Short Communication

Knowledge, Risk perception and Information Sources regarding COVID-19 among Allied Healthcare Workers in Peshawar

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Abstract

Background: The COVID-19 outbreak has caused concerns for both general masses and healthcare workers globally and brought much of anxiety and fear, further complicated by the "infodemic" phrase. In this study the core elements such as knowledge and risk perception of healthcare workers were evaluated and also determined where they obtained COVID-19 related information.

Methods: A web-based survey was conducted among allied healthcare workers in major tertiary care facilities in Peshawar, Khyber Pakhtunkhwa. A validated questionnaire through Google platform was penned down to the target participants from 12th to 29th April 2020.

Results: The average COVID-19 related knowledge of the participants was 81.92% and nearly 50% of the participants demonstrated good knowledge. Moreover, 45.5% demonstrated moderate knowledge. Age groups (P=0.003), sex (P=0.034) and work experience (P=0.001) were significantly associated with knowledge of COVID-19. Similarly, significant association was noted between COVID-19 associated stress and panic among participants who are involved in direct patients care (P=0.021). Likewise, those thinking of having higher chances of contacting coronavirus infection were significantly associated with age groups (P=0.007), job category (P=0.018), work experience (P<0.001), and direct patient interaction (P<0.001). Overall perceived risk of COVID-19 was 7.32±2.30 and a significant mean difference was observed between males and females. Pertaining to the sources of information, a similar proportion 17.6% disclosed research articles and social media as the primary sources.

Conclusion: We observed good knowledge about COVID-19 and high risk perception in the study population. Educational interventions are needed to expand participants existing knowledge. A high risk perception must be considered more promptly.

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Introduction

In the last month of 2019, a novel virus, namely coronavirus causing pneumonia was identified in China which subsequently spread to other countries. This novel virus strain was termed as 2019-nCoV, later on it was given the name, Severe Acute Respiratory Syndrome, Coronavirus-2 (SARS-CoV-2). On February 11th, 2020, the World Health Organization (WHO) proposed a new title for SARS-CoV-2 – Coronavirus disease 2019 (COVID-19).[1,2] The disease was declared a pandemic by the WHO on March 11th, 2020.

SARS-CoV-2 is causing clinical features such as fever, sore throat, cough, sneezing and bilateral chest infiltrates resulting in mild to severe form of pneumonia.[1,3] However, rare symptoms may include diarrhoea, myalgia, and smell or taste disorders as initial presentation.4 The exact mode of transmission is unclear however it is considered to occur via respiratory droplets or direct contact. The usual incubation period for SARS-CoV-2 is 2- 14 days, with majority of cases occurring around 4 - 5 days when exposed.[5] Severity of the disease is mild in majority cases with about 5% leading to critical conditions such as respiratory failure, shock and multi-organ dysfunction. [6]

At the time of writing, worldwide 6 799 713 confirmed cases, with 397388 deaths on June 07, 2020 have been reported. 7 In Pakistan, as of June 07, 2020, 98943 cases have been confirmed with a death toll of 2002.[7]

As of 17th April, 2020, 22,000 healthcare workers (HCWs) have been affected with the coronavirus globally with more than 1904 HCWs (Pakistan) and 17 doctors death reported so far[8], the number being under reported as no systematic reporting exist among the HCWs.

In the infection chain the HCWs are at higher risk, and considered a serious concern because HCWs are the front liners. Nevertheless, this is probably aggravated by the evidence that some of the HCWs have insufficient understanding of infections preventive measures.[9] Dearth of appropriate disease related knowledge among HCWs can lead them to miscalculating the situation, escalate their worry and apprehension and may interfere with their clinical decisions. A preliminary study of HCWs COVID-19 related knowledge and perception is necessary since COVID-19 is presently surging in Pakistani healthcare settings and around the globe. To our information, no basic study is published yet to evaluate HCWs knowledge about COVID-19 and risk perception. Thus, this study proposes to consider these elements in HCWs in Peshawar.

Methods

An online survey targeting Pharmacist, Nurses, Physical therapist and health technician was carried out from 12th to 29th April, 2020 in five major tertiary healthcare settings in Peshawar, Khyber Pakhtunkhwa. The five hospitals, namely: "Hayatabad Medical Complex" (HMC); "Lady Reading Hospital" (LRH); "Northwest General Hospital & Research Centre" (NWGH), "Rehman Medical Institute" (RMI) and "Khyber Teaching Hospital" (KTH), represent the major healthcare settings in Peshawar. An online self-administered questionnaire was designed in English using online platform (Google forms) to collect data respecting the strategies of social distancing and contact precautions.

The link of the survey was circulated via popular social networks (Facebook, WhatsApp and Gmail) to the targeted participants. The survey tried to target a minimum of 384 participants in five tertiary healthcare settings, but 257 submitted the form. No proper sample size was calculated due to the pilot nature of this study.

The validity of the questionnaire was ascertained by panel of experts and earlier published studies on SARS-CoV-2[10-12] and Middle East Respiratory Syndrome [MERS] [13,14]. The questionnaire comprised 26 items that recorded data about the background characteristics, knowledge about COVID-19, perception and sources of information. Internal consistency (α=0.83) was assessed by piloting the tool in 35 participants (excluded from the final analysis) before the actual questionnaire was circulated. The following system was used for scoring;

1. Correct option was given 1 point
2. Incorrect and I don't know was given 0 point

The overall knowledge score was transformed into a percentage, ranging from 0 -100%. The knowledge scores were divided as

1. Poor (≤60%),
2. Moderate (60.01–80%), and
3. Good knowledge (≥80.01%).

Data were analysed using SPSS® V 22. The frequencies (%) were calculated for categorical variable, the means (SD) were calculated for numerical variables. Chi square test (X^2) or Fischer exact test where appropriate was applied to determine the differences among the categories of background characteristics. Mean differences for numerical variables were calculated using independent t-test and ANOVA. The significance was set at p-value <0.05 for all statistical test. The survey protocol was evaluated and approved by the ethical committee of HMC, Peshawar (Reference Number: 1567-2020).

Results

The survey response rate was 66.92%. The mean (SD) age of the study participants was 29.04±5.36 years and majority 180(70.0%), were in age range 20-30 years. Male participants 189(73.5%) outnumbered the female 68(26.5%) participants. By job title, most of the participants were nurses 160(62.3%), followed by physiotherapist 38(14.8%) and pharmacist 35 (13.6%). Most of the study sample 171 (46.09%) had a job experience of ≤ 2 years, followed by 116 (31.27 %) 3-5 years of experience. The details can be seen in Table 1.

Overall COVID-19 knowledge of the participants was 81.92%, reflected to be good. Nearly 50% demonstrated good COVID-19 knowledge. The percentage of participants who obtained moderate knowledge was 45.5%. Only 4.7% showed poor COVID-19 related knowledge. The responses to the knowledge items were calculated separately for each question as shown in table 2. The highest proportion, 159(61.9%) of incorrect response was that for "usual incubation period for SARS-CoV-2", 89(34.6%) of the participants answered incorrectly to the statement "COVID-19 is zoonotic disease"?. followed by 96 (34.4%) responding to the statement that "People with COVID-19 can transmit the infection only after the symptoms appearance".

Background characteristics', including job title and direct patient contact did not show significant association with the COVID-19 knowledge category. All of the participants reported sound COVID-19 related knowledge, the mean knowledge score of nurses, paramedics, pharmacists and physiotherapists was 81.54%, 83.06%, 83.24%, and 81.58% respectively. But, the association of knowledge with the job title was insignificant (X2(df) 1.34(6) p=0.970). Although, it was observed that the proportion of the participants with a good knowledge score increased as job title changes to Nurses and paramedics. About, 50.6% and 50.0% of the participants' in job title category of nurses and paramedics had good knowledge.

Both the age groups (X2(df) 1.34 (6), P =0.003) and

Table 1: *Background Characteristics and Knowledge Score of COVID-19 Among Study Participants*

Background characteristics Category		Total participants %	Knowledge score %	Knowledge category (%)			X^2(df)	p-value
				Poor	Moderate	Good		
Overall			81.92	4.7	45.5	49.8		
Age groups	20-30 Years	70.0	80.41	6.7	49.4	43.9	11.38(2)	0.003
	>31 Years	30.0	85.45	0	36.4	63.6		
Sex	Male	73.5	82.72	3.7	41.8	54.5	6.76(2)	0.034
	Female	26.5	79.71	7.4	55.9	36.8		
Job title	Nurse	62.3	81.54	5.6	43.8	50.6	1.34(6)	0.970
	Paramedics	9.3	83.06	4.2	45.8	50.0		
	Pharmacist	13.6	83.24	2.9	48.6	48.6		
	Physiotherapist	14.8	81.58	2.6	50.0	47.4		
Work experience	< 1 years	14.4	76.22	18.9	35.1	45.9	22.29(6)	0.001
	1-2 years	15.2	79.49	5.1	53.8	41.0		
	3-5 years	38.1	83.61	2.0	46.9	51.0		
	⩾6	32.3	83.61	1.2	44.6	54.2		
Direct patient contact	Yes	69.	82.43	4.5	42.1	53.4	2.98(2)	0.226
	No	30.7	80.76	5.1	53.2	41.8		

Table 2: *Responses of Study Participants' Regarding COVID-19 Related Knowledge*

Knowledge items	Incorrect responses	Correct responses
	N (%)	N (%)
COVID-19 is caused by SARS-CoV-2. [True]	59(23.0)	198(77.0)
The first COVID-19 case was reported in Wuhan, -China.[True]	7(2.7)	250(97.3)
The common signs and symptoms of COVID-19 include fever, dry cough, dyspnoea, fatigue and myalgia.[True]	7(2.7)	250(97.3)
COVID-19 is zoonotic disease?[True]	89(34.6)	168(65.4)
COVID-19 can be spread from contact with contaminated objects/surfaces such as door, tables, knobs and mobile phone etc. [True]	24(9.3)	233(90.7)
COVID-19 incubation period is 5-11 days.[False]	159(61.9)	98(38.1)
The COVID-19 spreads primarily via coughing, sneezing or respiratory droplets of infected individuals. [True]	15(5.8)	242(94.2)
COVID-19 can leads to pneumonia, respiratory failure and death. [True]	16(6.2)	241(93.8)
No definite treatment is available, but early symptomatic or supportive treatment can recover most of the patients from the infection. [True]	83(32.3)	174(67.7)
Not all persons with COVID-19 will progress to severe cases. Only those who are elderly, have chronic diseases (diabetes, hypertension, heart diseases, cancer etc.), and obese are more at risk. [True]	19(7.4)	238(92.6)
Isolation and treatment of infected people with the COVID-19 are effective ways to reduce the transmission of the virus. [True]	14(5.4)	243(94.6)
People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days. [True]	10(3.9)	247(96.1)
Hand hygiene [hand wash, sanitizers use etc.], covering nose and mouth while coughing and sneezing, avoiding sick contacts can help in the prevention of COVID-19 transmission. [True]	4(1.6)	253(98.4)
Approximately how much distance in feet/meter do you think that the coronavirus can travel through the air to transmit the infection from one person to another?[6feet/2meter]	95(37.0)	162(63.0)
People with COVID-19 transmit the infection only after the symptoms appearance. [False]	96(37.4)	161(62.6)

sex (X^2(df) 6.76(2), p=0.034) significantly associated with knowledge of COVID-19. It was observed that the proportion of the participants with a good knowledge score increased as age increased. About, 63.6% of the participants' in the age category of ≥31 years had good knowledge with a mean score of 85.45%. Male participants showed higher mean knowledge score, 82.72 %, with 54.5% of them showed good knowledge level.

Furthermore, 54.2% and 51% of the participants' with the work experience of ≥6 years and 3-5 years had a good knowledge level compared to 45.9 % and 41.0% of the participants with experience of < 1 years and 1-2 years respectively and the differences were statistically significant (X^2(df) 22.29(6) p= 0.001). The participants' with higher experience showed higher mean knowledge. Further details can be found in table 1.

Regarding the risk majority of the respondents 214 (83.27%) perceived that COVID-2019 is a significant public health concern in Pakistan; similarly, 82% of the participants were concerned and terrified regarding the COVID-19 epidemic in Pakistan. Moreover a large proportion 184(71.60%) were paranoid with the contemplation of contracting the COVID-19. Visual analogue scale was used to assess the overall perceived risk of COVID-19 and the mean score was 7.32±2.30.

Significant association was noted between COVID-19 pandemic associated stress and panic among professionals who are in direct patients care (P= 0.021). Similarly thinking of having higher chances of contracting COVID-19 infection was significantly associated with age groups (P =0.007), job category (P =0.018), work experience (P <0.001), and direct patient interaction (P <0.001). Regarding the overall perceived risk, a significant mean difference (P= 0.004) was observed between males (7.07±2.28) and females (8.0±2.25). Although no association was observed but overall risk perception mean was lower in participants with good knowledge compared to moderate and poor knowledge.

Table 3: *Risk Perceptions and their Association with Background Characteristics*

Risk perception	Yes		No		Age groups	Sex	Job title	work experience	Direct patient contact
	N	%	N	%	p-value	p-value	p-value	p-value	p-value
COVID-19 is a significant public health problem in Pakistan	214	83.27	43	16.73	0.468	0.450	0.194	0.465	0.281
Do you feel distressed and panicked regarding COVID-19 infection in Pakistan	211	82.10	46	17.90	0.860	0.716	0.913	0.120	0.021
There is a high chance for you to be infected?	184	71.60	73	28.40	0.007	0.755	0.018	<0.001	<0.001
How risky do you judge an infection with COVID to be?[mean±SD]		7.32±2.30			0.395	0.004	0.361	0.222	0.236

Pertaining to the sources of information regarding COVID-19, the majority of the participants' opted research articles 44(17.6%) and social media 44(17.6 %) as the primary sources. Moreover, in 11.6% of the participants the primary source of information was official government, World health organization (WHO), Center for disease control and prevention websites while 4.8% of the participants discussed COVID-19 related topic with family and friends.

Discussion

The COVID-19 outbreak has caused an unparalleled health crisis globally and mounted anxiety and fear.[15] Being a novel disease the knowledge and risk perception among the general public and HCWs is anecdotally quite uncertain in this part of the country, further complicated by speculative and unauthentic information through different sources.

The core elements such as knowledge and risk perception were explored in the survey. HCWs sufficient knowledge and efficient practice with precautionary measures creates awareness among patients and general population while lack of knowledge among HCWs and deficiencies in the practice can be one of the reasons for the spread of virus. This study results showed overall knowledge of 81.92 %, demonstrating that most HCWs were well-informed. Nearly, 50% demonstrated sufficient knowledge of COVID-19. Pharmacists showed higher knowledge scores (mean score 83.24) than nurses (81.54) and physiotherapists (81.58), although results were insignificant. This is in line with earlier similar studies conducted about COVID-19[16] and MERS.[14,17] This could be ascribed by the evolving role of pharmacists in active patient care. Furthermore, pharmacists are now enthusiastically involved in knowledge seeking opportunities in order to flourish their role in clinical decision making. In addition, HCWs showed greater knowledge of the disease and its symptomatology but comparatively poor knowledge was noted regarding the preventive measures. This poor level of knowledge could be reflected in the recent high number of positive cases among the HCWs and their families.[8] Poor knowledge regarding the preventive aspect can be attributed to the lack of training and educational programs specifically designed in pandemics and virology. From prevention and control perspectives, HCWs should place a high value to their knowledge in order to limit the disease spread. When adopting and implementing infection prevention and control strategies HCWs should be familiar and updated with the basic description of pathogen, its incubation period and mode of spread. It is therefore, necessary for HCWs to constantly update their knowledge with evidence based literature about these novel pathogens.

Our results also indicated that knowledge score has a direct relationship with age and experienced health care professionals have good and statistically significant knowledge regarding COVID-19, assuming this group has particular skill and experience in dealing with public health emergencies. This is of great concern since majority of the countries utilize training fellow/residents in providing care to patients in such pandemics, as evident from our data, inexperienced and weak skilled HCWs may contribute to the high mortality, morbidity and healthcare cost associated with such pandemics. Hence, the stakeholder should constantly provide training and education to the training fellow as well as at the same time make arrangements for the recruitment of trained staff. Of note here to mention that the KP province of Pakistan has launched a locum scheme to hire trained HCWs on temporary basis in view of the current pandemic.

Regarding the risk perception, 83.7% agreed that COVID-19 is a significant public health problem in Pakistan. About 71.60% of the HCWs were paranoid with contemplation of contracting the COVID-19. Nearly 82.10 % of the HCWs were preoccupied and terrified regarding the COVID-19 epidemic in Pakistan. A high level of anxiety was reported among HCWs in the current pandemic in China and among medical students in Saudia Arabia during MERS epidemic.[18,19] However, a similar study reported a high level of anxiety among paramedical staff. [9] This may be implicated by the existence of fear of contracting the virus, inappropriate medical facilities and direct contact with affected patients and interrupted supply of protective gears. Knowledge is indispensable for instituting preventive principles; developing positive approaches and promoting optimistic behaviors, and individuals' perception and approaches towards disease that affect the success of their managing strategies to a definite extent.

Majority of the participants used social media as an information tool. These findings are in line with a study finding by Giao et al that presented social media as a main source of information.[16] There is a plethora of malicious and uncorroborated material waved on internet that spread quickly and could misguide the HCWs. The situation demands that HCWs carefully evaluate information sources and utilize authentic and valid contents to seek information.[20]

The worth mentioning limitation of this survey is limited generalizability of the results to other settings due to single province participants. Moreover, the depth of risk perception might be inexplicit due to the few items.

Conclusion

We observed good knowledge about COVID-19 along with high risk perception. Educational interventions and trainings are needed to expand participants existing knowledge. A high risk perception must be considered more promptly and seriously. Furthermore, to decrease the risk of infection among those HCWs who do not have a direct patients' interaction, strategy and interventions should be instigated to express the significance of communicating probable contact to the virus.

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