

Coronavirus Pandemic

Knowledge, attitude and preventive practices related to COVID-19 among health professionals of Punjab province of Pakistan

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Abstract

Introduction: Considering health professionals among high-risk individuals, we aimed to evaluate their knowledge, attitude and practices (KAP) regarding COVID-19.

Methodology: This cross-sectional study was conducted among the health professionals (medical doctors, nurses, pharmacists, physiotherapists, hospital technicians and technologists) providing services at seven hospitals of Punjab province of Pakistan. A self-administered questionnaire was used to evaluate knowledge, attitude and practices regarding COVID-19.

Results: All of the participants (N = 429) reported that they were aware of COVID-19 and social media was the major source (65%) of this information. Mean knowledge score was 12 ± 2.1 , with 75.5% of participants having satisfactory knowledge. Doctors were found to have significantly better knowledge scores than the other health professionals ($p = 0.001$). Mean attitude score was 8.0 ± 1.2 , with a wide majority of health professionals (86.5%) having positive attitudes. Regarding preventive practices, around 64% reported of always covering nose and mouth with a tissue paper during sneezing or coughing and nearly 65% disposed of the dirty tissue paper in trash bin. Only 40% of the participants reported that 'if they do not have tissue, they cough or sneeze into upper sleeves'. Around 45% reported that they used face mask during their working hours in hospitals nowadays. Mean practice score was 23.3 ± 3.6 , with 73.4% of health professionals having satisfactory practices.

Conclusions: The overall COVID-19 related KAP of Pakistani health professionals are satisfactory, however some misperceptions and malpractices uncovered in the present study must be addressed to effectively combat COVID-19.

Key words: Coronavirus; COVID-19; health professionals; Pakistan.

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Introduction

Coronaviruses were discovered in mid 1960s and named corona due to the presence of crown-like spikes on their surface [1]. These are large, enveloped and positive-strand RNA viruses that are classified into four genera namely alpha, beta, delta, and gamma. Of these, alpha and beta coronaviruses are known to infect humans [2]. Human coronaviruses were previously considered relatively harmless respiratory pathogens. This changed in 2002 when highly pathogenic SARS-CoV (severe acute respiratory syndrome coronavirus) was discovered in China and affected 33 countries with more than eight thousand cases and 747 deaths [3,4]. A decade later, another highly pathogenic coronavirus (Middle East respiratory syndrome coronavirus

(MERS-CoV)) was discovered in the Kingdom of Saudi Arabia which affected more than a dozen of countries. As of November 2019, there were a total of 2494 cases and 858 deaths due to MERS-CoV [5]. In December 2019, a novel strain of coronavirus, formerly called 2019-nCoV and then named SARS-CoV-2, emerged in Wuhan, China. This virus shared 79.5% of genetic sequence with SARS-CoV and had 96.2% homology to a bat coronavirus [6]. Moreover, it shared the same entry receptor, human angiotensin-converting enzyme 2, with SARS-CoV [7]. The new coronavirus disease (COVID-19) spread like a rapid wildfire and became a pandemic within a couple of months.

China is located in the northeast of Pakistan and both countries share more than 500 kilometers border.

Thousands of Chinese visitors come to Pakistan on a daily basis for the purpose of tourism as well as for the technical support for China Pakistan Economic Corridor. Moreover, Pakistan shares 959 kilometers porous border with Iran which has the second highest number of COVID-19 cases in Asia [8]. Hence, the likelihood of corona infection in Pakistan was overwhelmingly high. In Pakistan, the first case of COVID-19 appeared in late February 2020. As of 18 March 2020, there were 187 confirmed cases of COVID-19 in Pakistan and all of these were imported cases [8]. This caused a great deal of fear and unrest in the general public and health professionals all across the country. Since health professionals are the frontline forces against any disease outbreak, they are at high-risk for contracting it. Therefore, the current study was conducted to evaluate knowledge, attitude and practices related to COVID-19 among Pakistani health professionals to identify the areas that require improvement; misconceptions, misperceptions and malpractices. This study may assist health regulatory authorities to take necessary steps to increase health professionals' safety and their ability to deliver best care.

Methodology

Study design, participants and settings

This cross-sectional study was conducted among the health professionals (medical doctors, nurses, pharmacists, physiotherapists, hospital technicians and technologists) providing services at seven hospitals of Punjab province namely Gulab Devi Hospital, Lahore, District Headquarter (DHQ) Hospital Sahiwal, DHQ Hospital Pakpattan, DHQ Hospital Sheikhpura, Tertiary Headquarter (THQ) Hospital Wazirabad, THQ Hospital Arifwala and THQ Hospital Depalpur. A convenient sampling method was used to recruit the participants (22nd February to 12th March, 2020). Investigators approached health professionals at the aforementioned study settings and briefed them about the intent of the study. Those who were willing to take part in the study were administered the questionnaire.

Ethical considerations

The protocol of the present study was reviewed and approved by the Research Ethics Committee of the Department of Pharmacy Practice, Faculty of Pharmacy, The University of Lahore. Moreover, provisional approvals were also obtained from the administration of the study settings and research was conducted in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its

later amendments. A written informed consent was obtained from every participant prior to their recruitment. Moreover, all current COVID-19 preventive measures were used during data collection.

Outcome measures

Health professionals' knowledge, attitude and practices related to COVID-19 were evaluated by a 47-item self-administered questionnaire designed from the published literature [7, 9-13]. The questionnaire was reviewed by an expert panel for clarity and relevance of all the questions and their response options. After incorporating the changes suggested by the expert panel, the questionnaire was used for the evaluation of knowledge, attitude and practices regarding COVID-19 among Pakistani health professionals. The final questionnaire had five sections.

- Section-I: Five items to gather demographic details of the study participants.
- Section II: Seventeen questions to explore health professionals' knowledge of COVID-19. This section had multiple choice as well as "Yes", "No" or "Do not know" questions. The first two questions of this section were "Have you heard of the ongoing COVID-19 outbreak?" and "If yes, what was the source of this information?" Those who answered "Yes" to the first question were asked to provide their response to other fifteen COVID-19 related knowledge questions. Knowledge score was calculated by giving 1 point for every right answer and zero point for every wrong answer (score range 0-15). Participants with score ≥ 11 were considered having adequate knowledge.
- Section-III: Nine questions to assess the perception of the study participants.
- Section-IV: Nine questions having a 4-point Likert scale (strongly disagree to strongly agree) to evaluate attitude of participants' toward COVID-19. Attitude score was calculated by giving 1 point for every positive response and zero point for every negative response. Possible attitude score ranged 0-9; participants with score ≥ 7 were considered to have good attitude.
- Section-V: Seven questions having a 4-point Likert scale (1; never to 4; always) to evaluate the practices related to COVID-19. Possible practices-related score ranged 7-28; participants with score > 21 were considered to have good practices.

Statistical analysis

All data were entered and analyzed using Statistical Package for Social Sciences version 22.0 (IBM-SPSS

Inc., Armonk, NY). Number and percentages were calculated for categorical variables, whereas mean \pm standard deviation (SD) were expressed for continuous variables. P-values were determined by independent t test or analysis of variance, where applicable, to determine the significance of the results and a P value of less than 0.05 was considered statistically significant.

Results

A total of 458 health professionals were approached and 429 were recruited, with a response rate of 93%. Demographic details of the study sample are shown in Table 1. The mean age of the participants was 29.8 ± 5.7 years, with majority of females (74.8%). Around 42% were medical doctors whereas frequency of nurses and pharmacists were 38% and 14.9%, respectively. All of the participants (100%) reported that they were aware of the ongoing COVID-19 outbreak and social media was the major source (65%) of their information.

Mean knowledge score was 12 ± 2.1 (range 4-11), with 75.5% of participants having good knowledge of COVID-19. Doctors were found to have significantly better knowledge scores than that of the other health professionals ($p = 0.001$). Moreover, health professionals from secondary care hospitals had better

knowledge scores than the tertiary care hospitals (Table 2). As shown in Table 3, around 50% health professionals were afraid of the disease. Of them, majority (60.1%) was afraid because 'COVID-19 is highly contagious' followed by 'it has no cure' (16.8%) and 'it is a new disease' (15.6%). Around 61% participants believed in that media were exaggerating COVID-19 whereas nearly 39% believed that some fruits, vegetables, beverage and herbs could cure or prevent COVID-19.

Mean attitude score was 8.0 ± 1.2 (range 4-9), with a wide majority of health professionals (86.5%) having positive attitudes toward COVID-19. As shown in Table 2, there was a statistically significant difference of attitude score among age ($p = 0.031$), gender ($p < 0.001$), hospital ($p < 0.001$) and participant categories ($p = 0.007$).

Regarding the preventive practices, mean score was 23.3 ± 3.6 (range 10-28), with 73.4% (315/429) of healthcare professionals having good practices. Comparisons of practices score among various demographic variable showed that there was no significant difference of COVID-19 practice score among age, gender, working experience and participant categories.

Table 1. Characteristics of the study sample.

Variables	Subgroups	N (%)
Age (years)	≤ 25	95 (22.1)
	26-30	184 (42.9)
	31-35	84 (19.6)
	36-40	47 (11.0)
	> 40	19 (4.4)
Gender	Male	108 (25.2)
	Female	321 (74.8)
Participants' category	Medical doctor	178 (41.5)
	Physiotherapist	6 (1.4)
	Pharmacist	64 (14.9)
	Nurse	163 (38.0)
	Technologist/technician	18 (3.2)
Type of hospitals	Tertiary care hospital	243 (56.6)
	Secondary care hospital	186 (43.4)
Working experience (years)	≤ 3	186 (43.4)
	4-6	115 (26.8)
	7-10	77 (17.9)
	11-14	25 (5.8)
	≥ 15	26 (6.1)
	Have you heard of the recent corona disease (COVID-19) outbreak?	Yes
Source of information	No	--
	Friends/family/relatives	33 (7.7)
	Social media	279 (65.0)
	Television/radio	103 (24.0)
	Newspapers	8 (1.9)
	Others	6 (1.4)

Table 2. Comparisons of knowledge, attitude and practice score among demographic variables.

Variables	Subgroups	Mean score \pm SD		
		Knowledge	Attitude	Practices
Age (years)	≤ 25	11.1 \pm 2.4	7.8 \pm 1.4	23.0 \pm 3.4
	26-30	12.1 \pm 2.1	8.1 \pm 1.1	23.3 \pm 3.4
	31-35	12.4 \pm 1.8	8.0 \pm 1.4	23.7 \pm 4.2
	36-40	12.3 \pm 1.8	8.0 \pm 0.9	23.8 \pm 3.0
	> 40	11.9 \pm 2.1	7.3 \pm 1.2	21.3 \pm 4.2
	P-value	0.101	0.031	0.078
Gender	Male	12.1 \pm 2.1	7.6 \pm 1.4	22.2 \pm 4.0
	Female	11.9 \pm 2.1	8.1 \pm 1.2	23.7 \pm 3.4
	P-value	0.739	< 0.001	0.057
Participants' category	Doctor*	12.7 \pm 1.9	8.1 \pm 1.1	23.9 \pm 3.3
	Nurse	11.6 \pm 1.9	8.0 \pm 1.2	23.4 \pm 3.8
	Pharmacist	11.3 \pm 2.6	7.8 \pm 1.4	21.5 \pm 3.3
	Technologist/technician	10.9 \pm 2.4	7.0 \pm 1.5	22.4 \pm 3.5
	P-value	0.001	0.007	0.09
Type of hospitals	Tertiary care hospital	11.8 \pm 2.3	7.8 \pm 1.4	23.0 \pm 3.8
	Secondary care hospital	12.1 \pm 1.9	8.2 \pm 1.0	23.8 \pm 3.2
	P-value	0.05	< 0.001	0.044
Experience (years)	≤ 3	11.8 \pm 2.4	8.1 \pm 1.2	23.2 \pm 3.5
	4-6	11.9 \pm 1.9	7.9 \pm 1.3	23.1 \pm 3.3
	7-10	12.5 \pm 1.8	8.1 \pm 1.0	24.0 \pm 4.0
	11-14	12.0 \pm 1.4	8.0 \pm 1.1	23.8 \pm 3.5
	≥ 15	11.6 \pm 2.1	7.3 \pm 1.2	22.5 \pm 4.0
	P-value	0.004	0.203	0.272

*both medical doctors and doctor of physiotherapy.

Table 3. Response of study participants' to COVID-19 perception questions.

Items	Response options	N (%)
Are you afraid of COVID-19?	Yes	214 (49.9)
	No	215 (50.1)
If yes, why are you afraid of COVID-19?	No cure	42 (19.6)
	Is highly contagious	128 (59.8)
	Is a new disease	24 (11.2)
	No preventive methods	20 (9.3)
Do you believe the media is over-estimating COVID-19?	Yes	260 (60.6)
	No	169 (39.4)
Why has it been difficult to stop the spread of COVID-19?	Lack of awareness	210 (49.0)
	Inadequate health personnel	95 (22.1)
	Porous borders	82 (19.1)
	International travelers	42 (9.8)
Do you think COVID-19 can be brought under control in 2020?	Yes	276 (64.3)
	No	153 (35.7)
Do you think that people suspected to have COVID-19 should be quarantined?	Yes	366 (85.3)
	No	63 (14.7)
Do you believe there are some foods that can effectively cure or prevent COVID-19?	Yes	167 (38.9)
	No	262 (61.1)
Do you think thermal surveillance/screening of passengers at air or sea ports can prevent the spread of COVID-19?	Yes	321 (74.8)
	No	108 (25.2)
Do you think it is safe to visit a country with reported COVID-19?	Yes	72 (16.8)
	No	357 (83.2)

However, health professionals from secondary healthcare centers had better practices score than those from tertiary care centers (Table 2).

Discussion

This study was started before the first case of COVID-19 was reported in Pakistan (February 26, 2020) and a complete lock-down was imposed (March 23, 2020) and aggressive measures were taken by the authorities to disseminate information related to the disease. Therefore, our findings may provide baseline information regarding the knowledge, attitude and preventive practices related to COVID-19 among Pakistani health professionals. Our findings revealed that although Pakistani healthcare workers possessed satisfactory COVID-19 knowledge, attitude and practices but there were some misconception, misperceptions and malpractices. COVID-19 spreads from infected individual to others through respiratory droplets while sneezing or coughing, unwashed hands and sometimes as a result of touching contaminated surfaces [3,14]. Mean incubation period has been reported to be 5.2 days (95% confidence interval: 4-7 days) [15], however, the Centers for Disease Control and Prevention (CDC) suggests it can range from 2-14 days [16]. Most common symptoms of COVID-19 are fever, fatigue, and dry cough, with one third patients experiencing shortness of breath [9,10]. Other symptoms include myalgias, headache, sore throat, and diarrhea [10]. Although majority of COVID-19 cases have been reported to be mild (no pneumonia or mild pneumonia) but 14% were severe and 5% were critical (respiratory failure, septic shock, and/or multiple organ dysfunction) [17]. The elderly, chronic disease sufferers (e.g. hypertension, diabetes, cardiovascular, cerebrovascular disease and chronic respiratory diseases) and health professionals are at greater risk of COVID-19 [10,17]. In the present study, around 71% health professionals were aware of COVID-19 incubation period, 93.7% knew the common symptoms, around 63% knew that myalgia, sore throat, and diarrhea could also be possible symptoms of COVID-19, and more than 90% were aware of high-risk individuals. To date, management of COVID-19 has been largely supportive. Antivirals and antibiotics are used in serious cases but the effectiveness of antivirals is unproven. In the present study, approximately 25% health professionals reported that antibiotics were the first-line treatment for COVID-19. Moreover, 21.4% of the study participants did not know that there was no vaccine for COVID-19 till date. Regarding the preventive practices of participants', around 37%

(never = 4.7%, rarely = 10.3% and sometimes = 21.7%) reported of not always covering their nose and mouth with a tissue during sneezing or coughing, 34.7% (never = 4%, rarely = 7% and sometimes = 23.8%) reported of not always disposing of the contaminated tissues in the bin, and nearly 61% (never = 16.1%, rarely = 12.6% and sometimes = 31.9%) of health professionals reported of not coughing or sneezing in the upper sleeve. Around 39% participants' (never = 5.6%, rarely = 10.7% and sometimes = 22.8%) reported they did not avoid touching their face with contaminated hands after sneezing or coughing. Only 56% participants' reported that they always washed their hands, with soap and water, quickly after coughing or sneezing or touching contaminated objects like a tissue paper. In the present study, 45% health professionals reported that they were using face mask during their working hours in hospitals or when in crowds. These findings draw attention of the authorities to do the needful for enforcing compliance with preventive practices.

This study had some limitations. First, the study was conducted among health professionals of the central Punjab, Pakistan. Second, a self-completed questionnaire was used to collect data so response bias and sampling bias might exist. Third, we employed convenience sampling to conduct a quick survey due to the time limitation of the epidemic. Therefore, our findings may not be easily generalizable to the entire Pakistani health professionals' population. It is pertinent to mention that this study was conducted in the beginning of COVID-19 outbreak in Pakistan. As the awareness of a particular disease is swayed by the gravity of the situation, given that COVID-19 has been declared a pandemic, its cases has risen significantly in Pakistan [85264 confirmed cases (active cases = 53366, recovered = 30128 and deaths = 1770 [18]) as of June 4, 2020], and the authorities have been relentlessly providing information related to COVID-19 to not only health professionals but also to the general public, the existing scenario of knowledge, attitudes and practices may have improve significantly.

Conclusions

Our findings reveal that knowledge, attitude and practices of Pakistani health professionals are satisfactory regarding COVID-19. However, some misconceptions (mode of transmission, preventive measures, treatment and vaccine), misperceptions (some foods or herbs can cure or prevent COVID-19) and malpractices (respiratory etiquette, hand hygiene and use of face mask) exist that need to be addressed in order to effectively combat COVID-19 pandemic.

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Authors' contributions

MS and KH conceived and designed the study. MS conducted literature review. NA, ZUM, HAZ, and ZS collected data. MS, NS, KH and ZUM analyzed and interpreted data. MS drafted the manuscript and TMK critically revised the manuscript. All authors' approved the manuscript for submission.

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