treat COVID-19 infection. Mirza et al reported that 90% of respondents were aware that antibiotics were not effective against COVID-19.⁶ But

participants' views regarding the treatment of COVID-19 from inhaling water steam were mixed. Thirty-seven percent answered yes, 40% maybe, and 23% said no, against the question of inhaling water steam. However, none of these were backed by scientific evidence and are considered as myths or rumors. More than half of the participants were aware that neither hot temperature nor cold temperature kills SARS-CoV-2. Participants were also aware that persons having cough or symptoms of flu should seek medical assistance, and COVID-19 infection could be cured under medical attention at hospitals. Thirty-eight percent of people responded that infection could be treated by supportive treatment at home. According to the Centers for Disease Control, mild illness can be treated at home.¹⁹

Various regression analyses interpret participants, concerns, and preventions. Sixty-one percent of respondents were very concerned about catching COVID-19. Our findings revealed that the population was highly informed of preventive and precautionary measures. Almost all participants were aware of washing or sanitizing hand (97%), wearing a mask (60%), maintaining social distance (92%), and cough etiquettes (90%), which was in line with the results of Waheed et al,⁵ Reuben et al,¹⁴ and Khan et al.¹⁸ Four-fifths of respondents reported preferring disposable medical masks. The results of the study show that majority of participants had good prevention practices. The highest good practice was observed in washing hands. Furthermore, wearing masks and social distancing was also followed by participants. On a query regarding preventive measures, 96% of participants agreed to follow precautions to protect themselves and others. A great part of respondents receives information from the media and government. Participants were also satisfied with the information provided by the government. The government and media played a good role in providing sufficient knowledge of COVID-19. Almost all participants were aware of communicability, symptoms, incubation period, and protective behaviors of COVID-19. Besides the COVID-19 pandemic, rumors and misinformation about COVID-19 may lead to a more dangerous pandemic; panics and xenophobia. The panic situations and xenophobia are more dangerous than COVID-19 infection, as they might affect the mental and psychological afflictions.²⁰

Participation in the study was purely on the participant's choice. The demographics of this study represent the demographics of different regions of Pakistan. But the generalization of the results was not possible since it depends on researchers' convenience to share the questionnaire and sample collection. This cross-sectional study was conducted during the lockdown period, and universities were also closed, therefore the institutional review board was not approached. Moreover, the survey was conducted online, so those who had no Internet access were not included in the study.

Conclusion

The majority of participants are aware of symptoms and prevention of COVID-19 suggesting that the population know when to seek medical assistance. In addition, the population is concerned about catching the disease. For an

effective outcome, awareness campaigns need to promote basic education about transmission modes and disease knowledge. This should help in controlling the spread of disease and fighting this emerging epidemic.

Authors' Contributions

All authors contributed to the conception and conduct of the study and to the drafting and finalization of the manuscript.

Ethical Approval

The study was approved by the Ethical Committee of International Islamic University Islamabad.

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Conflict of Interest

None declared.

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