*Original Research Article*

**Challenges Faced by Healthcare Workers During the COVID-19 Pandemic in Prayagraj District of Uttar Pradesh**


**ABSTRACT**

Healthcare workers are more susceptible to contracting the coronavirus since they are the first to be exposed to the illness, even if they have the necessary training and experience to minimize the impact of disease spread among themselves and in the community. In this study, we have explored the preparedness of healthcare workers during threats of infectious disease outbreak in Prayagraj district.

The study aims to outline the challenges faced by healthcare workers in India during COVID-19 pandemic.

Qualitative research among healthcare professionals of a secondary and a tertiary care hospital for a duration of 4 months. The census method was used for completing this research in this all the healthcare workers of both the hospitals considered. The data was carefully examined and was exported to IBM SPSS version 28.

The study revealed that the healthcare workers indicated that they had to cope with mental health issues and a widespread PPE shortage. Furthermore, it was also found that the HCW suggested that the government should allow more entities to conduct and produce tests and should provide centralized communication and public information to help them prepare for future infectious disease outbreaks.

The findings reflect on the difficulties faced by healthcare workers during the COVID-19 pandemic. This implies that there is a need to support the healthcare workers with adequate PPEs and supplies. Furthermore, it is necessary to provide a supportive environment to the healthcare workers to help them cope with the mental pressure that arises during outbreaks like COVID-19.



**KEYWORDS**

COVID-19, healthcare workers, knowledge, practices, challenges, strategies, recommendations


## Introduction

On January 30, 2020, WHO declared the coronavirus disease 2019 (COVID-19) outbreak a public health emergency of worldwide concern, and on March 11, 2020, it was declared a pandemic. COVID-19 affected over 200 countries and territories worldwide, with 517,648,631 confirmed cases and 6,261,708 deaths associated with COVID-19 globally, as of May 13, 2022 (World Health Organization, 2022). Almost all countries and territories have been affected by the COVID-19 pandemic, regardless of their level of development or geographic location, while appropriate risk mitigation strategies differ between developing and developed countries. The pandemic's consequences in low- and middle-income countries (LMICs) are more challenging since incidence and mortality may be linked to a weak healthcare system and a scarcity of related resources (Hopman *et al.* 2020).

The first case of COVID-19 in India was reported on January 27th in Trissur, Kerala, in a 20-year-old woman with a history of travel to China (Santosh *et al.* 2020). COVID-19 transmission in India was aided by the quick mobility of people from worldwide epicenters and between cities, and the infection expanded to India's major cities. Active government action, such as foreign

travel suspension, contact tracing, containment, and mitigation methods, was implemented in response to the increase in cases and to break the transmission cycle. Despite the preventive measures, the illness continued to spread across the country, with confirmed cases totaling 4,25,86,544 as of February 12, 2022 (Ministry of Health and Family Welfare, 2022).

The use of evidence-based NPIs, including social distancing, personal and respiratory hygiene, as well as persistent public collaboration in many communities, have been advised to prevent the spread of the disease (Bhatia, 2020). The Indian government also planned a nationwide lockdown to limit social contact and prevent the virus from spreading throughout the country. The restriction on movement, non-essential activity, and travel is part of the measure. The frequently changed government guidelines regulated these unexpected limits and sparked panic and confusion among the population, encouraging migrant workers to travel vast distances to their hometowns, potentially increasing the danger of infection in other cities. In addition to the physical risks, such public health emergencies have psychological effects on healthcare workers, such as professional stress, infection anxiety, and a sense of helplessness (Li *et al.* 2021).

The exponential increase in the number of cases had put pressure on all nations' healthcare systems, including both developed and developing countries. Initial attempts also revealed that Medicare's efforts alone would not be sufficient to address the problem. Inefficient, unprepared health systems have made it difficult for developing or underdeveloped countries to accommodate active patients in medical facilities. The rapid lockdown was seen as a critical step in containing the virus's spread, and it was adopted by several countries.

At the beginning of the COVID-19 pandemic, a major challenge was insufficient personal protection of healthcare workers as well as their weak understanding of personal protection. As a result, before providing treatment, the front-line healthcare professionals did not adopt an appropriate personal protection strategy (Wang *et al.* 2020). Furthermore, the problem of resource availability, allocation, and adequacy has reached manifolds (Mishra & Mohanty, 2019). The healthcare workers were provided with an inadequate number of PPEs by the government, and a majority of them were not trained on how to use them, which resulted in an increased number of infections among healthcare professionals (Razu *et al.* 2021). The healthcare industry in India lacks resources. The gross mismatch in resource availability and allocation is of great concern (Bhukta & Patra, 2019). To the best of our knowledge, the majority of studies in India have focused on the virus's characteristics, epidemiology, therapeutic regimens, and vaccine trials, but there has been little research on the challenges faced by healthcare workers during the COVID-19 pandemic as well as their recommendations. This article aims to outline the challenges of Indian healthcare workers—physicians, nurses, paramedical staff, and frontline workers during the current pandemic.

## MATERIALS AND METHODS

A qualitative study was conducted from January –April 2022. This study was carried out on 153 healthcare workers from a secondary and a tertiary care hospital in the Prayagraj district of Uttar Pradesh. Well-informed consent was taken from the healthcare workers. A pretested bi-lingual questionnaire was used for collecting data. This questionnaire could measure the knowledge and

awareness about COVID-19 and the challenges faced during the pandemic. All statistical analysis was performed using SPSS version 28.

The responses were submitted online via Google Forms. The doctors at both institutions were given access to the survey link by email, online link, and social media, and they were requested to share it with their colleagues. Daily reminders were sent to them while the link was active to increase the response rate.

## RESULTS

A total of 153 healthcare workers were selected for the study, 56 from secondary care hospital and 97 from tertiary care hospital. The study population comprised 79 (51.63%) females and 74 (48.37%) males. The majority of respondents were between the age group 28 to 37 years and 91 (59.5%) of them had a bachelor's as their highest degree of education. The majority 77 (50.32%) of the respondents were nurses while 40 (26.16%) of them were doctors. Furthermore, 81 (53%) of the healthcare workers had been working in their respective institutes for one to five years. (Table I & Figure I, II, III)

### Knowledge

In the present study, it was revealed that most of the healthcare workers had received infection control protocol (ICP) training to respond to an outbreak. The majority of the respondents answered correctly that COVID-19 is an infectious disease, transmitted by coughs and sneezes of an infected person and the serious symptoms are troubled breathing, loss of speech and mobility, and chest pain. Most of them considered that diabetic patients are at a higher risk of getting infected with COVID-19 and that the approved testing method of testing COVID-19 is RT-PCR. Most of the healthcare workers who responded agreed that saliva is the major type of sample for COVID-19 testing and that duration of mild cases of COVID-19 is less than two weeks and for severe cases is 3 to 6 weeks (Table II).

The majority of the respondents agreed that COVID-19 patients can be discharged within 14 days with at least 2 negative results and disagreed that COVID-19 can be transmitted through mosquito bites. Most of the respondents agreed that donning area is to wear PPEs and that discarded PPEs should be disposed of in yellow bags. Most of the healthcare workers agreed that adherence to infection control protocol (ICP)s is one of the important factors in preventing healthcare-acquired infections. (Figure IV)

### Practice

Individual questions were answered correctly by 40.52% (62/153) to 85.62% (131/153) of respondents, except for the third practice question, where only 28.76% (44/153) of participants reported participating in educating patients about COVID 19 and other infectious diseases (Figure V).

### Challenges

In the current study, it was reported that majority 100% of the healthcare workers from the secondary hospital indicated that they had to cope with different mental health issues and a widespread PPE shortage during the COVID-19 pandemic, whereas 97.94% of the healthcare workers from the tertiary care hospital also reported the same. (Figure VI)

**Strategies**

The current study also revealed that maximum 100% of the healthcare workers from tertiary care hospital identified that securing necessary PPE, equipment, and supplies was the most important strategy that they had employed to mitigate the challenges faced during COVID-19, whereas minimum 91.75% of them reported that providing a supportive environment for the staff as their best strategy. In secondary care hospital, 80.36% of the healthcare workers reported that they preferred securing ventilators and alternative equipment to support patients as their best strategy, followed by managing patient flow. (Figure VII)

**Recommendations**

In the present study majority of healthcare workers from both institutes recommended that to help them prepare for infectious disease outbreaks the government should (Figure VIII):

- Allow more entities to conduct and produce tests
- Provide centralized communication and public information, as well as evidence-based recommendations, accurate data, and predictive models
- Assure that the hospital has test kits and swabs on hand
- Assist hospitals in obtaining PPE and other equipment

**Factors associated with the knowledge and practice of healthcare workers**

It was found in the present study that there was a significant association between the designation of the healthcare workers and their knowledge regarding COVID-19. It was observed that the knowledge with a higher level of education had higher knowledge. Furthermore, a significant association was observed between the designation of healthcare workers and their knowledge, as the knowledge was higher among the doctors followed by nurses and lab technicians. (Table III & IV)

In the present study, a one-way analysis of variance was conducted to evaluate the null hypothesis that there is no difference between the healthcare workers' knowledge with their practice regarding infection control protocol (ICP) (N=153). The independent variable, Healthcare workers follow infection control protocol (ICP), included three groups: Always, Sometimes, and When required. The ANOVA test was significant, $F_{2,150} = 4.78$, $p = 0.01$, $\eta^2 = 0.06$. Since the p-value is less than 0.05, there is significant evidence to reject the null hypothesis and conclude there is a significant difference between the healthcare workers' knowledge with their practice regarding infection control protocol (ICP). (Table V)

## DISCUSSION

The present study tried to provide significant insight into the knowledge and practice of healthcare workers regarding COVID-19 as well as the challenges they faced. The study results showed that the healthcare workers had relatively good knowledge and majority of them had adopted appropriate practices. It was observed that knowledge and practice were higher among doctors followed by nurses and lab technicians. Additionally, it was found that there was a

significant difference between the knowledge and practice of healthcare workers regarding infection control protocol (ICP) and donning.

This study highlights several challenges faced by healthcare workers during the COVID-19 pandemic. First, even though the nation had already past the peak of the first breakout wave by the time the study was done, the healthcare workers lacked infection control protocol (ICP) training. Similar findings were reported in a study by Tamang, et al. (2020) in a tertiary care institution in Nepal, where only 43.8% of the healthcare workers got infection control protocol (ICP) training.

Second, according to the results of the current study, the majority of healthcare workers indicated that they had to cope with different mental health issues and a widespread PPE shortage. In context to mental health problems faced by healthcare workers, it can be assumed that the reason could be high workload and fear of getting infected during the pandemic. Similar findings were found in a study by Razu, et al. (2021) that healthcare workers had to deal with a variety of psychological difficulties, such as anxiety, depression, insomnia, and a fear of unexpected death during the COVID-19 pandemic.

Third, the healthcare workers also reported that changing and inconsistent guidance was also one of the major issues they faced during COVID-19. According to a study by Sengupta, et al. (2021) conducted in public and private healthcare hospitals in West Bengal, it was reported that the COVID-19 pandemic has threatened the entire infrastructure of the healthcare system. Due to the limited COVID-19 testing guidelines, healthcare professionals' knowledge, judgment, and decisions have been challenged.

Fourth, the results of the current study also showed that the lack of PPEs was another major challenge faced by healthcare workers. Similar findings were reported in a study by Razu, et al. (2021) conducted in Bangladesh, where participants frequently mentioned that the PPE provided by their hospitals was either insufficient or of low quality. According to another study by Wang, Zhou, & Liu (2020) conducted in China, it was reported that a lack of PPE contributed to the spread of infections among medical staff.

Fifth, the healthcare workers also reported that insufficient staffing was another challenge they faced while tacking with COVID-19. In a study conducted by Sengupta, et al. (2021) in public and private healthcare hospitals in West Bengal, similar findings were reported that there was a lack of medical staff in the hospitals which lead to an excessive workload on the remaining personnel.

The findings of the study also revealed that the HCWs suggest that they need the government to:

- Provide them provide evidence-based guidance
- provide reliable predictive models and data that would help them plan and prepare
- Allow more entities to conduct and produce tests, resulting in faster testing
- Assure that hospitals have test kits and swabs on hands
- Assisting hospitals in obtaining PPE and other equipment such as ventilators

**CONCLUSION**

This study provides significant insight into the knowledge and practice of healthcare workers as well as the difficulties faced by them in Prayagraj and how they overcame them during the COVID-19 pandemic. Furthermore, the study has also tried to outline the recommendation made by the healthcare workers that might help them to prepare for infectious disease outbreaks. One of the limitations of the study was that not all healthcare workers were included in the study as they were engaged in their duties.

It is advised that healthcare professionals update their knowledge regularly. Health authorities should focus on preparing healthcare professionals for disease outbreak response because their readiness is crucial for preventing disease spread and providing better patient care. Healthcare workers should be provided with a supportive environment to help them cope with the mental pressure during such infectious disease outbreaks. It is recommended to conduct further research on the knowledge and practice of healthcare workers, as well as the challenges faced by them involving more healthcare institutes.

**RECOMMENDATIONS**

1. It is advised that healthcare professionals update their knowledge on a regular basis.

2. Health authorities should focus on preparing healthcare professionals for disease outbreak response because their readiness is crucial for preventing disease spread and providing better patient care.

3. The HCWs should be provided with a supportive environment to help them cope with the mental pressure during such infectious disease outbreaks.

4. More in-depth research should be conducted on knowledge and practice of health care workers, as well as the challenges faced by them during such outbreaks in India.

## REFERENCES


Bhatia, R. (2020). Public engagement is key for containing COVID-19 pandemic. *Indian Journal of Medical Research*, 118-120. doi: 10.4103/ijmr.IJMR_780_20.

Bhukta, A., & Patra, S. (2019). Pattern of Healthcare Expenditure in India. *SSRN Electronic Journal*.

Hopman, J., Allegranzi, B., & Mehtar, S. (2020). Managing COVID-19 in Low- and Middle-Income Countries. *JAMA*, 1549. doi:10.1001/jama.2020.4169.

Li, Q., Zhang, H., Zhang, M., Li, T., Ma, W., An, C., Chen, Y., Liu, S., Kuang, W., Yu, X., & Wang, H. (2021). Prevalence and Risk Factors of Anxiety, Depression, and Sleep Problems Among Caregivers of People Living With Neurocognitive Disorders During the COVID-19 Pandemic. *Frontiers in psychiatry*, 11, 590343. https://doi.org/10.3389/fpsyt.2020.590343

Ministry of Health and Family Welfare. (2022, February 12). *Ministry of Health and Family Welfare, Government of India*. Retrieved from https://www.mohfw.gov.in/#

Mishra, S., & Mohanty, S. (2019). Out-of-pocket expenditure and distress financing on institutional delivery in India. *International Journal for Equity in Health*. 8(1), 99. https://doi.org/10.1186/s12939-019-1001-7.

Razu, S., Yasmin, T., Arif, T., Islam, M., Islam, S., Gesesew, H., & Ward, P. (2021). Challenges Faced by Healthcare Professionals During the COVID-19 Pandemic: A Qualitative Inquiry From Bangladesh. *Frontiers in Public Health*. 9, 647315. https://doi.org/10.3389/fpubh.2021.647315.

Andrews, M. A., Areekal, B., Rajesh, K. R., Krishnan, J., Suryakala, R., Krishnan, B., Muraly, C. P., & Santhosh, P. V. (2020). First confirmed case of COVID-19 infection in India: A case report. *The Indian journal of medical research*, 151(5), 490–492. https://doi.org/10.4103/ijmr.IJMR_2131_20

Sengupta, M., Roy, A., Ganguly, A., Baishya, K., Chakrabarti, S., & Mukhopadhyay, I. (2021). Challenges Encountered by Healthcare Providers in COVID-19 Times: An Exploratory Study. *Journal of Health Management*, 339-356. doi:10.1177/09720634211011695.

Tamang, N., Rai, P., Dhungana, S., Sherchan, B., Shah, B., Pyakurel, P., & Rai, S. (2020). COVID-19: a National Survey on perceived level of knowledge, attitude and practice among frontline healthcare Workers in Nepal. *BMC public health*, 20(1), 1905. https://doi.org/10.1186/s12889-020-10025-8

Wang, J., Zhou, M., & Liu, F. (2020). Reasons for healthcare workers becoming infected with novel coronavirus disease 2019 (COVID-19) in China. *The Journal of hospital infection*, 105(1), 100–101. https://doi.org/10.1016/j.jhin.2020.03.002

World Health Organization. (2022, 05 16). *Coronavirus disease (COVID-19) Situation dashboard.* Retrieved 05 13, 2022, from World Health Organization: https://covid19.who.int/

## FIGURES

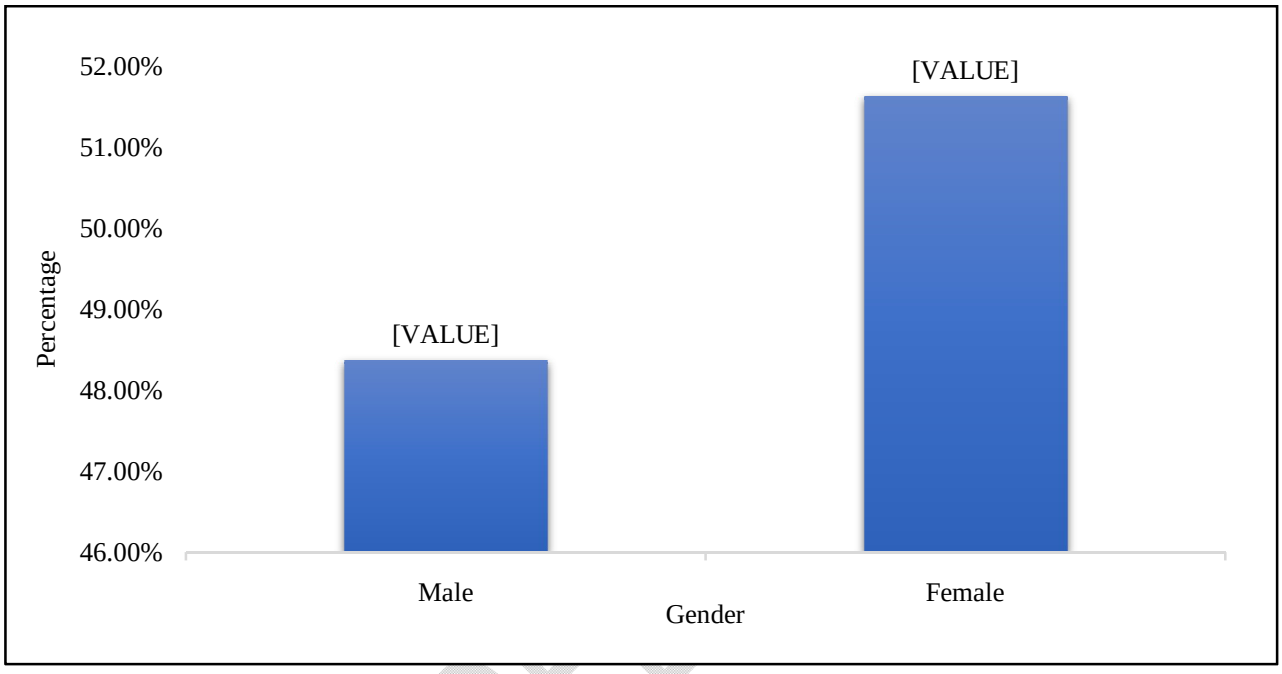


**Figure I: Gender wise distribution of healthcare workers**

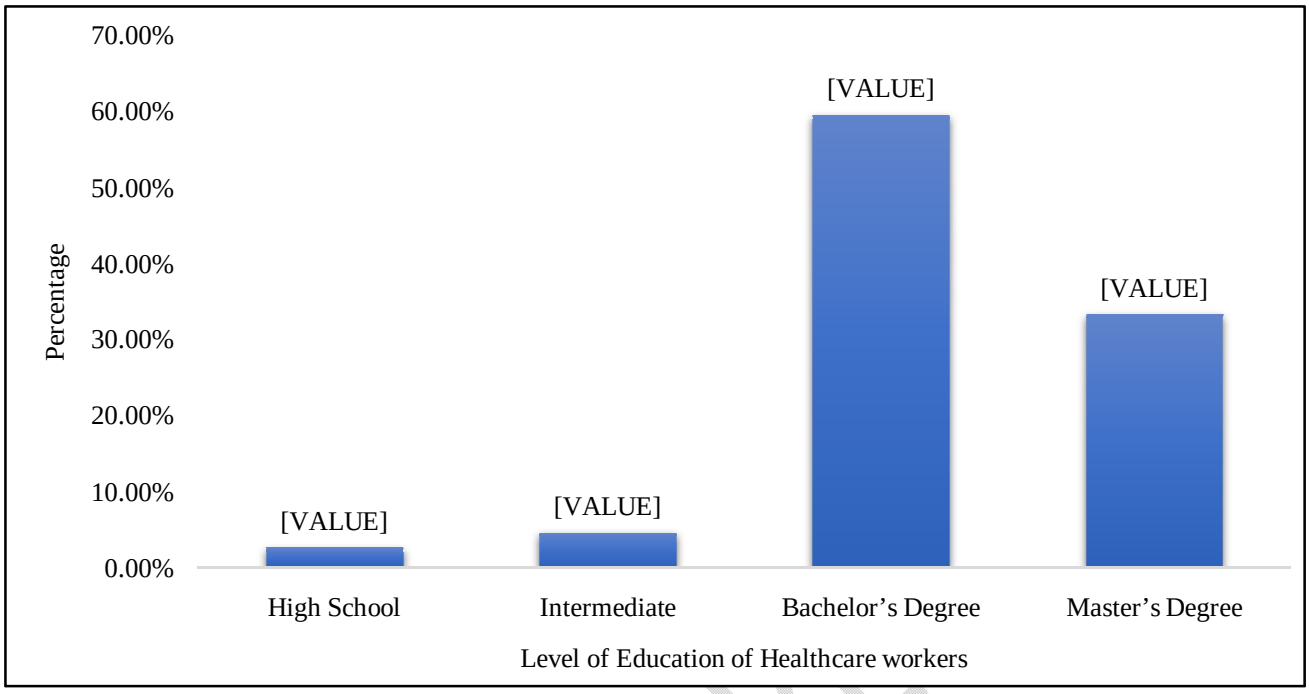


**Figure II: Education wise distribution of healthcare workers**

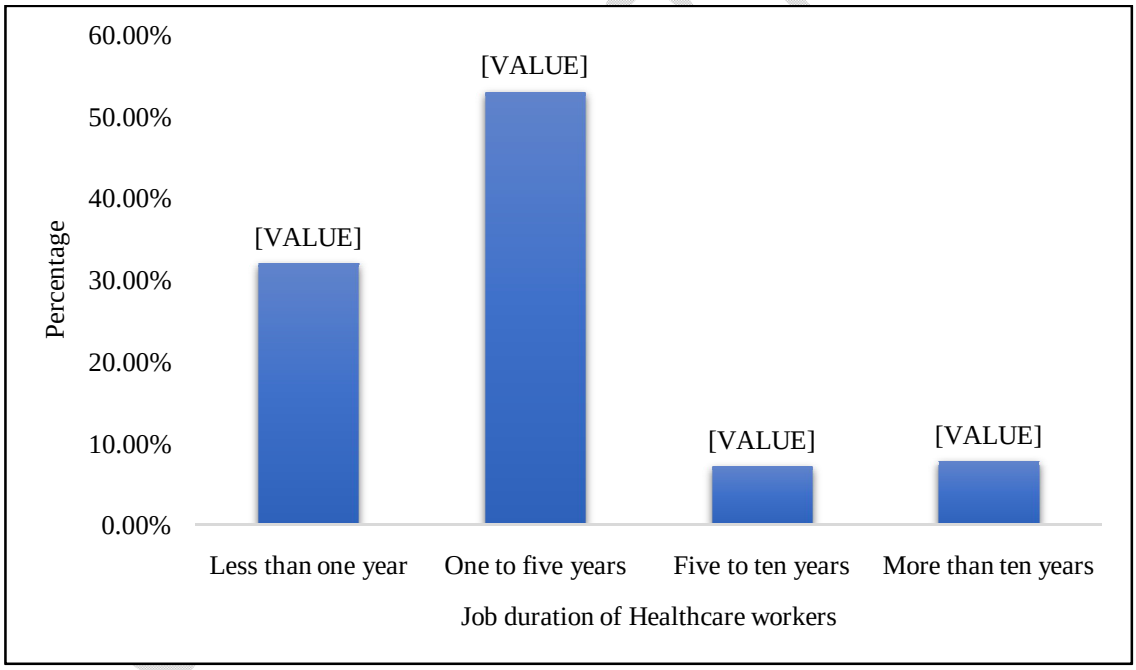


**Figure III: Distribution of healthcare workers according to their duration of job**

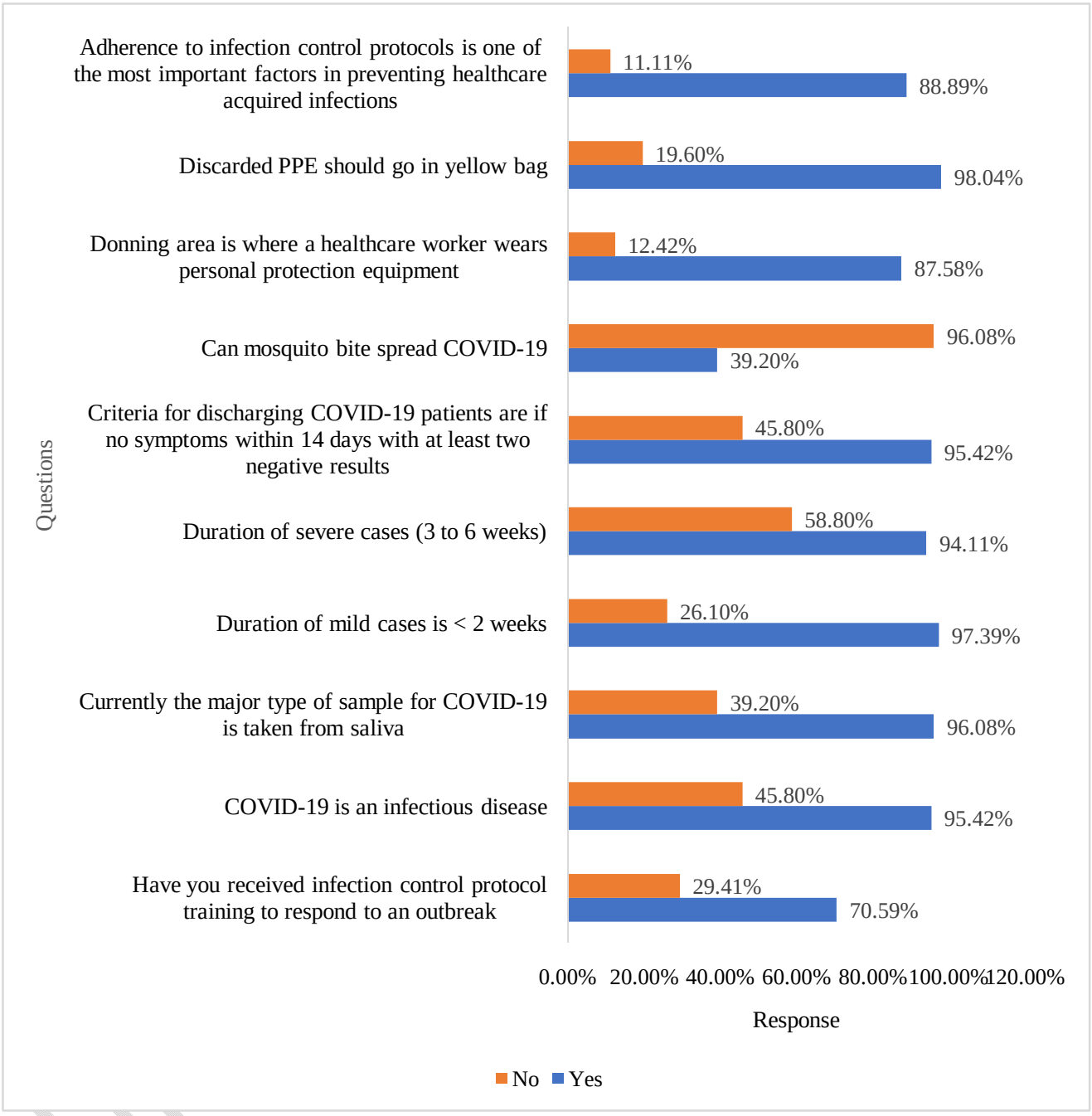


**Figure IV: Knowledge of healthcare workers regarding COVID-19**

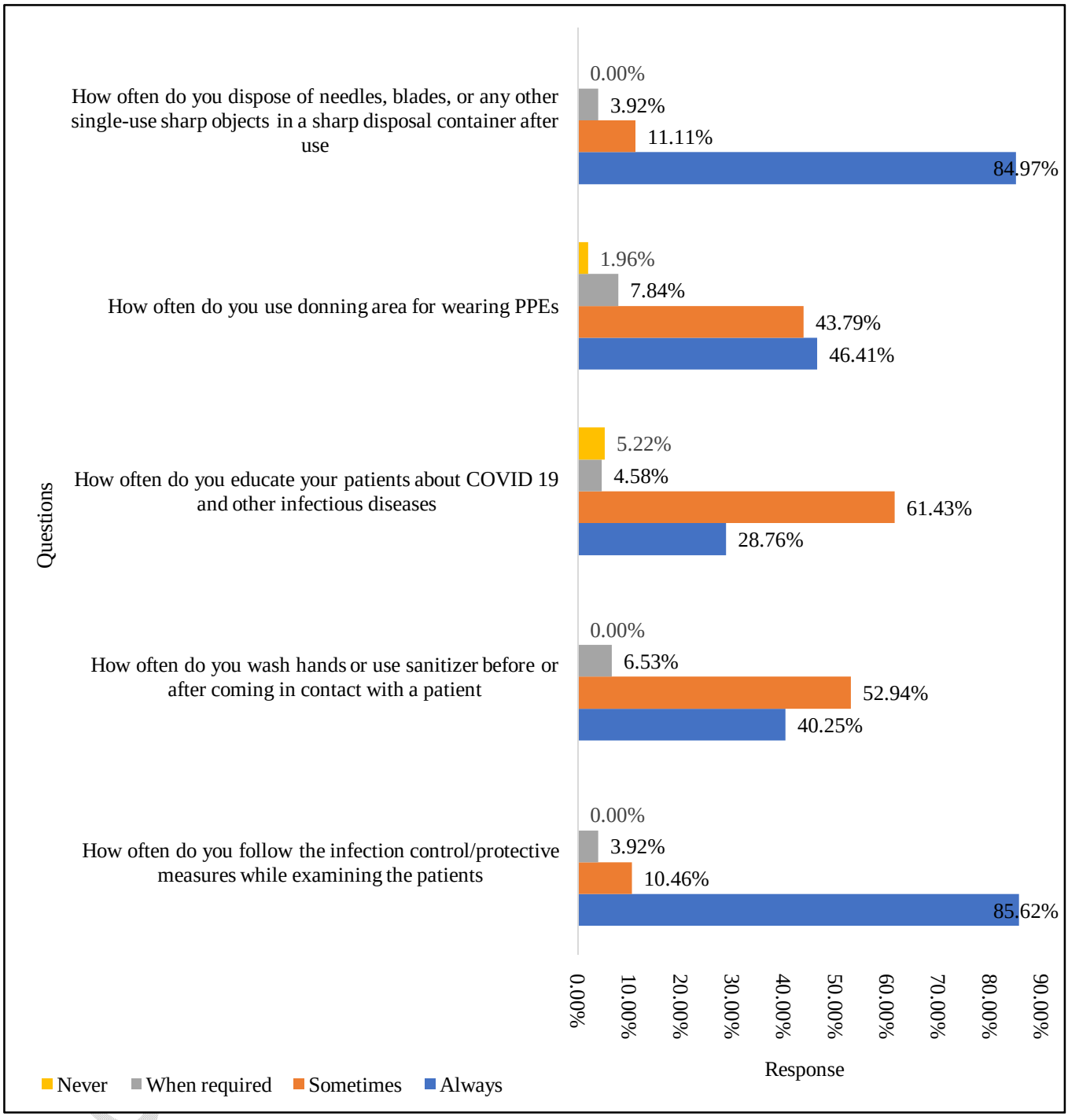


**Figure V: Practice of the healthcare workers regarding COVID-19**

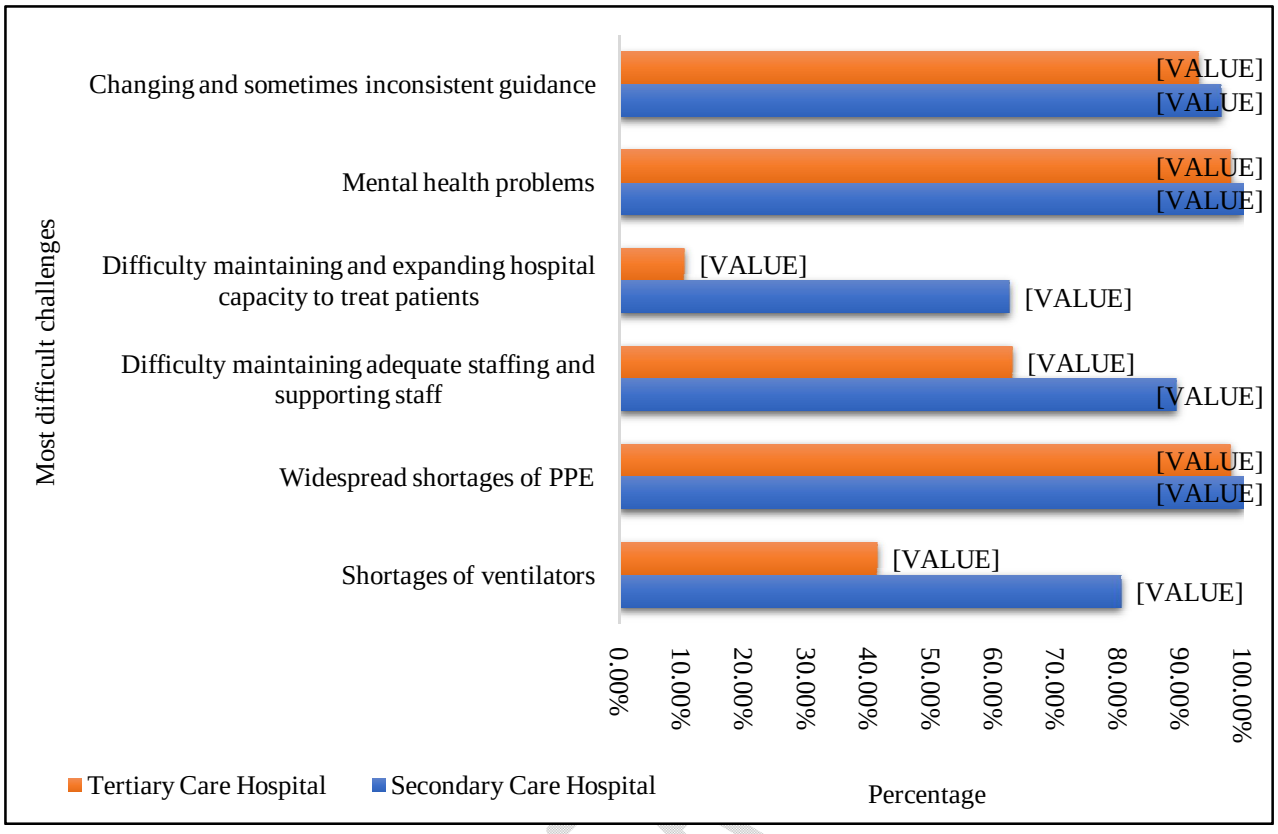


**Figure VI Most difficult Challenges faced by healthcare workers in responding to COVID-19**

**TABLES**

**Table I: Socio-Demographic Profile of Respondents**

| Questionnaire | Categories | Response | |
|---|---|---|---|
| | | Count | Percentage |
| **Gender** | Male | 74 | 48.37% |
| | Female | 79 | 51.63% |
| **Education** | High school | 04 | 2.6% |
| | Intermediate | 07 | 4.6% |
| | Bachelor's degree | 91 | 59.5% |
| | Master's degree | 51 | 33.3% |
| **Duration of job** | Less than one year | 49 | 32.02% |
| | One to five years | 81 | 53% |
| | Five to ten years | 11 | 7.18% |
| | More than ten years | 12 | 7.8% |

**Table II (Multi response): Knowledge of healthcare workers regarding COVID-19**

| Questions | Options | Response | |
|---|---|---|---|
| | | Count | Percentage |

| | | | |
|---|---|---|---|
| **COVID-19 can be transmitted through** | Coughs and sneezes of an infected person | 140 | 91.5% |
| | Food | 03 | 1.96% |
| | Infected surface | 138 | 88.89% |
| | Spitting of an infected person | 122 | 79.74% |
| **Serious symptoms of COVID-19** | Trouble breathing | 153 | 99.35% |
| | Loss of speech or mobility | 149 | 97.39% |
| | Chest pain | 148 | 96.73% |
| | Blurred vision | 12 | 7.84% |
| **The population at higher risk of getting infected with COVID-19** | Cancer patients | 134 | 87.58% |
| | Diabetic patients | 141 | 92.16% |
| | Older adults | 143 | 93.46% |
| | People with a weakened immune system | 128 | 83.66% |
| **Approved testing methods** | RT-PCR | 147 | 96.08% |
| | Antigen testing | 140 | 91.5% |
| | Antibody testing | 05 | 3.27% |
| | None of the above | 03 | 1.96% |

**Table III: Association between the education of HCWs and their knowledge regarding the type of sample for COVID-19 diagnosis**

| **Level of Education** | **Sample for COVID-19 diagnosis** | | |
|---|---|---|---|
| | **Yes** | **No** | **Total** |
| High School | 04 | 00 | 04 |
| Intermediate | 07 | 00 | 07 |
| Bachelor's Degree | 90 | 01 | 91 |
| Master's Degree | 50 | 01 | 51 |
| **Total** | **151** | **02** | **153** |
| Calculated ($\chi^2$) = 0.951 | df=3 | | Significant |

**Table IV: Association between the designation of HCWs and their knowledge regarding the type of sample for COVID-19 diagnosis**

| **Job title** | **Sample for COVID-19 diagnosis** | | |
|---|---|---|---|
| | **Yes** | **No** | **Total** |
| Doctor | 39 | 01 | 40 |
| Nurse | 76 | 01 | 77 |
| Lab Technician | 28 | 00 | 28 |
| Other | 08 | 00 | 08 |
| **Total** | **151** | **02** | **153** |
| Calculated ($\chi^2$) = 0.821 | df=3 | | Significant |

**Table V: Analysis of variance between knowledge and practice of HCWs regarding infection control protocols**

| **Knowledge regarding ICP** | **N** | **Mean** | **Std. Deviation** |
|---|---|---|---|
| **Always** | 131 | 1.05 | 0.02 |
| **Sometimes** | 16 | 1.19 | 0.40 |
| **When required** | 06 | 1.33 | 0.52 |

| | | | |
|---|---|---|---|
| **Total** | **153** | **1.08** | **0.27** |