

## KNOWLEDGE AND ATTITUDE OF HEALTHCARE PERSONNEL ABOUT COVID -19 PANDEMIC IN INDIA – CROSS SECTIONAL STUDY

\*Megha Sharma MSC. Nursing and Sunil Kumar Poonia MSC. Nursing

Nursing Officer All India Institute of Medical Sciences, Jodhpur, India.

Received date: 27 July 2020

Revised date: 17 August 2020

Accepted date: 07 September 2020

\*Corresponding author: Megha Sharma

Nursing Officer All India Institute of Medical Sciences, Jodhpur, India.

### ABSTRACT

**Purpose:** To assess the knowledge and attitude of healthcare personnel (HCP) about COVID -19 in the Indian healthcare scenario. **Methods:** A cross-sectional study was performed in April 2020 in India. Snowball sampling strategy was carried out and the data was collected through a self-administered questionnaire of the knowledge and attitude of healthcare personnel regarding COVID-19. Descriptive analysis was reported to describe the demographic, mean knowledge, and attitude score of healthcare personnel. **Results:** A total of 400 healthcare personnel had a mean score of knowledge and attitude of  $(10.0 \pm 1.3)$  and  $(10.7 \pm 6.9)$  respectively. They showed good knowledge and a positive attitude. However, the participants knew the mode of transmission, the isolation period and treatment (92.5%, 92.8%, and 77.5%, respectively), only (30.5%) were coming in direct contact with the patient, 55.5% personnel reported use of hand sanitizer more often than hand washing. **Conclusions:** The majority of healthcare workers had good knowledge and a positive attitude toward COVID-19. Only a few questions were not answered correctly. Additional education interventions and campaigns are required for healthcare workers.

**KEYWORDS:** Knowledge, Attitude, Healthcare Personnel, Covid-19.

### INTRODUCTION

Coronaviruses (CoVs) represent a major group of viruses mostly affecting human beings through the zoonotic transmission. In the past two decades, this is the third instance of the emergence of a novel coronavirus, after severe acute respiratory syndrome (SARS) in 2003 and Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012 (Ramadan & Shaib, 2019)(Zhong et al., 2003).

Coronaviruses, so named due to the outer fringe of envelope proteins resembling crown ('corona' in Latin), are a family of enveloped RNA viruses (Burrell, C. J., Howard, C. R., & Murphy, F. A. 2017, pp. 437-446). They are generally pathogenic to mammals and birds and cause mild upper respiratory tract infections in humans. They occasionally can be transmitted to a larger human population and can cause severe respiratory illnesses exemplified by Severe Acute Respiratory Syndrome (SARS) and Middle-East Respiratory Syndrome (MERS) in 2003 and 2012 respectively.

Coronavirus disease 2019 (abbreviated "COVID19" or SARS- Cov-2( severe acute respiratory syndrome coronavirus 2)) is an emerging respiratory disease that is

caused by a novel Coronavirus and was first detected in December 2019 in Wuhan, China. The disease is highly infectious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea (CDC). Some will develop severe illness, at present, it is estimated that 2% will die. Just as with other viral infections, older adults and patients with comorbid conditions are at increased risk for more severe illness (CDC, AMDA). People are more contagious when they are most symptomatic. Looking at the stretch of countries this outbreak spread to, WHO declared it a Public Health Emergency of International Concern on 30th January 2020 (2020).

The major causes of concern are rapid transmission, global coverage, risk in vulnerable groups, and significant mortality which grips the health care team too. The Global Virome Project has been initiated with the objective of creating a global atlas of pathogenic viruses, with the specific objective of identifying spillover events. This project is started with the thought of predicting such emerging infections, raising a timely alarm for the response system (Carroll et al., 2018) (Carroll et al., 2018).

This outbreak which has transmitted globally and India also braces for COVID-19 Pandemic (112,442 total cases) so healthcare personnel (HCP) on the frontlines are particularly vulnerable to this infection. Pandemics can lead to heightened levels of stress; Anxiety is a common response to any stressful situation. With its mode of transmission, healthcare personnel are among the highest risk of being infected.

The highly contagious SARS-CoV-2 virus is an additional hazard for the healthcare system apart from the burden of extended work hours, physical and psychological stress, burnout, and fatigue (Langade et al., 2016).

The knowledge and attitudes of the healthcare personnel are expected to largely influence the degree of adherence to the personal protective measures and ultimately the clinical outcome. Hence, it is important to study these domains in the Indian population. There is a paucity of research that evaluated the knowledge and attitudes of healthcare personnel during this pandemic. Considering the relevance of all the above factors, it was aimed to evaluate knowledge and attitude of healthcare personnel during the corona virus pandemic in India.

### Objective

The objective of this study is to assess the knowledge and attitude of healthcare personnel (HCP) about COVID-19 in the Indian healthcare scenario. This was a questionnaire-based survey adapted from current interim guidelines and information for HCP regarding COVID19 by WHO, CDC, and MOHFW India.

### MATERIAL AND METHODS

Our study population consisted of healthcare personnel who work in India, regardless of their place of work, in private clinics, hospitals, or health centers. This survey was conducted in April 2020. An online questionnaire by using Google Forms was used to collect the data. The Snowball sampling method was used for data collection. The link of the questionnaire was sent through emails, what's App, and other social media to the contacts of the investigators. The participants were encouraged to roll out the survey to as many people as possible. Thus, the link was forwarded to people apart from the first point of contact and so on. On receiving and clicking the link the participants got auto directed to the information about the study and informed consent. After they accepted to take the survey they filled up the demographic details. Then a set of several questions appeared sequentially, which the participants were to answer. Participants with access to the internet could participate in the study. The self-administered questionnaire consisted of socio-demographic questions, 12 questions based on knowledge, and 6 questions for attitude using 5 points Likert scale towards the COVID-19 pandemic. The questionnaire was adapted from the current interim guidance and information for healthcare workers published by ICMR and WHO.

Descriptive statistics have been used in the study to analyze the findings. Mean and standard deviation and proportions have been used to estimate the results of the study. The data is presented in the form of frequency and percentage.

### Ethical Clearance

Consent was obtained by all participants in this study. The questionnaires were anonymous to maintain the privacy and confidentiality of all information collected in the study

### RESULT

An online survey related to the knowledge and attitude of healthcare personnel about COVID -19 pandemic, was conducted in the Indian population. A total of 400 responses were recorded. Each correct answer in relation to the knowledge of COVID-19 was given one point. The total knowledge score varied between 0 (with no correct answer) and 12 (for all correct answers), and a cut off level of <6 was evaluated as poor knowledge, and >6 indicated good knowledge. The mean knowledge scores were (10.0±1.3).

The score of the attitude based on 5 points Likert scale, in which the score of 1 to 5 was given from strongly agree to strongly disagree. A mean score of  $\leq 2$  (answering for strongly agree or agree) was carried out as a positive attitude and a score of 3 to 5 indicated a negative attitude (answering strongly disagree or disagree or undecided). Therefore, the lower the attitude scores were, the higher the probability of positive attitudes and the reverse applied for a high score.

The mean attitude score of the study population was (10.7±6.9).

Table 1 shows the socio-demographic characteristics of HCP in which (64.3%) were males and (35.7%) were females. Most of the personnel (75.7%) aged between 20-30years. Maximum of the respondents were nursing personnel (84.8%) followed by doctors (8%), almost who reported were graduate (58.7%), approximately 70% were posted in areas other than COVID19 units, about (30.5%) health care personnel were coming in direct contact with COVID 19 patient. (36.7%) among the health care personnel reported the previous experience of caring for the patients with swine flu followed by 0.5% had an experience of treating/caring NIPAH.

The source of information for personnel was the internet (45%), television (5%), and seminars (50%) which are reported by most of the personnel.

Table 2 depicts the knowledge of HCP in which we asked 12 questions in which (82%) answered correctly about the beta-Covs category of virus and (64.2%) population knew about the UV sensitivity of the virus. The HCP who answered correctly about the hallmark features of disease were (90.3%), most of the HCP knew

about the correct incubation period (92.8%). Personnel who had knowledge about the WHO's recommendation of collection of two swabs (nasal and throat) were (85%). We also asked about the basic reproduction rate of COVID 19 in which only (27%) reported the correct response. RT PCR is the laboratory test for COVID 19 is responded by (91.3%) and (89.5%) knew about the non-availability of a vaccine. Oxygen therapy is the major treatment intervention for patients with severe infection is reported correctly by (77.5%) of HCPs. On utilization of contact, airborne and droplet precautions for caring for COVID-19 patients, (88.8%) reported it correctly, and (93.8%) agreed about the minimum duration of hand washing is 20 sec.

Table 3 depicts the attitude of health care HCP towards the pandemic COVID 19 in which personnel had a different attitude in each question but most of the personnel shown positive attitude which we can conclude by looking at the mean scores (10.7±6.9) of attitude scale, but only (55.5%) of the population showed strong attitude towards a preference of doing hand washing rather than using hand sanitizer more often.

#### Abbreviations

**CDC:** Centers for Disease Control and Prevention

**COVID-19:** corona virus disease

**AMDA:** American medical director association

**Table 1: Demographic characteristics of HCP (N=400).**

| Demographic groups   | Subgroups                                     | Frequency | Percentage (%) |
|--|---|-----------|----------------|
| Age  | 20-30   | 303       | 75.7           |
|  | 31-40   | 79        | 19.7           |
|  | 41-50   | 13        | 3.2            |
|  | 51-60   | 4         | 1              |
|  | >60   | 1         | 0.4            |
| Gender   | Male  | 257       | 64.3           |
|  | Female  | 143       | 35.7           |
| Marital status   | Married                                       | 244       | 61             |
|  | Unmarried                                     | 155       | 38.8           |
|  | Divorced/separated                            | 1         | 0.2            |
| Occupation   | Doctor  | 32        | 8              |
|  | Lab technicians                               | 1         | 0.2            |
|  | Nursing personnel                             | 339       | 84.8           |
|  | Others  | 28        | 7              |
| Professional qualification   | Diploma                                       | 57        | 14.2           |
|  | Graduate                                      | 235       | 58.7           |
|  | Postgraduate                                  | 88        | 22             |
|  | Doctorate                                     | 3         | 0.7            |
|  | others  | 17        | 4.4            |
| Type of health care setting  | Government sector                             | 276       | 69             |
|  | Private sector                                | 87        | 21.8           |
|  | Community Health Centre/ Public Health Centre | 5         | 1.2            |
|  | Other   | 32        | 8              |
| Current clinical working area  | COVID-19 isolation ward                       | 63        | 15.7           |
|  | COVID-19 ICU unit                             | 24        | 6              |
|  | COVID 19 triage                               | 35        | 8.8            |
|  | Non-COVID areas                               | 278       | 69.5           |
| Direct contact with COVID-19 patients  | Yes   | 122       | 30.5           |
|  | No  | 180       | 45             |
|  | Maybe   | 98        | 24.5           |
| Previous experience of treating/ caring patients with highly infectious diseases | NIPAH   | 2         | 0.5            |
|  | SWINE FLU                                     | 147       | 36.7           |
|  | NO EXPERIENCE                                 | 251       | 62.8           |

**Table 2: Knowledge regarding COVID 19 among HCP (N=400).**

| S. NO. | QUESTIONS   | Correct Responses Frequency (%) | Incorrect Responses Frequency (%) |
|--------|---|---------------------------------|-----------------------------------|
| Q1     | COVID-19 belongs to betaCoVs category   | 328(82)                         | 72(18)                            |
| Q2     | Is it sensitive to ultraviolet rays and heat  | 258(64.5)                       | 72(35.5)                          |
| Q3     | This viral illness is transmitted from human-to-human, and symptomatic people are the most frequent source of COVID-19 spread | 370(92.5)                       | 30(7.5)                           |
| Q4     | Basic reproduction number (R0- R naught) is 2.2   | 108(27)                         | 292(73)                           |
| Q5     | fever, dry cough and shortness of breath are hallmark symptoms of COVID-19  | 36(90.3)                        | 39(9.8)                           |
| Q6     | incubation time could be generally within 7 - 14 days   | 371(92.8)                       | 29(7.3)                           |
| Q7     | WHO recommends collecting specimens of both naso- and oropharyngeal secretions  | 340(85)                         | 60(15)                            |
| Q8     | Laboratory test for COVID -19 is RT-PCR   | 365(91.3)                       | 35(8.8)                           |
| Q9     | Currently, no vaccine is available for COVID-19   | 358(89.5)                       | 42(10.5)                          |
| Q10    | Oxygen therapy is the major treatment intervention for patients with severe infection   | 310(77.5)                       | 90(22.5)                          |
| Q11    | Washing hand with soap and water for at least 20 secs can help in the prevention of transmission of disease                   | 375(93.8)                       | 25(6.3)                           |
| Q12    | Healthcare personnel caring for COVID-19 infected patient should utilize contact, airborne and droplet precautions            | 355(88.8)                       | 45(11.3)                          |

**Table 3: Attitude regarding COVID 19 infection control measures among HCP (N 400).**

| S.no | Questions   | Strongly agree | Agree     | Undecided | Disagree | Strongly disagree |
|------|---|----------------|-----------|-----------|----------|-------------------|
| Q1   | I will prevent the spread of COVID-19 by actively participating in hospital infection control programs      | 233(58.3)      | 90 (22.5) | 30(7.5)   | 12(3)    | 35(8.8)           |
| Q2   | I will self-monitor for hallmark signs of COVID-19, do self-isolate and report to the managers if it occurs | 260(65)        | 57 (14.2) | 36(9)     | 13(3.3)  | 34(8.5)           |
| Q3   | I will put on, use, take off and dispose of personal protective equipment properly                          | 273(68.3)      | 49 (12.3) | 29(7.2)   | 14(3.5)  | 35(8.8)           |
| Q4   | I will apply institutional  | 254(63.5)      | 49        | 36        | 26(6.5)  | 35(8.8)           |

|    |  |           |         |          |         |         |
|----|--|-----------|---------|----------|---------|---------|
|    | protocols to assess, triage and treat/care of patients                       |           | (12.3)  | (9)      |         |         |
| Q5 | I will prefer doing hand washing rather than using hand sanitizer more often | 222(55.5) | 80 (20) | 41(10.3) | 24(6)   | 33(8.3) |
| Q6 | I will maintain social distancing while in community                         | 282(70.5) | 44 (11) | 22(5.5)  | 13(3.3) | 39(9.8) |

## DISCUSSION

This survey provides an insight into the knowledge and attitude of health care personnel in India on COVID-19 at the time of the outbreak in 2020.

For HCP, good knowledge, positive attitude, and good practices of following precautionary measures such as wearing gloves, protective clothing, goggles and face mask is imperative in effective dealing with infected patients with minimum risks. Also, ongoing pandemic nature of disease made it necessary for HCP to multiply their alarms corresponding to critical situation and to put efforts in following and implementing related hygienic conditions as well as recommendations.

The COVID-19 outbreak is considered an emergency and HCP are seen to have an increased risk of infection since epidemics and pandemics are the natural phenomena. It is therefore of paramount importance that health care personnel across the world have adequate knowledge about all aspects of the disease from clinical manifestation, diagnosis, proposed treatment, and established prevention strategies.

Among the healthcare personnel who responded the survey in our study most of the population were nurses (84.7%) followed by doctors (8%), and most of them were graduate (58.7%) which correlates with a study done in China in which nearly one-half of the study respondents (46.5%) were nurses, and (36.5%) were doctors and more than half of the respondents had a college degree (56.3%)(Zhang et al., 2020).

In our study only (30.6%) of the population was coming in direct contact with COVID 19 patients, which indicates a good strategy laid by the Indian government for deploying HCP during the pandemic that only 30% of healthcare personnel will work at a time for reducing the exposure.

We found that the majority of the respondents know the COVID-19 is a global issue and 55% of them got the information from seminars which is in line with the study done by Albarrak I et al in which the participants reported the highest main source of information was seminars and workshops (n=191; 48%) followed by social media (n=179; 45%) (Albarrak et al., 2019).

The findings in our study showed that health care personnel had a good level of knowledge(10.0±1.3) and a positive attitude(10.7±6.9) towards the COVID-19 outbreak, which is in line with the study done by Albarrak I et al, Giao H et al in Vietnam (Albarrak et al., 2019)(Giao H et al., 2020) (Olum, Chekwech, Wekha, Nassozi & Bongomin, 2020).

Knowledge is a prerequisite for establishing prevention beliefs, forming positive attitudes, and promoting positive behaviors, and individuals' cognition and attitudes towards disease affect the effectiveness of their coping strategies and behaviors to a certain extent (McEachan, Taylor, Harrison, Lawton, Gardner & Conner, M. 2016).

In our study personnel reported answers correctly regarding transmission by close contact was (92.5%), and incubation period (92.8%), treatment (77.5%) respectively which is in contrast with the study where they reported only 67.0%, 65.8% and 58.4% of good answers relate to the transmission by close contact with an infected person, the isolation period and treatment of the COVID-19 virus. (Giao H et al., 2020).

Present findings provide confidence in terms of healthcare personnel knowledge regarding COVID-19 symptoms, transmission and preventive measures. This is of more significance in current scenario when there is no vaccine and research is ongoing so HCP must aware of all the updates and take precautions in treating and preventing the infection.

Majority of the personnel agreed for following infection prevention and control practices such as participating in hospital programs regarding prevention of infection, practicing social distancing, self-isolation, and use of PPE while caring the patients which is again in line with the study by Olum R et al in which majority of the HCWs were following infection prevention and control practices recommended by the Ministry of Health Uganda and WHO. These include regular hand hygiene, social distancing, and wearing a face mask when in high-risk situations (Olum, Chekwech, Wekha, Nassozi & Bongomin, 2020).

In our study 55.5% HCP preferred use of hand sanitizers more often than hand washing which is also reported in a

study done in India by Deblina et al in which more than 75 % felt the need to use sanitizers and gloves (Roy D et al., 2020).

### LIMITATION

This study has some limitations which impact its findings.

- 1) Web-based survey design and sampling bias are evident as there were no restrictions in participant's self-selection.
- 2) It included only those HCP who use internet access.

The survey was conducted in only India, so the results may not be generalizable to other hospitals. Additionally, the measurement of knowledge and attitude may be imprecise due to the limited number of items. Further study is needed to expand upon and resolve these issues.

### 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. Additional education intervention and campaigns are required for HCP to avail them with the knowledge of the mode of transmission, the isolation period and treatment strategies, as well as the risk of personal and family infection.

Acknowledgment – None.

Funding – None.

Declaration of competing interest – None.

### REFERENCES

1. Ramadan, N., & Shaib, H. Middle East respiratory syndrome coronavirus (MERS-CoV): A review. *Germes*, 2019; 9(1): 35-42. doi: 10.18683/germes.2019.1155.
2. Zhong, N., Zheng, B., Li, Y., Poon, L., Xie, Z., & Chan, K. et al. Epidemiology and cause of severe acute respiratory syndrome (SARS) in Guangdong, People's Republic of China, in February, 2003. *The Lancet*, 2003; 362(9393): 1353-1358. doi: 10.1016/s0140-6736(03)14630-2.
3. Carroll, D., Daszak, P., Wolfe, N., Gao, G., Morel, C., & Morzaria, S. et al. The Global Virome Project. *Science*, 2018; 359(6378): 872-874. doi: 10.1126/science.aap7463.
4. Carroll, D., Watson, B., Togami, E., Daszak, P., Mazet, J. A., Chrisman, C. J., Rubin, E. M., Wolfe, N., Morel, C. M., Gao, G. F., Burci, G. L., Fukuda, K., Auewarakul, P., & Tomori, O. Building a global atlas of zoonotic viruses. *Bulletin of the World Health Organization*, 2018; 96(4): 292–294. <https://doi.org/10.2471/BLT.17.205005>
5. Langade, D., Modi, P. D., Sidhwa, Y. F., Hishikar, N. A., Gharpure, A. S., Wankhade, K., Langade, J., & Joshi, K. Burnout Syndrome Among Medical Practitioners Across India: A Questionnaire-Based Survey. *Cureus*, 2016; 8(9): e771. <https://doi.org/10.7759/cureus.771>.
6. Albarrak, A. I., Mohammed, R., Al Elayan, A., Al Fawaz, F., Al Masry, M., Al Shammari, M., & Miaygil, S. B. Middle East Respiratory Syndrome (MERS): Comparing the knowledge, attitude and practices of different health care workers. *Journal of infection and public health*, S1876-0341(19)30239-4. Advance online publication. <https://doi.org/10.1016/j.jiph.2019.06.029>, 2019.
7. Giao, H., Han, NTN., Van, Khanh T., Ngan, VK., Van, Tam V., Le, An P. Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City. *Asian Pacific J Trop Med*, 2020; 13: 3–5. DOI: 10.4103/1995-7645.280396.
8. Olum, R., Chekwech, G., Wekha, G., Nassozi, D. R., & Bongomin, F. Coronavirus Disease-2019: Knowledge, Attitude, and Practices of Health Care Workers at Makerere University Teaching Hospitals, Uganda. *Frontiers in public health*, 2020; 8: 181. <https://doi.org/10.3389/fpubh.2020.00181>.
9. Zhang, M., Zhou, M., Tang, F., Wang, Y., Nie, H., Zhang, L., & You, G. Knowledge, attitude, and practice regarding COVID-19 among healthcare workers in Henan, China. *Journal Of Hospital Infection*, 2020; 105(2): 183-187. doi: 10.1016/j.jhin.2020.04.012.
10. McEachan, R., Taylor, N., Harrison, R., Lawton, R., Gardner, P., & Conner, M. Meta-Analysis of the Reasoned Action Approach (RAA) to Understanding Health Behaviors. *Annals Of Behavioral Medicine*, 2016; 50(4): 592-612. doi: 10.1007/s12160-016-97984.
11. Roy, D., Tripathy, S., Kar, S. K., Sharma, N., Verma, S. K., & Kaushal, V. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian journal of psychiatry*, 51, 102083. Advance online publication. <https://doi.org/10.1016/j.ajp.2020.102083>, 2020.
12. Retrieved 3 May 2020, from <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200306-sitrep-46-covid-19.pdf?sfvrsn=96b04adf-2, 2020>.
13. Burrell, C. J., Howard, C. R., & Murphy, F. A. Coronaviruses. *Fenner and White's Medical Virology*, 437–446. <https://doi.org/10.1016/B978-0-12-375156-0.00031-X>, 2017.