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Original Research Article

# Knowledge, Attitude and Practice about COVID-19 Pandemic among Healthcare Professionals in Tertiary Healthcare Facilities in Western Rajasthan

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**Abstract**

**Introduction:** While managing COVID -19 patients, the healthcare professionals are at higher risk for contracting the infection and also could be a potential source of transmitting the disease in the community unknowingly. Therefore awareness [knowledge, attitude, and practice (KAP)] among healthcare professionals becomes of utmost importance.

**Methods:** We conducted this observational cross sectional study to evaluate the knowledge, attitude and perceived practices toward COVID-19 among HCWs using a self-administered questionnaire at tertiary level healthcare facility in western Rajasthan. The questionnaire was shared with all the healthcare professionals of the pre identified tertiary care facilities through electronic mail (e-mail) and the responses received were recorded and analyzed.

**Results:** A total of 59 responses were recorded. Out of the total participants, 61% were aware of national COVID-19 helpline numbers, 54.2% answered correctly about Hydroxychloroquine prophylaxis, 13.6% answered appropriately on COVID-19 testing. Almost 96.6% acknowledged to wear a medical mask however only 55.9% participants answered correctly regarding using a face mask. 52.5% responded that ash collection as a ritual may be allowed after funeral (cremation) of the body of a COVID-19 patient. More than 90% of participants acknowledged to clean their hands > 6-10 times in a day. 72.9% of participants admitted to open the MoHFW website to keep themselves updated on COVID-19 in India and 66.1% have 'Aarogya Setu' application in their mobile phone. However only 23.7% have ever used central helpline number or email-ID to get information on COVID-19.

**Conlcusion:** We concluded that healthcare professionals were aware of the management strategies and treatment protocol however there is significant differences in the KAP of HCW sub groups. It

also becomes important to study the KAP in various other populations (general populations, close contacts of COVID-19 etc.) for planning effective intervention strategies for them.
**Keywords:** KAP, COVID-19, SARS CoV-2, Aarogya Setu.



## Introduction

Coronaviruses are a large group of viruses that are rather common throughout the community. Historically, evidence has shown that the virus is transmitted through birds and mammals, with human being particularly vulnerable to infection and transmission of the virus [1]. The previous outbreaks of coronaviruses such as Severe Acute Respiratory Syndrom-Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) in 2003 and 2015 show similarities to the novel coronavirus, which was first reported in December 2019, and is currently the disease in questions resulting in the worldwide Coronavirus disease-2019 outbreak, COVID-19 [2].

Coronavirus disease outbreak in the year 2019 began in Wuhan city of Hubei Province in China [3]. New cases of the disease thereafter started appearing in other parts of the World as well including India [1]. A larger portion of the World was trapped by the disease relatively sooner and the disease was declared a pandemic by World Health Organization (WHO) on 11 March 2020 [2].

The disease was named as Corona Virus Disease 2019 (COVID-19) and its causative organism as 'Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) by WHO [3]. COVID-19 presents most commonly as a rise in body temperature, cough, difficulty in breathing. Other clinical features of the disease may include loose motions, fatigue, myalgia, headache, etc [4]. Presentation of the disease may range from mild cases to severe life-threatening pneumonia and hypoxemia [4,5]. Severe cases require hospitalization and need to be managed in a healthcare facility [4,6].

During the initial phase of pandemic, there was no specific antiviral treatment and preventive vaccine. Therefore, the guidelines are recommended to decline the spread of infection and respond to the challenges during the epidemic. As CDC recommends, coronavirus spreads mainly from person-to-person by close contact (within about 6 feet) with infected people via respiratory (coughs or sneezes) or transmitted by touching a surface or object that the virus on it [7,8].

In terms of symptoms, the WHO reported that more than 80% of COVID-19 patients showed mild symptoms and recovered without any medical intervention, approximately 20% of infected cases had a severe illness such as shortness of breath, septic shock and multi-organ failure, and it has been reported that an estimated 2% of cases can be fatal [2]. The risk of increased severity was noticed in the elderly and with underlying chronic diseases. The best prevention is to avoid being exposed to COVID-19. This is done by washing hands with soap and water, and using face masks, isolating confirmed and suspected cases [8].

GMC Pali and GMC Barmer are tertiary level hospitals in western Rajasthan with specialist service, so the response to major medical issues are available to all patients. It is also responsible for training and research, as well as supporting the medical workers to treat the suspected cases of COVID-19 infection. Due to the importance of this facility, and from evidence obtained from Wuhan in China that

HCWs were at a high risk of getting the virus within medical facilities and also transmission to other patients within the community.

This study aimed to assess the knowledge and attitude toward COVID-19 among HCWs at GMC Pali and GMC Barmer. The findings would help authorities organize the necessary educational programs in order to provide up-to-date information and deliver the best practice to control the pandemic situation.

## Materials and Methods

The study was conducted during the first wave of COVID-19 i.e. Jun-20 to Dec-20 using a self-administered questionnaire. Websites of the World Health Organization (WHO) and the Ministry of Health & Family Welfare were accessed and material relevant to transmission and management of COVID-19 was downloaded. A preliminary questionnaire to contain 27 questions in total covering all the domains of knowledge (07), attitude (06) and practice (07), was formulated. The questionnaire was circulated to all the members of the research team to get feedback. A pre-finalized questionnaire was applied to 20 healthcare professionals from the study population in a random manner to evaluate the validity of its content, readability, and ease of filling the responses. The final version of the questionnaire was formulated according to the results of this pilot application. The final version of the questionnaire was made in the google form.

In view of current situation of COVID-19 and keeping in mind the social distancing, the data was collected through online mode only after taking an online consent from volunteers. The final version of the questionnaire was sent to all the healthcare professionals of the above-mentioned healthcare facilities through electronic mail (e-mail). Questionnaire remained open for volunteers to give the responses for fifteen days following getting approval from the Institute Ethics Committee. A paragraph quoting instructions to fill the form, study title and purpose, eligibility criteria, risks and benefits to participate, maintenance of confidentiality etc was mentioned in the initial part of the questionnaire (participant information sheet). An online consent was obtained from the volunteers agreeing to participate in the study (Informed consent form). Healthcare professionals would freely decide whether or not to fill the questionnaire. Providing personal identifiers were optional to study participants, however, all the responses received were kept confidential without revealing them to a third party.

### Statistical analysis

Data was entered in Microsoft Excel and later imported in SPSS V.21 for statistical analysis. Numerical variables were measured as mean and standard deviations while categorical variables were expressed as frequencies and percentages. Inferential statistics were applied depending upon nature of data and variables. Chi-square tests were applied to find difference in knowledge groups and practice by demographic characteristics. A p value of less than 0.05 was considered as significant in all tests.

## Results

An online survey, related to awareness, attitude, and perceived health care practices in the community during the corona pandemic, was conducted. A total of 59 responses were recorded. All the participants were above 18 years of age. The study included only those participants who understood English and had access to the internet. Hence, by default individuals with a higher level of education were included in the study. The mean age of the participants was 29.09±8.83 years. Among the participants, 86.4 % were females and 13.6 % were males (Figure 1).

### Part I: awareness about COVID-19 pandemic

A considerable number of responders were passably aware of the basic elements of the disease, as shown in Table 1. Out of the total

participants, 61% were aware of national contact number on which information of COVID-19 case needs to be given; also 54.2% answered correctly about indication of Hydroxychloroquine prophylaxis for COVID 19. However only 13.6% of responders answered appropriately on Indian Council of Medical Research (ICMR) guidelines about eligibility of candidates for COVID-19 testing. Only 32.2% participants negated saliva specimen-collection for SARS-CoV-2 testing. 55.9% participants answered the most appropriate regarding using a medical/surgical mask having upper and lower strings.

Though majority of participants (52.5%) responded that ash collection as a ritual may be allowed after funeral (cremation) of the body of a person who died of COVID-19, Only 5.1% responded that precautionary measures are not required while handling of the body of a person who died of COVID-19 as the viruses also die with death of the person.

**Part II: attitude towards COVID-19 pandemic**

As shown in Table-1, more than 85 % of the participants agreed with the proposition that a team of the doctors should undergo quarantine whereas another one should serve to manage COVID-19 patients for 14 days at their facility and vice versa for the next 14 days. However 59.3% of the participants were confident enough that their healthcare facility will be able to manage a sudden surge of COVID-19 cases in near future, if needed. Most (76.3 %) of them think that the correct methodology is followed at their facility for a sample collection from persons for testing of SARS-CoV-2.

Approximately 78 % of participants believed that a research should take place at their facility on COVID-19 for finding out better management options for the disease.

**Part III: perceived practices towards COVID-19 pandemic**

As shown in Table 1, most of the participants (96.6%) acknowledged to wear a medical mask while working in the healthcare facility. Similarly more than 90% of participants acknowledged to clean their hands > 6-10 times in a day. Majority (72.9%) of participants admitted to open the website of the Ministry of Health & Family Welfare to keep themselves updated regarding the information on COVID-19 in India and 66.1% have 'Aarogya Setu' application in their mobile phone.

Approximately 49.1% of participants admitted to check the website of Ministry of Health & Family Welfare every week to keep themselves updated regarding information of COVID-19 in India. However only 23.7% have ever used central helpline number or email-ID to get information on COVID-19.

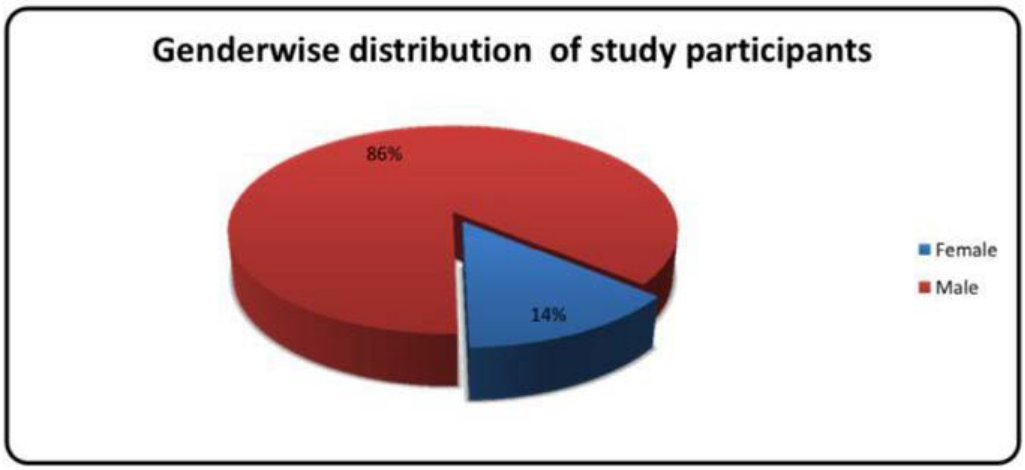


**Figure 1**

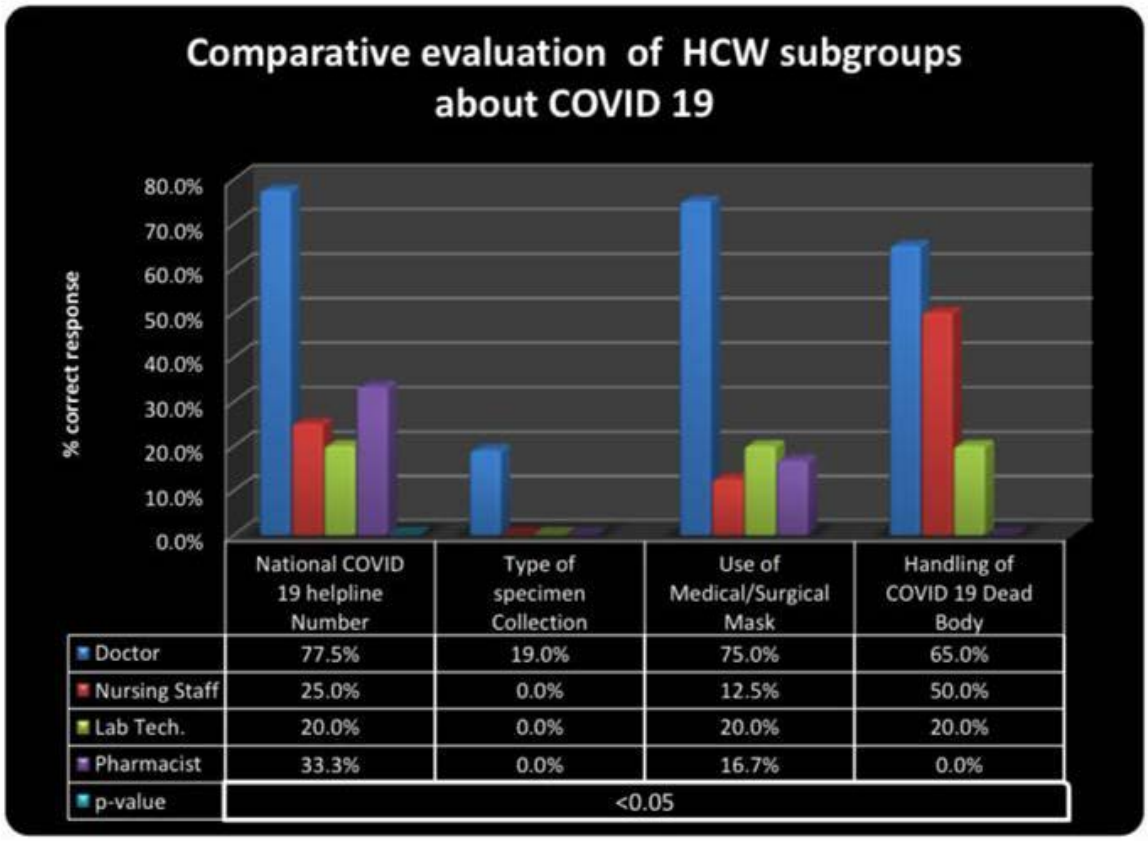


**Figure 2**

**Table 1: Demographic details of study participants**

| Variables | | Frequency (%) |
|---|---|---|
| Gender | Female | 8 (13.6%) |
| | Male | 51 (86.4) |
| Occupation | Doctor | 40(67.8%) |
| | Nursing staff | 8(13.6%) |
| | Lab technician | 5(8.5%) |
| | Pharmacist | 6(10.2%) |
| Which of the following institutes you are affiliated with? | Government Medical College, Pali & associated hospitals | 39(66.1%) |
| | Government Medical College, Barmer & associated hospitals | 20(33.9%) |
| What is the national contact number on which information of COVID-19 case needs to be given? | 1075 | 36(61.0%) |
| | 1001 | 5(8.5%) |
| | 1080 | 3(5.1%) |
| | 1095 | 3(5.1%) |
| | Cannot comment | 12(20.3%) |

| | | |
|---|---|---|
| Hydroxychloroquine chemoprophylaxis is indicated for: | Healthcare workers giving care to COVID-19 cases or suspect cases and are asymptomatic | 32(54.2%) |
| | Persons (other than healthcare workers) who have come in close contact of confirmed cases of COVID-19 | 4(6.8%) |
| | Healthcare workers giving care to COVID-19 cases or suspect cases and have become symptomatic | 22(37.3%) |
| | Cannot Comment | 1(1.7%) |
| Who should get tested for COVID-19 as per the Indian Council of Medical Research (ICMR) guidelines? | All persons who have come in contact with COVID-19 confirmed cases | 37(62.7%) |
| | Healthcare workers caring persons with respiratory distress and/or severe respiratory illness and become symptomatic | 8(13.6%) |
| | All persons having flu like symptoms | 9(15.3%) |
| | All persons who have undertaken international travel | 2(3.4%) |
| | Cannot comment | 3(5.1%) |
| Which one of the following specimen-collection is NOT recommended for SARS-CoV-2 testing? | Serum | 31(52.5%) |
| | Saliva | 19(32.2%) |
| | Bronchoalveolar lavage | 1(1.7%) |
| | Naso-pharyngeal and oro-pharyngeal swab | 5(8.5%) |
| | Cannot comment | 3(5.1%) |
| Which one of the following is the most appropriate regarding using a medical/surgical mask having upper and lower strings? | Folds on the outer surface of the mask should face downwards | 33(55.9%) |
| | Mask should be removed holding it from its outer surface | 10(16.9%) |
| | Single mask remains effective at least for 24 hours | 3(5.1%) |
| | Upper strings should be untied first while removing a mask | 7(11.9%) |
| | Cannot comment | 6(10.2%) |

| | | |
|---|---|---|
| Select the most appropriate sentence regarding the handling of the body of a person who died of COVID-19. | Ash collection as a ritual may be allowed after funeral (cremation) of the body | 31(52.5%) |
| | Funeral of the body should not be allowed | 18(30.5%) |
| | Precautionary measures are not required while handling as the viruses also die with death of the person | 3(5.1%) |
| | Cannot comment | 7(11.9%) |
| Spray of which of the following disinfectants on the body of a patient suffering from COVID-19 or that of a person suspected to have this disease, is recommended for | No disinfectant solution is recommended for this purpose | 34(57.6%) |
| | 1% sodium hypochlorite | 20(33.9%) |
| | 10% benzalkonium chloride | 1(1.7%) |
| | Cannot comment | 4(6.8%) |
| Do you agree with the proposition that a team of the doctors should undergo quarantine whereas another one should serve to manage COVID-19 patients for 14 days at your facility and vice versa for the next 14 days? | Yes | 52(88.1%) |
| | No | 5(8.5%) |
| | Cannot comment | 2(3.4%) |
| Do you think that the correct methodology is followed at your facility for a sample collection from persons for testing of SARS-CoV-2? | Yes | 45(76.3%) |
| | No | 0(0%) |
| | Do not know | 14(2.37%) |
| Are you confident that staff at your facility is skilled enough to manage well a confirmed case of COVID-19 with the severe disease? | Yes | 35(59.3%) |
| | No | 11(18.6%) |
| | Do not know | 13(22.1%) |
| Are you confident enough that your healthcare facility will be able to manage a sudden surge of COVID-19 cases in near future, if needed? | Yes | 35(59.3%) |
| | No | 15(25.4%) |
| | Do not know | 9(15.3%) |
| Do you think that a research should take place at your facility on COVID-19 for finding out better management options for the disease? | Yes | 46(78.0%) |
| | No | 5(8.5%) |
| | Do not know | 8(13.6%) |
| Do you wear a medical mask while working in the healthcare facility? | Yes | 57(96.6%) |
| | No | 2(3.4%) |
| How many times in a day do you clean your hands? | 3-5 times | 5(8.5%) |
| | 6-10 times | 27(45.8%) |
| | More than 10 times | 27(45.8%) |
| Have you ever used central helpline number or email-ID to get information on COVID-19? | Yes | 14(23.7%) |
| | No | 45(76.3%) |
| | Yes | 29(49.2%) |

| | | |
|---|---|---|
| Have you ever taken Hydorxychloroquine prophylaxis against COVID-19? | No | 30(51.8%) |
| Do you have 'Aarogya Setu' application in your mobile phone? | Yes | 39(66.1%) |
| | No | 20(33.9%) |
| Do you open the website of the Ministry of Health & Family Welfare to keep yourself updated regarding the information on COVID-19 in India? | Yes | 43(72.9%) |
| | No | 16(27.1%) |
| How frequently do you check the website of Ministry of Health & Family Welfare to keep yourself updated regarding information of COVID-19 in India? | Even less frequently | 6(10.2%) |
| | Every 1-2 days | 16(27.1%) |
| | Every 3-5 days | 13(22.0%) |
| | Every 1-2 weeks | 8(13.6%) |

## Discussion

Epidemics and pandemics are a periodic phenomenon. People in the community face several challenges during such periods. Lack of awareness often leads to an unconcerned attitude, which may adversely affect the preparedness to meet these challenges. Impacts of these epidemics and pandemics are often intense, which may adversely affect the mental well-being of a given population. The fear and anxiety related to epidemics and pandemics also influence the behavior of people in the community. Hence, this study attempted to evaluate the knowledge, attitude and perceived healthcare needs of the society.

The swine flu pandemic of 2009–2010, which resulted in high mortality worldwide also caught global media attention and evoked anxiety among the public significantly [10]. In a study by Rubin *et al* [11] during the swine flu outbreak in the United Kingdom, a telephonic survey was conducted over four days in the native population who heard the term "swine flu" and was able to speak English. There is much similarity like illness between swine flu and COVID-19 infection. Both illnesses are viral in origin involving the respiratory system and spreading by droplet infection. Similar precautions would often recommend for the prevention of swine flu and COVID-19 infection. Unfortunately, there is no specific treatment or vaccine available for COVID-19 infection, whereas both treatment and vaccines are present for swine flu. Though epidemics and pandemics have their unique characteristics in terms of causality, progression and control measures. It is crucial to provide health education and create awareness during such situations for effective prevention of disease spread [12].

The study of Bener and Khan *et al*. also highlighted that 40% and 57.6% of study participants had no knowledge of the treatment of SARS and MERS [14, 15]. In addition, healthcare workers (HCWs) are at a high risk of getting the infection and the source of transmission in the community. Some previous studies showed that HCWs had a lack of knowledge and attitude toward MERS CoV [13,16] and SARS [17] that could have been deleterious in managing the pandemic.

On contrary, Mishra *et al*. [18], 2016 reported that health professionals often have better awareness, positive attitudes towards epidemics/pandemics and they often experience low levels of anxiety, But, a study from Ethiopia reported, poor knowledge and erroneous believes of healthcare professionals, during the Ebola virus outbreak in 2015 and it urged for intense training of the healthcare professionals [19]. In a study conducted in Trinidad and Tobago in 2016, following the

H1N1 epidemic, it was seen that a significant proportion of the general public was unaware of the seriousness and measures of prevention of the epidemic [12]. A similar study, evaluating the knowledge, attitude, and perception of Ebola virus infection among secondary school children of Nigeria, found that most of the participants had inadequate knowledge and carried a negative attitude towards the outbreak [20].

A study conducted by Huynh Giao *et al*. in Year 2020 showed that HCWs are more interested in social media to gather knowledge on an emerging infectious disease like COVID-19 than the official website of the Ministry of Health at the present time [9]. This is an important issue for the government because it's important to consider a variety of channels to update knowledge and learning materials about this pandemic and, especially, to communicate information to the minority of HCW's who have a lack of knowledge or are not currently aware of any issue relating to COVID-19 [13].

Most of the participants in our study were either graduate or post-graduate and were healthcare professionals. The participants had a moderate level of awareness regarding mode of spread, symptoms and preventive measures. However we observed statistically significant difference in knowledge among HCWs sub groups (based on the occupation i.e. Doctor, Nursing staff, Lab technician and Pharmacist) regarding COVID-19 national helpline number, type of specimen collection, use of face mask and handling of COVID-19 dead body (Figure 2).

In our study, participants reported frequent use of sanitizers, hand wash, and appropriate use of face masks. This indicates the increasing concern of participants towards personal hygienic measures to avoid COVID-19 infection. Sensitization and awareness about COVID-19 are reflected in their behavior and attitude significantly as most of the participants agreed with – social distancing, avoiding travel, self-quarantine and adequate hygeinic measures. It seems that a significant proportion of participants in the survey were largely influenced by media information as the government and media emphasizing more on the preventive measures.

At the time of this study, our study population was not infected with COVID-19 infection, however there was an increased need for timely intervention and education about the preventive measures. Those individuals, who were infected with COVID-19 infection or suspected of having the infection and the health workers, who were dealing with COVID-19 infected patients were expected to have more comprehensive knowledge and positive attitude to deal with pandemic situation. Meeting the individual health needs in typical clinical settings that need face-to-face interviews for evaluation, is challenging in the current scenario considering the risk of the spread of COVID-19 infection. In this situation considering online health consultation might be more beneficial and it can deliver the consultation at the doorstep. Also appropriate and judicious use of electronic media to disseminate knowledge and treatment guidelines would further enhance the effectiveness of treatment protocol. The use of telemedicine to discuss and connect with the physician and administrative authority across the region/globe would also be helpful to plan and execute the defined strategies in an effective manner.

## Limitations

The study is limited to the people who had smartphones, e-mail IDs and the ability to English. This represents the educated population of the country, so it should not be generalized to the whole population. The awareness, attitude, and perceived healthcare practices in uneducated people may be different from the findings of our study.

## Conclusion

During this coronavirus pandemic, most of the educated people and health professionals are aware of this infection, possible preventive measures, the importance of social distancing and government initiatives were taken to limit the spread of infection. While managing COVID-19 patients, healthcare professionals should also take extra precautions to limit the spread of the disease to other patients. A personal protective equipment kit has been made available for the professionals involved in the management of such cases. Healthcare professionals are at higher risk for contracting the infection and also could be a potential source of transmitting the disease in the community unknowingly. Therefore awareness (knowledge, attitude, and practice) among healthcare professionals becomes of utmost importance. There is a need to intensify the awareness program and address the health issues of people during this COVID-19 pandemic. It also becomes important to study the KAP in various populations (general populations, cases of COVID-19, close contacts of COVID-19 and healthcare workers) for planning effective intervention strategies for them.

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