Knowledge, Attitude, and Practices Towards COVID-19 Among Pakistani Population: A Nation-wide Cross-sectional Survey

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Abstract

Objective: The current study was conducted to assess the knowledge, attitude, and practices among the Pakistani population during the COVID-19 pandemic.

Methodology: This was a cross-sectional survey-based study conducted from September 2021 to November 2021, among the general public of Pakistan. A structured pre-tested questionnaire was designed and pre-tested before collecting data. Knowledge, attitude, and practices were the three key dimensions included in the questionnaire. The data from the survey responses were recorded in a Google spreadsheet before being exported and recorded in Microsoft Office Excel 365. Version 23.0 of the Special Package for Social Sciences (SPSS) was used for all quantitative statistical analyses.

Results: Among the survey completers (n=1,000), 60.1% (n=601) were males and 39.9% (n=399) were females. The majority of participants (54.8%) were aged 18-25 years and belonged to the province of Punjab (66.9%). The participants had moderate knowledge of 56.9% (n=538) regarding disease origin, clinical features, symptoms, and prevention. The majority (69%) of participants were aware that COVID-19 is a contagious and fatal disease. The participants (90%) knew that virus takes 2-14 days to show its first symptom and normally affects the respiratory system (88%). The participants' knowledge regarding washing hands with soap or sanitization (98.2%), covering the face while sneezing or coughing (90%), and strengthening the immune system (80%) was excellent. The majority (61%) of participants were concerned about infection with COVID-19 and 96% had a positive attitude toward SARS-CoV-2 prevention.

Conclusion: The present study indicated a moderate level of COVID-19-related knowledge, attitudes, and practices in the Pakistani population.

Keywords: Pakistan, COVID-19, Knowledge, Practices

Introduction

In December 2019 in Wuhan, Hubei Province of China, a patient with viral pneumonia-like symptoms developed coronavirus disease (COVID-19), a severe acute respiratory disease.[1] The pathogen causing the infection is known as acute respiratory syndrome coronavirus-2 (SARS-CoV-2) and is a novel coronavirus (nCoV) that was first given a tentative name.[2] A global health emergency was caused by this extremely infectious virus, which spread quickly to most of the world's countries after beginning its infections in a tiny city. On March 12, 2020, the World Health Organization (WHO) issued a call for a coordinated effort to address the issue and designated it a worldwide pandemic.[3] As of October 9, 2022, the deadly COVID-19 virus had been confirmed in 618 million cases and caused 6.5 million fatalities worldwide[4]

The WHO has stressed the significance of accurate, unambiguous COVID-19-related health information as a strategy of eradicating future COVID-19 outbreaks by

eradicating myths, reducing fear, preventing prejudice, and other negative effects of the disease.[5]

The healthcare systems of all countries, whether developed or developing, are under tremendous stress due to the exponential increase in the number of cases. Initial efforts also indicated that the Medicare initiative would not be significant enough to address the issue on its own. The extra difficulty of ineffective, unprepared health systems to accommodate active patients in medical facilities has been experienced by developing or impoverished nations. The quick lockdown measure, which was adopted by other nations, was seen as a crucial effort to stop the virus from spreading. In order to limit social interactions and the spread of the virus among the population, the Pakistani authorities prepared a severe nationwide lockdown. This action had the additional benefit of lessening the strain on the nation's healthcare system and giving time for that system's readiness. The regulations included a total ban on travel, non-essential activity, and movement. The government regulations, which are continuously being changed, controlled these unexpected limits and caused panic and confusion in the public. This encouraged migrant workers to travel vast distances to their hometowns, potentially raising the risk of infection in other cities. Understanding knowledge, attitudes, and practices (KAP) at the macro and micro levels will enable individuals to participate in these interventions as intended, which will determine the efficacy of any anti-contagion measure.[6]

So, for implementing these interventions effectively, public education is considered one of the most significant efforts that can vastly help, as has been the case regarding MERS[7] or SARS.[8] In order to enlighten the public and give correct, authentic information about COVID-19, the Ministry of National Health Services, Regulations and Coordination (M/o NHSR&C) and the provincial health departments took certain decisive initiatives.

Many people are suspicious and concerned about the poor testing and blatant under-reporting of COVID-19 cases in Pakistan, despite the fact that official figures indicate that the growth in the number of cases and deaths has been controlled.[9]

Assessment of population knowledge, attitudes, and practices (KAP) is a crucial first step in putting behavioural change interventions into practice since it shows how open the community is to change. It offers the fundamental knowledge and deeper understanding needed to address the myths, harmful practices, and knowledge gaps surrounding the condition, and it clarifies the need for changes to prevention programmes and health awareness campaigns. Studies on the current COVID-19 pandemic with KAP-based study design and variable study populations have been published in several countries as well as from Pakistan. These studies include a wide range of disorders, including infectious diseases. However, most of the studies10-12 focused on the healthcare sectors, and little was known about population-based studies.

The focus of the current study was the Pakistani population's assessment for Knowledge, Attitude, and Practice (KAP) towards COVID-19. The study's findings and observations tried to shed light on the necessity of proactive activities focused on societal readiness to adhere to pandemic management measures.

Materials and Methods

The knowledge, attitudes, and practices of the Pakistani people were examined using a quantitative technique based on cross-sectional analysis. It is generally agreed upon that an online survey is the most suitable and practical technique for gathering data from a sizable sample of geographically diversified respondents.[13,14] As a result, from September 2021 to November 2021, data for this study were collected online utilizing the Google Forms online tool. Using the author's personal and professional networks, as well as the support of numerous public and private employees, student leaders, and teachers of higher education institutions from all provinces of Pakistan, participants were invited to voluntarily participate in this research via social media.

The sample size was calculated through a single population proportion formula at a 95% confidence level assuming the proportion of the population with good knowledge to be 50% and considering a 5% margin of error and design effect of 3. The final sample size was 1,000 after adding a 10% non-response rate as assessed by using the online available calculator Open-Epi.

The objective of the survey was written on the questionnaire. The eligibility requirements for survey participants were being of Pakistani nationality (and residing in a Pakistani region), being at least 18 years old, and giving agreement to participate. Individuals under the age of 18, non-Pakistanis, and those unable to grasp the survey language were not allowed to participate in the study.

Knowledge, attitude, and practices were the three key dimensions included in the questionnaire. A structured questionnaire was formulated based on available literature.[15-16] The possible responses to 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 for the correct answer, while no point was given for 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 rumours and myths, listed on the WHO website under the section 'Myth Buster', were also included.

To measure attitudes linked to COVID-19, the perceived risk of COVID-19 infection (three items) comprising perceived susceptibility was assessed.

The attitude statements were scored by "Yes", "No" or "Don't know". Further the "No" and "Don't know" replies were coded as zero, indicating a negative attitude, while "Yes" replies were coded as 1, indicating a positive attitude. Accordingly, the score for attitude towards COVID-19 ranged from zero to 3, where a total score of zero meant a negative attitude and a score of 1–3 indicated a positive attitude in any of the three scenarios.

The data from the survey responses were recorded in a Google spreadsheet before being exported and recorded in Microsoft Office Excel 365.

Summary statistics were reported as means, standard deviations, and frequencies after descriptive analysis was conducted on pertinent outcomes and attributes. For comparative studies of participant frequency in various demographic variables, the chi-square (χ2) test of independence was used.

Using an independent samples t-test, the demographic variables' domain mean scores for knowledge, attitude, and practice were compared. Version 23.0 of the Special Package for Social Sciences (SPSS) was used for all quantitative statistical analyses.

Results

A total of 1,039 responses were received, out of which 1,000 were complete (96.24% completion rate) and included in the study. These 1,000 responses included 60.1% (n=601) males and 39.9% (n=399) females (Table 1).

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 belonged to the age group of 18-25 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.

About 74.7% thought that COVID-19 disease is a coronavirus and originated from an animal source (30%). The majority (70%) of participants were aware that COVID-19 is a contagious and fatal disease.

The participants knew that virus takes 2-14 days to show its first symptom (90%) and affects the respiratory system (88%). 40% of the participants respond that SARS-CoV-2 affects anyone, 35.5%, and 18% respond that old people and those who have symptoms of any other diseases are at high risk of catching the virus, respectively. The majority of the participants agreed that maintaining hygiene, social distancing, and practising precautionary measures protect from disease.

The pparticipant'sknowledge regarding washing hands with soap or sanitization (97%), covering the face while sneezing or coughing (90%), and strengtheningthe immune system (80%) was excellent. The participants agreed to wear a face mask (59%) and avoid close contact with others (92%). The majority (61%) of participants were concerned about infection with COVID-19 and 96% had a positive attitude ftowardSARS-CoV-2 prevention. The data obtained from depicts that mthe ajority of the participants were practicing precautionary measures.

Discussion

To ensure success against the challenge of COVID-19, the public have to practice preventive measures. The current study demonstrated that the outbreak of COVID-19 had an emotional impact, and also gain the public's concentration on preventive and precautionary measures and their knowledge about the disease.

The questionnaire was shared with people via social media, to obtain awareness regarding the origin, spread, transmission, symptoms, treatment, and preventive measures of COVID-19 viral infection. The various socio-

TABLE 1: Socio-demographic characteristics of the study sample

Socio-demographic Characteristics		Total Number (N)	%	Male Number (N)	%	Female Number (N)	%
Age	18-25	520	52.0%	316	52.7%	204	26.9%
	26-35	290	29.0%	180	17.04%	110	10.3%
	36-45	126	12.6%	79	8.2%	47	4.9%
	46-55	45	0.45%	15	2.3%	30	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 (B.A. / BS, etc.)	191	19.9%	108	11.2%	83	8.7%
	Masters or higher degree	382	39.7%	245	25.5%	137	14.3%
Occupation	Student	525	54.6%	327	34%	198	20.6%
	Working Persons	374	38.8%	246	25.6%	128	13.3%
	Prefer not to say	63	6.6%	15	1.6%	48	5%
Region	Azad Jammu and Kashmir	107	11.1%	84	8.7%	23	2.4%
	Baluchistan	22	2.3%	20	2.1%	2	0.2%
	Gilgit Baltistan	11	1.1%	7	0.7%	4	0.4%
	Islamabad	91	9.5%	47	4.9%	44	4.6%
	Khyber Pakhtunkhwa	76	7.9%	50	5.2%	26	2.7%
	Punjab	613	63.7%	357	37.1%	256	26.6%
	Sindh	42	4.4%	24	2.5%	18	1.9%

Table 2: Responses to the questionnaire on knowledge of COVID-19 disease, origin, transmission, symptoms, treatment, and precautionary measures

		Number	%
Knowledge of etiology of the disease			
COVID-19 is due to	Coronavirus	719	74.7%
	SARS-CoV-2*	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*	291	30.3%
	Bioterrorism	183	19.02%
	Man-made (Mistakenly formed and spread due to lab experiments)	128	13.3%
	Modification or mutations in any pre-existing 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*	676	70.3%
	A contagious disease and doesn't leads to death	181	18.8%
	A non-contagious disease and to death	82	8.5%
	A non-contagious 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*	259	26.9%
	Maybe	437	45.4%
Transmission from blood	Yes	188	19.6%
	No*	573	59.6%
	Maybe	201	20.9%
Transmission from mosquitoes	Yes	49	5.1%
	No*	804	83.6%
	Maybe	109	11.3%
Transmission from Respiratory particles (sneeze, cough etc.)	Yes*	907	94.3%
	No	39	4.05%
	Maybe	16	1.66
Knowledge of the incubation period of the disease			
What is the incubation period of SARS-CoV-2	2-5 days	58	6.01%
	2-14 days*	867	90.1%
	2-19 days	17	1.8%
	2-27 days	20	2.1%
Knowledge of symptoms of the disease			
COVID-19 affects which parts of body:	Respiratory system*	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*	341	35.5%
	Those who have symptoms of any other diseases*	175	18.2%
	To specific group of people	49	5.1%
Knowledge of symptoms of the disease			
Infected persons suffer from:	Runny nose*	569	59.2%
	Sore throat*	423	44%
	Shortness of breath*	832	86.5%
	Ache and pain*	311	32.3%
	Diarrhea and vomiting*	184	19.3%
	Fever and illness*	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 affect virus*	504	52.4%
Could antibiotics treat or prevent COVID-19?	Yes	228	23.9%
	No*	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*	889	92.4%
Do you think that Garlic and Onion are effective to cure against COVID-19?	Yes	103	10.7%
	No*	515	53.5%
	Maybe	344	35.8%
Do you think that inhaling water steam treats COVID-19?	Yes	355	36.9%
	No*	223	23.2%
	Maybe	384	39.9%
The disease can be treated through:	Supportive treatment at home	368	38.3%
	Hospitalization*	303	31.5%
	Intensive Care Unit (ICU)	85	8.8%
	Ventilators	200	20.8%
If a person has fever or cough, he/she should seek medical attention?	Yes*	771	80.2%
	No	70	7.3%
	Maybe	121	12.6%

Attitude towards COVID-19

Do you think that staying home, maintaining social distance, and practicing preventive measures prevent against COVID-19?	Yes	925	96.1%
	No	35	3.63%
	Don't know	2	0.20%
Are people obeying official precautionary measures?	Yes	265	28%
	No	466	48%
	Don't know	231	24%
Are you concerned of catching COVID-19	Yes	591	61.4%
	No	265	27.6%
	Don't know	106	11.02%

* = correct answer(s)

Knowledge of preventive measures of disease

Prevention from COVID-19 is possible through	Hand washing with soap*	943	98.03%
	Using alcohol-based hand sanitizers*	937	97.4%
	Cover nose and mouth when Sneezing*	863	89.7%
	Boost our immune system by exercise and healthy diet*	775	80.6%
	There are no preventive measures	18	1.9%
Wearing mask is necessary	Yes*	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*	783	81.4%
	Wear cloth cover*	140	14.6%
	Prefer not to cover face	40	4.2%
Should we have to maintain Social distance?	Yes*	888	92.3%
	No	10	1.04%
	It may depend on the area, whether they are cases of disease or not	62	6.5%

demographic characteristics (such as age, gender, qualification, occupation, and region) of the population were also explored to measure the degree of knowledge and awareness of 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 practising of preventive measures. The findings of this research showed that the participants were aware of origin (30%), communicability (70%), transmission routes (53%), the incubation period (90%), symptoms (52%), and preventive measures (73%). That was due to the efforts of social media and the government, as 53% of participants had reported the government and media as a source of knowledge, and 66% were satisfied with the information provided by government authorities. Similar findings have been reported by Waheed et al., (51%) and Bhagayathula et al., (60%) about people using social media as a source of knowledge.[17,21] On the other hand, a study conducted by Hussain et al., indicated that 29% of participants were strongly satisfied, and 47% were satisfied with the government awareness campaigns.[22] The studies conducted with Health Care Professionals (HCPs) indicated that television (46%) and social media (88%) were sources of information for HCPs.[23] Our findings were consistent with earlier findings that reported the use of

social media as a source of COVID-19-related information.[23-25]

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 the coronavirus, and only 15% were aware that SARS-CoV-2 causes COVID-19. COVID-19 is an infection caused by SARS-CoV-2, which belongs to the family of coronavirus.[26] Our findings demonstrated that the public had little information about the origin of SARS-CoV-2. The data obtained from responses reports the mixed answers on COVID-19 origin. About 13% and 21% state COVID-19 as created in laboratory or mutations in pre-existing influenza viruses, respectively. About 18% reported COVID-19 as bioterrorism which was far less from the results reported by Ladiwala et al., (55%).[22] However, COVID-19 is reported by Chinese authorities to have been originate from the animal source, possibly from bats.[27-29] The data from responses showed that population knowledge and attitude regarding virus transmission was good, which aligns with the findings of Waheed et al., 2020,[17] Saqlain et al., 2020,[23] and Reuben et al., 2020.[30] A good number of respondents knew that COVID-19 cannot be transmitted through mosquitoes (83%) and blood (59.6%), but from respiratory droplets (94%). Some preliminary studies have already shown that SARS-CoV-2 is not transmissible through blood transfusions.[31-33] Fewer participants (30%) were aware of the fact 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. About 92% of participants knew that currently there were no vaccines available for infection, which was nearly equal to the response rate by Hussain et al., 2020 (97%) and Ladiwala et al., 2020 (88%).[23,24] The respondents were also mindful that COVID-19 affects the respiratory system and affects anyone (40%), especially old people (35.5%), and those who had pre-existing symptoms of any other disease were at more risk (18%).[26,28] However, the study by Waheed et al., 2020 stated that 49.6% participants responded that patients with underlying chronic disease are at higher risk of infection.[17] The responses on the question of symptoms indicated that a vast majority of the participants had knowledge regarding cough, sore throat,

shortness of breath, fever as the signs and symptoms of infection. We measured that 86% of participants knew that shortness of breath is a symptom of COVID-19, which was similar to Hussain et al., (86%) but different from Ladiwala et al., (98%).[22,34] As the vast majority of participants knew about the symptoms of COVID-19, therefore, we can presume that the population would know when to seek medical assistance.

The study participants were also familiar that antibiotics (76%), garlic, and onion (53%) do not treat COVID-19 infection. Ladiwala et al., reported that 90% of respondents were aware that antibiotics were not effective against COVID-19.[22] However, participants' views regarding the treatment of COVID-19 from inhaling water steam were mixed. 37% 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. About 38% of people responded that infection could treat by supportive treatment at home. According to the CDC, mild illness can recover at home.[35]

Various regression analysis interprets participants, concerns and preventions. 61% of the 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 results reported by Waheed et al.,[17] Reuben et al.,[30] and Khan et al.[34] 4/5 respondents reported preferring disposable medical masks. The results of the study show that majority of participants had good prevention practices. The uppermost 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 the participants agreed to follow precautions to protect themselves and others. A great number of respondents receive 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.[36]

Conclusion

The vast majority of participants knew about the disease and were aware of symptoms and prevention. As the vast majority of participants knew about symptoms of COVID-19, therefore we can presume that the population would know when to seek medical assistance. From the data of responses, we can also conclude that the population was serious about acquiring the disease. However, our data indicated improvement in awareness about disease origin, treatment, and also transmission routes. For an effective outcome, awareness campaigns need to promote basic education about transmission modes and disease knowledge. This will help to be very beneficial in controlling the spread of disease and fighting this emerging epidemic.

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