

Healthcare workers during the COVID-19 pandemic: Experiences of doctors and nurses in Bangladesh

Mehdi Hussain¹  | Tahmina Begum² | Syeda A. Batul³ |
Nastaran N. Tui⁴ | Md. N. Islam⁵ | Bashir Hussain⁶

¹Department of Management, Canberra Business School, University of Canberra, Canberra, Australia

²Department of Gynaecology and Obstetrics, Holy Family Red Crescent Medical College Hospital, Dhaka, Bangladesh

³Department of Political Science and Sociology, North South University, Dhaka, Bangladesh

⁴Department of Economics and Management, School of Business, University of New South Wales, Canberra, Australia

⁵Department of Medicine, Holy Family Red Crescent Medical College Hospital, Dhaka, Bangladesh

⁶Department of Marketing & Int'l Business, North South University, Dhaka, Bangladesh

Correspondence

Mehdi Hussain, Canberra Business School, University of Canberra, 11 Kirinari St, Bruce, ACT 2617, Australia.

Email: Mehdi.Hussain@canberra.edu.au

Abstract

Healthcare workers, who are in low-resource settings, are critically vulnerable during the COVID-19 pandemic. The increasing rate of coronavirus infection in a developing country such as Bangladesh caused the highest death rate of doctors among frontline service providers and resulted in fear and anxiety among healthcare workers. Even with the preliminary measures of hospitals and clinics to protect healthcare workers, the growing casualties are alarming. This research uses case study approach to explore the issues doctors and nurses face in 'priority intervention areas' (PIA) in order to improve the health system quality. Qualitative in-depth semi-structured interviews were conducted from 12 May to 4 June 2020 among doctors and nurses from two different private hospitals in Dhaka city. Data were analysed using thematic content analysis. The two significant areas that required immediate attention were identified from the PIA framework as 'patient and staff safety, infection control' and 'cultural aspects and community engagement'. Each area of the PIA framework showed previously ignored issues in the current health system. The adaptation of the PIA framework helped identify critical health system issues. Possible corrective actions including proper planning and management of isolating the infected patients and provision of adequate personal protective equipment are recommended to

management and policymakers to save the lives of healthcare workers and to minimise the spread of infection.

KEYWORDS

Bangladesh, COVID-19, healthcare workers, health workforce preparedness, low-income country

1 | INTRODUCTION

Bangladesh is a low-resource country in South Asia which ranks 8th in population and 17th in the order of COVID-19 infection worldwide; its first case was officially identified on 8 March 2020.^{1,2} The doctor to patient disparity is significantly high. The International WHO estimated 3.05 physicians per 10,000 population and 1.07 nurses per 10,000 population in Bangladesh based on the Ministry of Health and Family Welfare Human Resources Development Unit.³ These numbers show healthcare professionals as among the most vulnerable segment in society who need to be protected in order to continue supporting the healthcare system of the country. However, healthcare professionals are critically affected daily during the pandemic as the increasing numbers of infection and death shows Chan-Yeung.⁴ In Bangladesh, among frontlines, doctors hold the highest mortality rate from COVID-19 although the actual figure is not available. Thus, it is essential to protect healthcare professionals.

The research explores the issues that doctors and nurses face during the COVID-19 pandemic in Dhaka city, where 58.35% of all COVID-19 patients in the country are located.⁵ The study explored two case hospitals using the 'priority intervention areas' (PIA) framework developed by Brugnara et al.⁶ The PIA framework also integrates the quality improvement of the WHO building blocks suitable to improve, monitor and evaluate health systems. The enquiry was made based on the PIA framework identified in six areas: 'surveillance', 'basic infrastructures and wash', 'patient and safety, infection control', 'case management', 'maintenance of other routine services' and 'cultural aspects, and community engagement'.⁶ The PIA framework used here to explore the issues that doctors and nurses face will help hospital authorities properly integrate to the building blocks that WHO presented in 2007 to the country's health system⁷ and to take preventive measures for quality improvement. The adoption of correct prevention measures for the issues identified can also minimise infection rate.⁸

2 | METHOD

This research used case studies from two hospitals in Dhaka city, which treat the low- and mid-income population in Bangladesh. Given that Bangladesh is a developing country, the socioeconomic profile of patients and the ratio of doctors to patients of the two selected case hospitals represent the situation of most hospitals in the country. The case hospital names are pseudonymised as XYZ Medical College Hospital (XYZ) and PQR Medical College Hospital (PQR) for privacy and ethical consideration. Both hospitals are located within 5 km from the centre of Dhaka and treat the low- and mid-income population of the country. The average bed numbers of each hospital are around 550. Both hospitals approved this research.

A semi-structured interview guide was prepared in line with the PIA framework, where the first question was about the respondents' workplace and task during COVID-19 in order to build a rapport and put the interviewee at ease. The six primary questions used were aligned with the PIA framework. The final question enquired about any

TABLE 1 Summary findings according to PIA framework

PIA framework	Findings	Doctors	Nurses
Surveillance	Weak surveillance	Agree	Agree
Basic infrastructure and cleaning	Poor time and queue management	Agree	Agree
	Inadequate cleaning	Agree	Agree
Patient and staff and infection control	Shortage of PPE	Agree	Agree
	Insufficient healthcare workers	Agree	Agree
	Missing parts of PPE	Disagree	Agree
Case management	Lack of treatment experience	Agree	Disagree
	Lack of training	Disagree	Agree
Maintenance of other routine services	Absence of routine cleaning	Agree	Agree
Cultural aspects and community engagement	Patients improper behaviour	Agree	Agree

Abbreviations: PIA, priority intervention areas; PPE, personal protective equipment.

additional important comment to achieve the research purpose. All questions were translated to Bengali. Two senior physicians of XYZ reviewed the English and Bengali versions of questionnaires, which were revised to improve the translation.

From the two hospitals, 15 in-depth interviews were conducted on 10 doctors and 5 nurses who treated or took care of COVID-19 patients. Given that the research was conducted during critical time (May–June 2020) of COVID-19 pandemic, researchers used convenience sampling to select respondents. Interviews were conducted from 12 May to 4 June 2020. Six doctors and three nurses from XYZ and four doctors and two nurses from PQR were interviewed. In this research, doctors and nurses are referred to as 'D' and 'N', respectively, with a subscript 'x' for XYZ and 'p' for PQR. In addition, copies of published photos in the news bulletins and notice boards of the hospitals were also collected with permission. Also two short video clips of the hospitals showing how doctors should wear personal protective equipment (PPE) were collected. Multiple sources of data collection increased the validity, credibility and triangulation.^{9,10}

Given that the interviews were conducted during the lockdown period, a non-face-to-face mode was preferred and recommended by doctors, nurses and hospital authorities. Hence, the interviews were conducted either through direct phone calls or video calls through an instant messenger. Each participant gave their consent to record the interviews as full anonymity was assured with regards to voice or name while reporting. Multiple waves of data collection from two different groups of samples (doctors and nurses) through in-depth semi-structured interviews helped the researchers explore the issues that doctors and nurses face, which are socially and culturally specific and valid in its local context. Interviews were then transcribed and coded in NVivo 12 to analyse the data following thematic content analysis methods.¹¹ Transcribed data were imported into NVivo 12 to perform first cycle coding or open coding in line with the PIA framework. In the next stage, data were revisited retrospectively for better understanding and refinement of the initial coding to derive the findings.

3 | RESULTS

Findings derived from the interviews are mapped based on six PIA 6 mentioned (Table 1): comprising surveillance, basic infrastructure and wash, infection control/patient and staff safety, case management, maintenance of other routine services, cultural aspects and community engagement.

3.1 | Surveillance

Both hospitals had weak surveillance systems both technological and reporting. None of the two hospitals had information systems that document patients' cases (Dx1, Dx4, Nx1). For signing entry, nurses without PPE walked through the main entrance area to counter (Nx1, Nx3), in which patients were visited throughout the day for different reasons (Nx1, Np5). There was no proper process to report affected mitigating issues (Dx4, Dx5, Dp6).

3.2 | Basic infrastructure and cleaning

Although the disinfection system improved compared with past routine cleaning services, infrequent cleaning was still observed in both hospitals (Dx6, Np4). In addition, only one booth was available to conduct COVID-19 test of all the stakeholders in the hospital (Nx1 to Np5; Dx1 to Dp10) and everyone—infected and noninfected—stood in the same line almost adhering to each other (Nx1 to Np5; Dx1 to Dp10). This is reflected in the comment of Dp10, 'There is no prior time slot given; as a result, people are coming randomly to the hospital for test. Also, everyone including infected and noninfected patients standing in the same queue without maintaining distance'.

3.3 | Patient and staff safety and infection control

3.3.1 | Issue with PPE

Nurses received only two sets of unsealed PPE packs weekly. The pack for the nurses included only a gown and shoe cover (Nx1 to Np5) and no gloves, masks, or face shields. To protect themselves, they purchased their N95 masks before entering to medical ward. One nurse cried and told that they purchased two masks to use for 10 days. The masks got wet when used in a 10-h shift for 5 days. After their daily shift, they put the mask in a packet and spray disinfectant (Nx1, Nx3, Np4, Np5). Nx1 even washed the masks in the assigned accommodation to reuse in the next day. Although they tried hard to dry the masks, they were still wet when they put them on the following day. During the interview period, nurses worked for 10 h daily for 10 consecutive days. Np4 also commented, 'They gave us only gown and shoe cover and nothing else. We had to buy N95 masks and reuse them by washing. They were still wet'.

3.3.2 | Lack of adequate healthcare professionals and absence of assurance if infected

Around 8–10 doctors were allocated in 8-h shifts to attend to around 200–300 patients (Dx1, Dx3, Dx6, Dp7, Dp8). Most were newly passed or with around 2–5 years of experience in a clinical setting. Among nurses, around 2–3 were given a station of 40–50 infected patients (Nx1, Np5). These numbers were extremely inadequate compared with their past allocations in the same hospitals. Almost all doctors and nurses confirmed the absence of assurance from hospital authorities if get infected (Dx3, Dx4, Dp7, Np4). Moreover, the intensive care unit facilities were limited for them to be treated in their hospitals.

3.3.3 | Poor coordination and proper guideline

There were no coordination and time management in the testing booth to set a schedule for specific COVID-19 patients, as well as for doctor and nurse cohorts (Dx1 to Dp10; Nx1 to Np5). Doctors, infected patients, nurses,

cleaners and other support workers all gathered in a small room in line to be tested. Such noncoordination resulted in fear and anxiety, which affected the morale of doctors and nurses and left them with extreme anxiety, depression and mental stress. No updated guidelines were given to the doctors or nurses for performing their duties (Dx3, Dp7, Dp10; Nx1 to Np5). All the nurses interviewed confirmed that no proper guideline or training on putting on PPE was given to them. Nurses watched YouTube videos to learn how to put on PPE (Nx1, Np5).

3.4 | Case management

3.4.1 | Inexperience of doctors

Some doctors from the academic sector of the Medical College hospital were brought into the clinical setting to treat patients. They were also given short notice to join the clinical sector (Dx1, Dp7, Dp8). Dp8 commented, 'Earlier I was teaching only in the Medical College with very little clinical involvement. Now I am forcefully scheduled to treat patients without having practical knowledge of handling COVID-19 patients'.

3.4.2 | Lack of communication and training

Nurses complained that the hospital transformation into a COVID-19 hospital facility was not properly communicated (Np5). Nurses were trained in English by foreign trainers which led to misunderstanding (Nx1, Nx2). Doctors and nurses were also given short periods to treat patients, which left them dissatisfied with their work performance.

3.5 | Maintenance of other routine services

Pharmacies also lacked medicines during the COVID-19 crisis (Nx1, Np3). The high demand resulted in short supply of disinfected materials and routine cleaning services (Dx2, Nx1, Np4). Nx1 commented, 'Hospital does not have sufficient cleaning and disinfecting materials. Sometimes during cleaning schedule no actual cleaning is performed'. Due to attendants' restriction in hospitals, patients walked around everywhere in the hospital premises, which increased contamination threat (Nx3, Dp7).

3.6 | Cultural aspects and community engagement

Nurses complained that they found COVID-19 infected ward patients walking around the hospital and brushing their teeth (Nx1, Nx2, Np4). Although nurses frequently complained about this behaviour, the situation remained the same. Again, due to lack of medicine, infected patients walked out of the hospital and even went to drugstores without wearing masks in most instances (Nx2, Nx3, Nx5).

Nurses were the most vulnerable in the hospital as they were frequently subjected to the abusive behaviour of patients (Nx1 to Np5). According to Nx2, 'I am coming every day for the last eight days and none of the day is free from any misconduct by the patients. Such as, visitors are restricted to enter hospital and so they yell. Again, we are very few and patients do not get us when they ask for and so they yell. It is all time scenario'.

Such abusive behaviour is a mental burden for nurses at their workplace. The sad part revealed in the research was that most frontline doctors and all the nurses did not receive 3 months' salary since February until the time the interviews were conducted (Dx2, Dx4, Dx5, Dp7, Nx1 to Np5). However, they continued work in this uncertain time

of the pandemic with the feeling that they are doing good for the community and with the hope that they will receive their salaries soon.

4 | DISCUSSION

The present research underpins the PIA framework to investigate issues that healthcare workers faced during the COVID-19 pandemic and to identify critical areas to take preventive measures for quality improvement. The research reveals that, 'surveillance' calls for a well-functioning health information system that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants and issues, as well as health system performance. Hospitals can use e-health and social media strategies to document and monitor the issues or attempts taken by frontline professionals to become informed in the growing pandemic situation.¹²

Basic facilities need to be available on time to be operational with particular attention given to the availability of essential medical materials for hygiene and waste disposal; the frequency of spraying disinfection liquids with monitoring the cleanliness; and the required promotion materials such as leaflets distribution, stickers or marks given on the floor to maintain social distancing.¹³⁻¹⁵ The layout of the hospital or clinic can be altered in different zones, and patients can be transferred based on their responses following the flowchart recommended by Kim et al.¹⁶ and supported by Tan.¹⁷

Personal protection of the doctors and nurses can be ensured with a full set of PPE worn properly. The PPE set includes a disposable work hat, an N95 respirator, inner gloves, a protective eye mask, protective clothing, disposable waterproof shoe covers, disposable isolations gowns, outer gloves and a face shield. A monitoring system or infection control system needs to be established to monitor any breach or deviation from the risks associated special attention caution message or stealing PPE from the sealed packet.¹⁸ Shammi et al.¹⁹ found some mismanagement and a lack of coordination among the responsible parties, which can be resolved by introducing a monitoring cell or by using information system technology.¹² They also showed that present national guidelines on the clinical management of COVID-19 lack detailed guidelines for protecting healthcare workers.²⁰

The 'cultural aspects and community engagement' area is identified as the second critical problem after 'staff safety'. National dailies delivered news about vulnerable treatment facilities for doctors and nurses, fear of getting loved ones infected when living in a small house, and not being able to physically look after their children, which took a lot of mental toll in this critical time 19. At the hospital and national levels, special attention should be immediately given to the safety and treatment of healthcare professional while ensuring that they will be offered emergency services.²¹

5 | CONCLUSION

The elevated infection during the COVID-19 pandemic in Bangladesh necessitates the protection of healthcare professionals and the improvement of the health system. In health facilities with limited resources, healthcare professionals are the only chief actors to treat the growing number of infected patients. A practical list of issues the healthcare workers face in 'PIA' is identified through in-depth interviews and analyses. By applying the PIA framework, a holistic picture can be portrayed to reflect the known and unknown issues that healthcare professionals face in the workplace during the COVID-19 pandemic. The issues revealed in the research recommend that concerned stakeholders take immediate effective measures to holistically minimise the casualties of healthcare professionals. Ensuring their safety can significantly minimise the spread of infection in the country and improve its health system.

The research is limited to doctors and nurses only. Further research on other cohorts of health support workers such as nursemaids, ward boys, cleaners, gatekeepers and clerks in the same healthcare setting may

strengthen the arguments made here. The PIA framework can also be used to explore issues in rural settings where community health workers are more active. However, this study only included doctors because of the immediate concern about the increasing casualties of both doctors and patients and their high demand in health facilities in the country. Further research needs to be done to advance the discussion and to generate additional evidence on issues from health support workers.

ACKNOWLEDGEMENT

The authors wish to thank all the doctors and nurses who participated in the interview from the hotel at their quarantine period to share practical experiences they gained while working.

CONFLICT OF INTEREST

The authors declare that there are no conflict of interest.

ETHICS STATEMENT

Approval was taken by from the hospitals prior to conduct the research. This article is authors' own original work. This paper reflects authors' own research and analysis in a truthful and complete manner.

ORCID

Mehdi Hussain  <https://orcid.org/0000-0001-5544-6219>

REFERENCES

1. CoronalInfo. 2020. <https://corona.gov.bd/press-release?type=2&title=>. Accessed June 17, 2020.
2. Worldometer. *Countries where COVID-19 Has Spread*. Worldometer. 2020. <https://www.worldometers.info/coronavirus/countries-where-coronavirus-has-spread/>. Accessed June 18, 2020.
3. World Health Organization. *Bangladesh*. 2012. <https://www.who.int/workforcealliance/countries/bgd/en/>. Accessed May 3, 2020.
4. Chan-Yeung M. Severe acute respiratory syndrome (SARS) and healthcare workers. *Int J Occup Environ Health*. 2004;10(4):421-427.
5. Noman M. *Half the country's Covid-19 infection in Dhaka city alone*. *The Business Standard*. May 11, 2020. <https://www.tbsnews.net/coronavirus-chronicle/covid-19-bangladesh/bangladesh-reports-highest-daily-spike-1034-covid-19-cases>
6. Brugnara L, Pervilhac C, Kohler F, Dramé ML, Sax S, Marx M. Quality improvement of health systems in an epidemic context: a framework based on lessons from the Ebola virus disease outbreak in West Africa. *Int J Health Plann Manage*. 2020;35(1):52-67.
7. World Health Organization. *Everybody's Business-Strengthening Health Systems to Improve Health Outcomes: WHO's Framework for Action: 2007*. https://www.who.int/healthsystems/strategy/everybodys_business.pdf
8. Luigi V, Alessandro D, Giovanni M, et al. Prevention and protection measures of healthcare workers exposed in health settings to severe acute respiratory infections from SARS-CoV-2 in a university hospital in Bari, Apulia region, Southern Italy. *J Hosp Infect*. 2020;105(3):454-458.
9. Creswell JW, Poth CN. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. SAGE publications; 2017. <https://us.sagepub.com/en-us/nam/qualitative-inquiry-and-research-design/book246896>
10. Yin RK. How to do better case studies. *SAGE Handb Appl Soc Res Methods*. 2009;2:254-282.
11. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77-101.
12. Mahmood S, Hasan K, Colder Carras M, Labrique A. Global preparedness against COVID-19: we must leverage the power of digital health. *JMIR Public Health Surveill*. 2020;6(2):e18980.
13. Zhang DX. SARS-CoV-2: air/aerosols and surfaces in laboratory and clinical settings. *J Hosp Infect*. 2020;105(3): 577-579.
14. Fusco F. COVID-19 and labour law: Saudi Arabia. *Ital Labour Law e-J*. 2020;13(1S):1-3.
15. Lin J-Y, Kang EY-C, Yeh P-H, et al. Proposed measures to be taken by ophthalmologists during the coronavirus disease 2019 pandemic: experience from Chang Gung Memorial Hospital, Linkou, Taiwan. *Taiwan J Ophthalmol*. 2020;10(2):80-86.
16. Kim YJ, Jeong YJ, Kim SH, et al. Preparedness for COVID-19 infection prevention in Korea: a single-centre experience. *J Hosp Infect*. 2020;105(2):370-372.
17. Tan LF. Preventing the transmission of COVID-19 amongst healthcare workers. *J Hosp Infect*. 2020;105(2):364-365.

18. Peng J, Ren N, Wang M, Zhang G. Practical experiences and suggestions for the 'eagle-eyed observer': a novel promising role for controlling nosocomial infection in the COVID-19 outbreak. *J Hosp Infect.* 2020;105(1):106-107.
19. Shammi M, Bodrud-Doza M, Towfiqul Islam ARM, Rahman MM. COVID-19 pandemic, socioeconomic crisis and human stress in resource-limited settings: a case from Bangladesh. *Heliyon.* 2020;6(5):e04063.
20. Department of Health. *National Guidelines on Clinical Management of Coronavirus Disease 2019 (COVID-19)*; 2020. <https://www1.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-novel-coronavirus.htm>
21. Simonds AK, Sokol DK. Lives on the line? Ethics and practicalities of duty of care in pandemics and disasters. *Eur Respir J.* 2009;34(2):303-309.

How to cite this article: Hussain M, Begum T, Batul SA, Tui NN, Islam MdN, Hussain B. Healthcare workers during the COVID-19 pandemic: Experiences of doctors and nurses in Bangladesh. *Int J Health Plann Mgmt.* 2021;1–8. <https://doi.org/10.1002/hpm.3154>