

Research Article



Knowledge, Attitude, Practice among Healthcare Workers regarding COVID-19: An Online Questionnaire-based Study

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ABSTRACT

Knowledge of the disease, attitude towards the stopping of transmission and practicing of the preventing and treatment measure determine the spread of any communicable disease. COVID-19 is a viral pandemic wreaking havoc in day-to-day life especially affecting the health care workers. This was a prospective, cross-sectional, observational study that was carried out in the healthcare workers (HCWs) involved with the care of COVID-19 patients. The patients were given a semi-structured questionnaire adapted from online available literature and information provided on the WHO and Centers for Disease Control and Prevention (CDC) website. The questionnaire was distributed by online platforms as a google form. A total of 104 HCWs were enrolled and 95 of them were included. They were majorly from age group 26-35 years (64.2%) and were males (62.8%). Most of the HCWs were postgraduate (73.7%) and graduates (25.3%). A majority (96.7%) of subjects had a good knowledge about the disease and its prevention with a positive attitude towards proper care and management of the patient. Majority of the HCWs were practicing all the preventive measures possible in their work environment like disinfecting the frequently touched surfaces, hand hygiene, mask etc. Good knowledge and proper following of the COVID-19 protocols can help in protecting oneself from getting exposed especially in professions like health care and halting the spread of this communicable disease.

Keywords: COVID-19; KAP; Knowledge; Attitude; Practice; Healthcare workers; SARS-CoV-2.

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INTRODUCTION

Coronavirus disease 19 (COVID-19) is a disease caused by a novel human to human transmittable coronavirus SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2). This Coronavirus most probably got transmitted from bats to humans making it one of the three to jump from human to animals in last twenty years.¹ COVID-19 with its index case in Wuhan city in China has spread uncontrollably and has threatened the lives of many people.² The transference of SARS-CoV-2 in humans has been attributed to close contact with an already infected individual through respiratory droplets, secretions of infected individuals, or indirectly by contact with contaminated surfaces.³ The World Health Organization (WHO), in Jan 2020, declared novel coronavirus an international public health emergency and called for an international collaboration, to halt its swift spread. Later, the WHO designated COVID-19 a “global pandemic” status on March 11, 2020.⁴

Fever, dry cough, and breathing difficulty are the presenting clinical symptoms in the majority of patients afflicted with COVID-19. Other signs like sore throat, myalgia, headache, fatigue, and diarrhea are also present in some patients.⁵ Most cases of COVID-19 happen to be mild with patients being afebrile, with chills and respiratory symptoms as the only presenting picture. Patients who develop mild disease, develop fever, cough, sore throat, myalgia or headache. Such patients are devoid of any serious symptoms or complications.⁶ Few patients reported having an upper respiratory infection (URI) with bilateral patches in the lung on CT scan, reduced white blood cell count, and increased liver enzymes (ALT and AST) and CRP levels.^{2,7} Patients who presented with severe pneumonia, have an enhanced probability to suffer from acute respiratory distress syndrome (ARDS) and refractory hypoxemia.⁸ Patients also presented with dermatological manifestations.⁹ Cytokine storm with high levels of pro-inflammatory cytokines has been identified as a key pathological player in the causation of pneumonitis, ARDS, and respiratory failure in such patients.^{10,11} Children, till now had mostly milder clinical presentations or even asymptomatic, as compared to older individuals. Previous studies suggests that pregnant women do not present with severe disease, while elderly patients with comorbidities are more vulnerable to progress to critical stages of the disease.^{6,8} The Case Fatality Rate (CFR) was found to be higher in patients older than 80 with comorbidities such as hypertension, diabetes, chronic lung diseases, stroke,



gastro-intestinal disorders, and cancers. Death mostly occurs due to respiratory failure, septic shock, or multi-organ failures.⁸ In view of no definitive therapy, several old drugs, local therapies and nutraceuticals were being repurposed for the treatment and preventive practices like hand washing, alcohol rubs and face masks were recommended for the condition.^{12–19} With the recent development of vaccines in a short course of time, we aren't aware of the rare and long term adverse effects associated with them yet going by the current emergency scenario, a wide scale vaccination of the people round the world seems to be only option currently to tide over this pandemic.^{20–22}

COVID-19, and the associated lockdown imposed had posed a sudden burden on the country's healthcare setup, impacting the social, economic, and mental position of the various frontline workers in contact with the patient primarily.²³ The pandemic has also disrupted healthcare system and medical/nursing education along with essential activities like pharmacovigilance and biomedical waste management.^{23–27} The lack of knowledge resulting in a lack of appropriate practice had imposed an additional stigma on our society of which the frontline workers are no exception.²⁸

Healthcare workers (HCWs) are the frontline force to combat the pandemic situation and are therefore at a higher risk of exposure to the infection, long and tedious work hours, stress, occupational stigma, workplace burnout and sometimes physical violence.²⁹ Incomplete knowledge of the disease among healthcare workers had resulted in delayed recognition and treatment, which can further result in the rapid spread of infection even the HCWs which can further worsen the scenario in the healthcare sector.³⁰ It is not only the prevention of COVID-19 infection but at the same time, timely diagnosis and treatment of other health-related issues are crucial and have increased the concerns among the HCWs across the globe.³¹ Proper patient handling requires the good knowledge and attitude of these frontline workers.

KAP study is a tool developed in 1950 to investigate health-related practices and behaviors. It aims to elicit the know-how, belief, and actions taken by the target population for a particular health problem. These studies aim to identify, assess, understand the analyze the myths, beliefs, attitudes, and behavior about health-related problems.³² Knowledge and attitude has a crucial role in the progression of a communicable disease in a community.³³ Most of the studies have focused on the knowledge attitude and practice of the general public regarding the current pandemic. However, an Asian study with HCWs reported deficient COVID-19 knowledge with positive attitude towards preventing transmission of COVID-19.³⁴ A study in Uganda assessed the KAP of HCWs towards COVID-19 demonstrating that about seven in ten HCWs had enough knowledge regarding COVID-19. However, attitude toward COVID-19 was poor and 74% of the studied HCWs had good COVID related practices.³⁵

To facilitate the better management of COVID-19 in India, need to understand the healthcare worker's awareness of COVID-19 is critical. This study was planned to assess the KAP of HCWs towards COVID-19 involved in the management of patients during the COVID-19 outbreak.

METHODS

The current study was a prospective, cross-sectional, observational study that was carried out in the healthcare workers (HCWs) associated with the care of COVID-19 patients. The participants of the study were randomly selected and were enrolled only after obtaining informed consent. The study was conducted by using a semi-structured questionnaire which was prepared and adapted from online available literature and information provided on the WHO and Centers for Disease Control and Prevention (CDC) website.^{34,36–39} Later it was refined as required to facilitate better comprehension and organization. The questionnaire had twelve knowledge questions, four perception, and four practice questionnaires regarding COVID-19. For assessing the knowledge and perception questions scoring was done as follows: one mark was given to each correct answer and zero for all wrong answers. The questionnaire was distributed by preparing a Google questionnaire form through online platforms like WhatsApp, Email, and other messaging applications. The form was designed in such a way that the participants giving consent after reading the description of the study were allowed to answer the questionnaire and those denying consents were directed to submit the form. Following consent, the participants were asked to fill in the sociodemographic details followed by which they were asked to answer the knowledge, perception, and practice questionnaires regarding COVID-19. The study was approved by the institutional ethics committee and care was taken to protect the confidentiality and anonymity of participants. The data collected in the online mode was entered into Microsoft Excel 16. The data were presented as frequencies and percentages and descriptive statistics was used to analyze the data.

RESULTS

Sociodemographic details:

A total of 104 healthcare workers enrolled in the study and 95 of them consented to participate in the study. Of these 95 HCWs, the majority were in the age group 26-35 years (64.2%) and most of them were males (62.8%). The educational status of the majority of the HCWs was postgraduate (73.7%) and graduates (25.3%). [Table 1]

Knowledge regarding COVID-19:

About 97% of the HCWs mistook COVID-19 as a virus whereas COVID-19 is the disease name that is caused by SARS-CoV2. The majority (94.7%, 95.8%, and 91.5% respectively) of the HCWs answered "Bats are thought to be the source of origin of the SARS-coV2", "COVID-19



routes of spread” and “Incubation period of COVID-19” correctly.

Table 1: Sociodemographic Profile of Healthcare Workers

Sociodemographic parameters		Number of participants (%)
Age	18-25 years	11(11.6%)
	26-35 years	61(64.2%)
	36-45 years	11(11.6%)
	46-55 years	8(8.4%)
	56-65 years	3(3.2%)
	65+ years	1(1.1%)
Gender	Male	59(62.8%)
	Female	35(37.2%)
Marital Status	Married	47(49.5%)
	Unmarried	48(50.5%)
Educational Status	Primary	0(0%)
	Secondary	1(1.1%)
	Graduate	24(25.3%)
	Postgraduate	70(73.7%)

Similarly, most of them correctly responded to the questions related to symptoms of COVID-19(92.6%), the fatality of COVID-19(96.8%), its spread through respiratory droplets (100%), and its prevention via washing hands with soap and water (98.9%). Although the majority responded to the question related to "Antibiotics can be used to prevent and cure COVID-19" correctly yet approximately 37% of the HCWs thought antibiotics might be helpful in COVID-19. The majority of them had good knowledge of preventive measures such as face mask that can prevent

transmission of SARS-coV2(98%) and preferred methods of hand hygiene (81%). Most of them knew that comorbidities like heart disease, diabetes, and respiratory diseases can increase the severity of the COVID-19 in these patients (93.7%). The details of the knowledge questionnaire are given in table 2. The mean knowledge score was 10.09 +/- 1.17(SD) and the overall correctness rate was calculated as 84.16%. On assessing the knowledge score among them, a majority (96.7%) of them had a good knowledge and scored above 8(75%) out of 12. [Figure 1]

Attitude regarding COVID-19:

Approximately 96% of the HCWs agreed that social distancing and lockdown can prevent the spread of COVID-19. Most of them (90.5%) were convinced that 14 days quarantine is essential if a person comes in contact with someone infected with the novel coronavirus even if and does not have any symptoms, should be immediately quarantined for a duration of 14 days. About 98% of the HCWs agreed that medical and healthcare workers were working adequately to control the pandemic of COVID-19 and 73.4% disagreed with the fact that being young does not provide you immunity against COVID-19. Altogether, the HCWs had a positive attitude towards the management of COVID-19. [Table 3]

The practice of HCWs in COVID-19:

About 99% of the HCWs confirmed that they cover their face with a handkerchief/tissue or cloth if they cough or sneeze and wear mask when they go for duty. About 92.6% of the HCWs reported that they clean and disinfect their hand every time after touching frequently touched surfaces and 79% of them confirmed that they rub their hands with soap and water for more than 20 seconds to perform hand hygiene. Overall, the majority of the HCWs had a good practice towards coping up with COVID-19. [Table 4]

Figure 1: Knowledge Scores of Healthcare Workers Regarding COVID-19

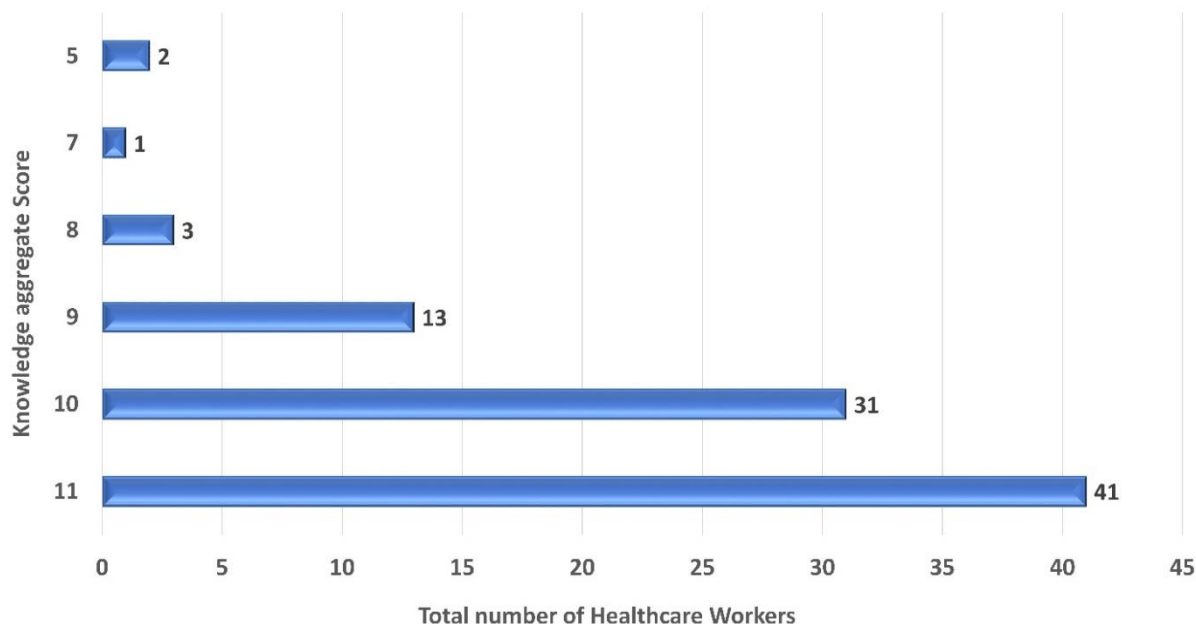


Table 2: Knowledge of Healthcare Workers regarding COVID-19

Knowledge questionnaire	Responses	N (%)
COVID-19 is a virus (N=95)	True	92(96.8%)
	False	3(3.2%)
Bats are thought to be the source of origin of the Novel Coronavirus 2019 (SARS-coV2) (N=95)	True	90(94.7%)
	False	5(5.3%)
The Novel Coronavirus 2019 (SARS-coV2) can spread via. air, contact, fecal-oral routes (N=95)	True	91(95.8%)
	False	4(4.2%)
COVID-19 has an incubation period of (N=94)	2-14 days	86(91.5%)
	0-5 days	2(2.1%)
	12-20 days	6(6.4%)
	1-4 days	0(0%)
The COVID-19 can have symptoms like (N=95)	Headache	1(1.1%)
	Fever	2(2.1%)
	Cough	0(0%)
	Sore throat	2(2.1%)
	Difficulty in breathing	2(2.1%)
	All of them	88(92.6%)
COVID-19 can be fatal disease. (N=95)	Yes	92(96.8%)
	No	3(3.2%)
The novel coronavirus usually spreads through respiratory droplets of infected individuals. (N=93)	Yes	93(100%)
	No	0(0%)
Washing your hands regularly with soap and water can prevent the novel coronavirus from spreading? (N=95)	Yes	94(98.9%)
	No	1(1.1%)
Antibiotics can be used to prevent and cure COVID-19. (N=95)	Yes	35(36.8%)
	No	60(63.2%)
Wearing face masks can prevent the transmission of the novel coronavirus. (N=95)	Yes	93(97.9%)
	No	2(2.1%)
Which is the preferred method of hand hygiene to clean visibly soiled hand? (N=94)	Hand wash with soap and water for 10 seconds	11(11.7%)
	Hand wash with soap and water for a minimum of 20 seconds followed by use of alcohol-based sanitizer	76(80.9%)
	Use of hand sanitizer	6(6.4%)
	None of the above	1(1.1%)
Which of these patients, the chances of severity of disease (COVID-19) are more? (N=95)	Patients with heart disease	0(0%)
	Patients with diabetes	2(2.1%)
	Patients with respiratory diseases like asthma, COPD	4(4.2%)
	All of them	89(93.7%)

N= Number of participants

Table 3: Attitude of Healthcare Workers regarding COVID-19

Attitude questionnaire	Responses	N (%)
Do you think that social distancing and lockdown can prevent the novel coronavirus from spreading? (N=95)	Yes	91(95.8%)
	No	4(4.2%)
If a person comes in contact with someone infected with the novel coronavirus and does not have any symptoms, should be immediately quarantined for duration of 14 days. (N=95)	Yes	86(90.5%)
	No	9(9.5%)
Do you think medical and healthcare workers are working adequately to control the pandemic of COVID-19? (N=95)	Yes	93(97.9%)
	No	2(2.1%)
Do you think if a person is young, he is immune to COVID-19? (N=94)	Yes	25(26.6%)
	No	69(73.4%)

N= Number of participants



Table 4: Practice of Healthcare Workers regarding COVID-19

Practice questionnaire	Responses	N (%)
Do you cover your face with handkerchief/tissue or cloth if you cough or sneeze? (N=94)	Yes	93(98.9%)
	No	1(1.1%)
Are you regularly wearing mask while you go for duty? (N=95)	Yes	94(98.9%)
	No	1(1.1%)
Do you clean and disinfect your hand every time after touching frequently touched surfaces? (N=95)	Yes	88(92.6%)
	No	7(7.4%)
How much time do you rub your hands with soap and water to perform hand hygiene? (N=95)	10 seconds approximately	7(7.4%)
	15 seconds approximately	9(9.5%)
	Wash off the soap immediately after applying on the hands	4(4.2%)
	20 seconds approximately	75(78.9%)

DISCUSSION

The present online survey was an attempt to assess the knowledge, awareness, and practice among healthcare workers involved in COVID-19 services during pandemic. The majority of the HCWs had a good knowledge, positive attitude, and good safety practices towards COVID-19.

The mean knowledge score in the present study was 10.09 and the overall correctness rate of the knowledge questionnaire was 84.16%. A study by Ejuh et al. reported a knowledge correctness rate of 88.75% which was comparable to our study.⁴⁰ Zhong et al in their study reported the knowledge correctness rate as 90%.⁴¹ A large proportion of HCWs in the present study correctly identified that Bats can be a source of SARS-CoV-2 (94.7%) and it can spread via. air, contact, fecal-oral routes (95.8%). Ahmed et al in their study reported that approximately 76% of the HCWs knew that bats can transmit the disease.⁴² Ejuh et al in their study reported that about 91.3% of the HCWs correctly identified the mode of transmission.⁴⁰ The study done by Bhagavathula et al. reported a lower knowledge regarding its association with the bats (58.7%) and transmission (39%).³⁴

The majority of the HCWs (99%) in this study correctly identified that regular handwash with soap and water can prevent the novel coronavirus from spreading. Ahmed et al in their study reported that 97.1% of the HCWs and 97% of HCWs in the study of Roy et al had knowledge regarding the handwashing practices and prevention of COVID.^{42,43} Huynh et al. (98.2%) reported the findings quite similar to the present study.³⁷ Similar results were seen with Bhagavathula et al. (85.6%) but the proportion was competitively lower as compared to the current study.³⁴ A major chunk of the HCWs (93.7%) in the present study correctly identified all the chronic disease condition which can worsen the prognosis in COVID-19. Huynh et al. also reported that the majority of the HCWs (79.2%) identified a similar question correctly.³⁷

Approximately 97% of the HCWs in the current study correctly identified that COVID-19 can be a fatal disease. A study by Huynh et al. reported that about 99% of HCWs agreed that COVID-19 can be fatal.³⁷ Ahmed et al in their study reported a lower percentage (67.1%) of HCWs who agreed that COVID can be fatal.⁴² On the contrary, the study conducted by Bhagavathula et al. reported a lower proportion of HCWs (11.4%) who believed that COVID-19 is a fatal disease.³⁴

The vast majority of the HCWs (92.6%) correctly identified all the symptoms of the COVID-19. Ahmed et al in their report that all the HCWs (100%) had a good knowledge regarding symptoms of COVID-19.⁴² A study done by Huynh et al. reported a comparatively low proportion (72.8%) of HCWs answering it correctly.³⁷ More than half of the HCWs (63.2%) thought that antibiotics can be used to prevent and cure COVID-19. Similar results were reported by Huynh et al. (58.4%).³⁷

About 95.8% of the HCWs believed that social distancing and lockdown can be helpful in the prevention of COVID from spreading. Roy et al in their study reported that the majority of the participants (98%) believed that social distancing is a crucial step to stop the COVID from spreading.⁴³ About 91.5% of the HCWs correctly identified the correct duration of the incubation period of the novel Coronavirus. Bhagavathula et al. in their study reported that about 84.3% of the participants correctly answered the incubation period of COVID-19.³⁴ A large proportion of HCWs (98.9%) was regularly wearing a mask while going for duty. Similar findings were reported by Zhong et al where 98% of the participants wore masks while going out.⁴¹ However, Ejuh et al. in their study reported that about 59.2% of the HCWs wore a mask while leaving home.⁴⁰

Altogether, the knowledge and perception of the HCWs in the present were comparable to various other studies conducted internationally and, in some cases, better than a few of them. This is a positive finding from the study as adequate knowledge among these HCWs would help in better management of the pandemic situation.



CONCLUSION

The HCWs in our study had a good knowledge and attitude regarding the COVID-19 with high correctness rate in the knowledge assessment. The sufficient knowledge and positive attitude regarding COVID-19 would play a crucial role in the effective management of the COVID-19 patients. The practices of the HCWs were also good which can prevent the spread of infection and getting them from getting infected from the SARS-CoV-2. As COVID-19 is still an evolving disease and new information are being published continuously, a better and updated knowledge of the HCWs is very crucial in handling the pandemic and safeguarding themselves.

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