

Knowledge and Attitudes Concerning SARS-CoV-2 Among Healthcare Workers in Mirpur, Azad Jammu and Kashmir, Pakistan

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ABSTRACT

Background: The healthcare workers are leading the fight against the coronavirus pandemic and are at great risk of acquiring the infection. The information on the knowledge and attitude of healthcare workers towards SARS-CoV-2 is useful to plan awareness and educational programs.

Aim: To assess the knowledge and attitude of healthcare workers towards SARS-CoV-2 in Mirpur, Azad Jammu and Kashmir, Pakistan.

Material and Methods: A cross-sectional study was performed during March and April 2020, on healthcare workers in a tertiary care divisional headquarters teaching hospital of Mirpur, Azad Jammu and Kashmir, Pakistan. A self-administered questionnaire was used to collect the data through a face to face approach. The data were organized and statistically analyzed through SPSS version 21.0.

Results: A total of 520 healthcare workers were approached and 468 of them filled and returned the questionnaire, giving a response rate of 90.0%. The age range of the participants was 18 to 59 years with a mean of 31.5 ± 4.9 years. The majority of respondents were males (62.4%) and more than half of the participants had knowledge of the SARS-CoV-2 outbreak (62.1%) and their main source of information was television (51.3%). Overall, 60.6% had sufficient knowledge of the disease and 79.7% had a positive attitude towards SARS-CoV-2.

Conclusion: The outcomes of our study revealed that overall healthcare workers had an acceptable level of knowledge and a positive attitude towards the SARS-CoV-2 outbreak.

Keywords: SARS-CoV-2, outbreak, COVID-19, knowledge, attitude, healthcare workers.

INTRODUCTION

The ongoing pandemic of coronavirus disease 2019 (COVID-19) caused by SARS-CoV-2, emerged in the Chinese city of Wuhan last December. As of August 24, 2020, the disease has so far infected more than 23.4 million people killing an estimated 0.890 million people globally [1]. The WHO declared the SARS-CoV-2 outbreak a public health emergency of international concern in January and a pandemic in early March [2].

Pakistan has an international border with the People's Republic of China and took all necessary measures to limit the disease transmission in the country. However the first case of the disease was reported in the last week of February 2020, and since then the number has now crossed 0.293 million [3]. The earliest infected cases in Pakistan were primarily those traveling from Iran and Saudi Arabia. Later the transmission dynamics

changed and followed a local human-to-human transmission. Meanwhile, the Government of Pakistan enforced a 6-week lockdown to mitigate the SARS-CoV-2. With the advent of SARS-CoV-2 and the imposed lockdown to ensure social distancing, the psychological fallout of the pandemic continues to rise. The lockdown is taking a toll on mental health and the pandemic has reached its tentacles into just about every area of life at this point.

The healthcare industry is one of the most unsafe environments to work in as the workers including doctors, nurses, technicians, helpers, and waste handlers, are constantly exposed to serious hazards. In the current disaster pandemic, the healthcare workers are spearheading the fight against SARS-CoV-2. Considering the mode of transmission, these workers are at high risk for viral exposure which makes them highly vulnerable to acquire the occupational infection [4]. Studies with other viral outbreaks have shown that the frequency of viral agents in healthcare workers dealing with the patients, was up to 20.9% [5, 6]. Although the exact figures are not yet available, in some

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countries, up to 10% of healthcare workers are being infected by a coronavirus and many of them have died [7]. Only in China, more than 1,700 healthcare workers acquired the infection in the first two months [8]. So far, no vaccine and antiviral therapy are specifically recommended for SARS-CoV-2. Hence, applying preventive actions to reduce the transmission of the disease is of prime importance. However, the implementation of these precautionary measures depends solely on awareness and compliance among healthcare workers. A poor knowledge base was found to be supporting the rapid spread of the infection in hospital settings [9]. In the past, healthcare workers have been assessed in terms of their knowledge and attitude in similar viral outbreaks. The results showed a poor understanding of the disease and its dynamics [10-12].

This current study was performed to examine the knowledge and attitude of healthcare workers towards SARS-CoV-2 in a tertiary care hospital setting. The study findings will be useful to recommend remedial actions and necessary educational programs to improve awareness and attitudes among healthcare workers.

MATERIAL AND METHODS

This was a descriptive, cross-sectional study conducted at the Divisional Headquarters (DHQ) Teaching Hospital, Mirpur, Azad Jammu and Kashmir, Pakistan, during March and April 2020. The hospital is a divisional-level tertiary care facility catering to a population of ~ 1.6 million from three districts including Mirpur, Kotli, and Bhimber. The daily OPD of the hospital is approximately 1,100. The study was performed under the international guidelines of STROBE (Strengthening the Reporting for Observational Studies in Epidemiology) [13]. Ethical clearance of the study was granted by the Hospital Ethics Committee of DHQ Teaching Hospital, Mirpur (No. 8174/MS/2020).

The sample size was calculated based on the assumption that 50% percent of the people would have good knowledge of SARS-COV-2. Thus, with a precision of 5% and a 95% confidence interval, a minimum sample of 384 participants was required as estimated by using the online available calculator Open-Epi. The total number of healthcare workers in the hospital is 520 including clinicians, nurses, pharmacists, technicians, and support staff such as hospital waste handlers. All these workers were included in the study. The questionnaire was designed in English and was self-administered. The questionnaire was pre-tested in a population of 10 healthcare workers who were not part of the study to help determine whether the questionnaire

is understandable. This practice yielded valuable comments from the 10 respondents and was used to adapt and further develop the questionnaire. The questionnaire was structured in a way to be anonymous and the data were kept confidential. A face to face approach was followed to gather the data from respondents.

The questionnaire was formulated, with some amendments, using the frequently asked questions from the CDC [14] and WHO [15] websites. The questionnaire was divided into three sections intended to collect information on (a) five questions related to demographic data and source of participant's knowledge on SARS-CoV-2; (b) 10 questions related to knowledge of study participants; and (c) seven questions regarding the attitude of participants towards SARS-CoV-2 in a yes or no format.

Regarding the scoring system, one point was given for the correct answer and zero points for an incorrect answer. The total knowledge score varied between 0 (with no correct answer) and 10 (for all correct answers), and a cut off level of <7 was evaluated as insufficient knowledge, and ≥ 7 indicated sufficient knowledge. For the attitude portion of the questionnaire, one point was given for positive response, and an overall percentage of 70% was considered as a good attitude.

The data were collected, organized, and statistically evaluated by SPSS software (Statistical Program for Social Science version 21.0). Data were presented in the form of frequencies and percentages. Chi-square test was applied to find the association of participants' characteristics with their knowledge level and attitude. P-value ≤ 0.05 was considered as statistically significant.

RESULTS

The overall response to the study was encouraging. A total of 468 healthcare workers (out of 520) filled and returned the questionnaire, giving a response rate of 90.0%. The features of the study participants are shown in Table 1. The age range of the participants was 18 to 59 years with a mean age of 31.5 ± 4.9 years. The majority of respondents were males (62.4%) and belonged to the category of clinicians (35.2%). More than half of the participants (62.1%) knew about the SARS-CoV-2 outbreak and their main source of information was television (51.3%).

Table 1: The features of the study participants.

Participants' features	Frequency (%)
Sex	
Male	292 (62.4)
Female	176 (37.6)
Age (Year)	
18-29	161 (34.4)
30-39	139 (29.7)
40-50	93 (19.9)
50-59	75 (16)
Occupation	
Clinician	165 (35.3)
Nurse	70 (15)
Technician	48 (10.3)
Pharmacist	25 (5.3)
Other support staff	160 (34.2)
Do you know about SARS CoV-2 outbreak?	
Yes	291 (62.2)
No	177 (37.8)
Your source of information	
Newspaper	38 (8.1)
Television	240 (51.3)
Social media	129 (27.6)
Websites of WHO and other agencies including the ministry of health	58 (12.3%)
None	3 (0.6%)

Participants' knowledge and attitudes towards SARS-Cov-2 are presented in Table 2. The knowledge of study participants regarding the SARS-CoV-2 shows that 60.6% had sufficient knowledge while the remaining 39.4% had insufficient knowledge. Most of them knew that the current disease outbreak is caused by a virus (63.5%). 76.5% were aware of the mode of transmission while 52.6% were familiar with the COVID-19 signs and symptoms. A high percentage of participants answered that healthcare workers (83.1%) are more at risk of acquiring SARS-CoV-2 infection. The participants' knowledge regarding vaccination (47.4%), the incubation period (41.2%), and treatment by antibiotics (47.2%) was poor (Table 2).

The majority (79.7%) of the healthcare workers had a positive attitude for SARS-CoV-2 while 20.3% displayed a negative attitude. About 85.8% of respondents were aware of the prevention of SARS-CoV-2 such as isolation and other standard precautions. A majority of the participants believed that they might get the disease (82.5%). Besides, 63.9% showed confidence in their institution to cope with the pandemic.

Table 2: Knowledge and attitude of study participants towards SARS-CoV-2.

Knowledge Regarding SARS-CoV-2	Yes n (%)	No n (%)
SARS-CoV-2 is a viral infection	297 (63.5)	171 (36.5)
SARS-CoV-2 is transmitted by close contact with an infected person or animal	358 (76.5)	110 (23.5)
Fever, dry cough, tiredness, and shortness of breath are symptoms of SARS-CoV-2	246 (52.6)	222 (47.4)
The incubation period for SARS-CoV-2 is 2–4 weeks	193 (41.2)	275 (58.5)
The SARS-CoV-2 vaccine is available in markets	222 (47.4)	246 (52.6)
Antibiotics are the first-line treatment for SARS-CoV-2	221 (47.2)	247 (52.8)
Washing hands with soap and water can help in the prevention of SARS-CoV-2 transmission	318 (67.9)	150 (32.1)
Patients with underlying chronic diseases are more at risk of SARS-CoV-2 infection	232 (49.6)	236 (50.4)
Health care workers are more at risk of SARS-CoV-2 infection	389 (83.1)	79 (16.9)
SARS-CoV-2 infection can be fatal	363 (77.6)	105 (22.4)
Attitude Regarding SARS-CoV-2		
You are worried one of your family members may get an infection	321 (68.6)	147 (31.4)
You think you will possibly contract the disease from the hospital environment	386 (82.5)	82 (17.5)

Attitude Regarding SARS-CoV-2	Yes n (%)	No n (%)
Transmission of SARS-CoV-2 can be prevented by following isolation and standard precautions like handwashing with soap	402 (85.9)	66 (14.1)
Prevalence of SARS-CoV-2 can be minimized by the active participation of healthcare workers in hospital infection control program	349 (74.6)	119 (25.4)
If a SARS-CoV-2 vaccine was available, I would have it	440 (94)	28 (6)
Patients infected with SARS-CoV-2 should be kept in isolation	414 (88.5)	54 (11.5)
The government hospitals are able to control the pandemic	299 (63.9)	169 (36.1)

Table 3 presents the association of participants' characteristics with the level of knowledge. Gender was significantly associated with the knowledge level ($p < 0.001$). Age was also associated with knowledge level ($p < 0.001$). Knowledge was significantly better in age groups of 40-49 (83.8%) and 50-59 (81.3%) as

compared to the younger age group of 18-29 years (38.5%) and 30-39 years (59.7%). Association of occupation with knowledge level was also observed ($p < 0.001$) with significantly better knowledge in clinicians (88.4%), nurses (78%), and pharmacists (76%) as compared to technicians (45.8%) and other support staff (26.3%).

Table 3: Association of participants' features with knowledge of SARS-CoV-2.

Participants' Features	Sufficient Knowledge n (%)	Insufficient Knowledge n (%)	P-value
Gender			
Male	209 (71.6)	83 (28.4)	<0.001
Female	75 (42.6)	101 (57.4)	
Age (in years)			
18-29	62 (38.5)	99 (61.5)	<0.001
30-39	83 (59.7)	56 (40.3)	
40-49	78 (83.9)	15 (16.1)	
50-59	61 (81.3)	14 (18.7)	
Occupation			
Clinician	146 (88.4)	19 (11.6)	<0.001
Nurse	55 (78.5)	15 (21.5)	
Technician	22 (45.8)	26 (54.2)	
Pharmacist	19 (76.0)	6 (24)	
Other support staff	42 (26.3)	118 (73.7)	
Do you know about the SARS-CoV-2 outbreak?			
Yes	203 (69.8)	88 (30.2)	<0.001
No	81 (45.8)	96 (54.2)	

The association of participants' features with their attitude towards SARS-COV-2 is depicted in Table 4. Age is associated with participants' attitudes regarding the COVID-19 pandemic ($p < 0.001$). The proportion was participants with a positive attitude were significantly high for age groups 40-49 years (89.2%) and 50-59 years (85.3%) as compared to the age group 30-39 years

(67.6%) and 18-29 years (44.1%). Association between occupation and attitude towards disease was also observed ($p < 0.001$). The positive attitude was more prevalent in clinicians (94.5%), pharmacist (88%), nurses (84.2%), and technicians (64.5%) as compared to technical support staff (29.3%).

Table 4: Association of participants' features with the attitude towards SARS-CoV-2.

Participants' Features	Positive Attitude n (%)	Negative Attitude n (%)	P-value
Gender			
Male	241 (82.5%)	51 (17.5)	<0.001
Female	132 (75.0%)	44 (25.0%)	
Age (in years)			
18-29	71 (44.1)	90 (55.9)	<0.001
30-39	94 (67.6)	45 (32.4)	
40-49	83 (89.2%)	10 (10.8)	
50-59	64 (85.3%)	11 (14.7)	
Occupation			
Clinician	156 (94.0)	10 (6.0)	<0.001
Nurse	59 (84.3)	11 (15.7)	
Technician	31 (64.6)	17 (35.4)	
Pharmacist	22 (88.0)	3 (12.0)	
Other support staff	47 (29.4)	113 (70.6)	

DISCUSSION

This study was the first of its kind from the AJK region since the SARS-CoV-2 outbreak. Currently, SARS-CoV-2 is the most discussed issue around the globe, especially among patients and healthcare workers. The safety of healthcare workers is vital in case of any pandemic particularly when a country is running on limited professional manpower in the health sector.

Our findings showed that 60.6% of the healthcare workers had sufficient knowledge about the SARS-CoV-2 outbreak. As such, this is not very encouraging and indicated the implementation of educational and awareness programs for healthcare workers.

About 50% of our study participants reported the television and 27.6% social media as the main source of information about SARS-CoV-2. This was in line with previously published studies among healthcare workers, where social media and television were the foremost sources of information [16-20]. The use of websites from WHO and other agencies was mentioned by only 12.3% of the respondents. This differs from the study by Assad *et al.* [10] where the Ministry of Health website was the main source of information. It is pertinent to mention that the use of social media as a source of information is of concern due to the credibility and validity of the content. It is therefore very important that healthcare workers should review the educational material available on credible agencies' websites [21].

A sufficient level of knowledge was present among healthcare workers regarding the preventive measures (67.9%), causative agent (63.4%), and the mode of

transmission (76.5%). These findings were consistent with the outcomes of previously reported studies [22-24]. Regarding the level of knowledge for disease symptoms, relatively low findings were evident (52.6%). This was in agreement with a study by Tice *et al.* [25] where participants had a low level of knowledge about the symptoms of viral disease in question.

The occupation was considerably linked to the knowledge and attitude of healthcare workers. The clinicians (88.4%) and nurses (78.5%) showed relatively more knowledge as shown in earlier studies by Reusken *et al.* [26] and Alkot *et al.* [27]. Moreover, our findings exhibited a high level of knowledge in the pharmacists' category (76%) as already seen in Vietnam [17]. Healthcare workers in the age category of 40-49 years (83.9%) showed a high level of satisfactory knowledge followed by the category of 50-59 years (81.3%). Two previously published studies also revealed that age was significantly associated with a higher level of sufficient knowledge [19, 28].

The majority (79.7%) of the healthcare workers in our study had a positive attitude towards SARS-CoV-2. Most of the participants (88.5%) agreed that SARS-CoV-2 patients should be isolated and 68.6% of the participants were concerned about their family members being infected with SARS-CoV-2. These findings were consistent with those previously reported [19, 24]. The participants supported the idea of active participation in the hospital infection control program (74.6%) and the role of preventive measures to stop transmission (85.9%). About 63.9% assumed the government can control the pandemic as reported in earlier studies [21, 24].

CONCLUSION

The outcomes of our study revealed that overall healthcare workers had an acceptable level of knowledge and a positive attitude towards the SARS-CoV-2 outbreak. However, there was a significant difference in the knowledge base of different occupations. Awareness interventions are necessary to improve the knowledge gap. Large scale studies are imperative to further study the dynamics of knowledge and attitude towards SARS-CoV-2 in the rest of the country.

LIMITATIONS

The study was conducted at a divisional level tertiary care teaching hospital and may not be generalized to the whole country. We had a limitation in the interpretation of our findings as the outbreak is ongoing and no large scale research studies available to compare.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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