



Challenges And Issues Faced by Junior Doctors During Covid-19 Pandemic in A Tertiary Care Institution: A Mixed Method Approach

Bishwalata Rajkumari¹, Th Kayia Priscilla Kayina², Ningthoukhongjam Shugeta Devi³, Regina Wahengbam⁴, S Elakkiya^{5*}, M Mangboi Haokip⁶

¹Professor, Department of Community Medicine, Jawaharlal Nehru Institute of Medical Sciences, Imphal, Manipur, India

Email: dr.bishwalata@rediffmail.com

Orcid ID: 0000-0002-8596-329X

²Assistant Professor, Department of Community Medicine, Jawaharlal Nehru Institute of Medical Sciences, Imphal, Manipur

Email: priscilla.kayina@gmail.com

Orcid ID: 0000-0003-0917-0172

³Public Health Specialist, Manipur health services, Imphal, Manipur

Email: shugetarims@gmail.com

Orcid ID: 0000-0003-1472-0650

⁴Senior Resident, Department of Community Medicine, Jawaharlal Nehru Institute of Medical Sciences, Imphal, Manipur

Email: regwahengbam@gmail.com

Orcid ID: 0000-0001-9241-9535

⁵Senior Resident, Department of Community Medicine, Jawaharlal Nehru Institute of Medical Sciences, Imphal, Manipur

Email: drelakkiya1994@gmail.com

Orcid ID: 0009-0006-6819-4421

⁶Post Graduate Trainee, Department of Community Medicine, Jawaharlal Nehru Institute of Medical Sciences, Imphal, Manipur

Email: diclonacmangboi@gmail.com

Orcid ID: 0009-0000-6593-0880

*Corresponding author

Received: 06 August 2023

Revised: 01 September 2023

Accepted: 12 September 2023

Published: 31 October 2023

Abstract

Background: The world was not ready in terms of infrastructure & manpower to face COVID-19 when it was declared pandemic in March 2020. Health-care workers had to deal with the pressures of changing protocols for treatment as well as the physical & psychological stress. This study was done to assess the challenges faced by junior doctors while performing COVID-19 related duties.

Material & Methods: A cross-sectional mixed-method approach study was conducted among 163 junior doctors comprising of Interns, Junior Residents and Post graduate trainees working in a government tertiary care institution in Manipur, India. For qualitative component fifteen (15) In-depth interviews were taken. A structured questionnaire for quantitative and interview guides for qualitative component were used. Descriptive statistics were generated and qualitative data were analyzed thematically. Ethical approval was obtained from the Institutional Ethics committee.

Results: Mean (SD) age of the respondents was 27.44±3.2 years with males constituting 46.6%. More than half of the respondents (87, 53.3%) were not satisfied with work environment. Most respondents (121, 74.2%) were unsatisfied with drugs & consumables supply. From the qualitative component, effect on academics due to pandemic, fear of stigma and discrimination, resource constraints, conflicting situations were some of the issues identified. **Conclusion:** Most of the junior doctors who had done Covid-19 related duties faced various difficulties and psychological issues. The need to support physical and mental health of our frontline healthcare workers is to be emphasized.

Keywords:- Challenges, COVID-19, junior doctors, mental health, Psychological.

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) was declared a pandemic by the World Health Organization (WHO) on March 2020 due to its

severity and alarmingly rapid spread. The world at large was not ready in terms of infrastructure and manpower to face this new disease posing a challenge to the health care



systems of the world in both the developed and developing countries alike.^[1,2]

The COVID-19 pandemic has put a strain in the health-care delivery services in our country too. India, a developing country has an allopathy doctor-patient ratio of 1 per 1445 and a hospital bed ratio of 0.5 per 1000.^[3,4] Burnout among health-care providers has already been reported in India among ICU workers. Burnout, characterized by three dimensions which includes feelings of energy depletion and exhaustion; increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; and reduced professional efficacy.^[5,6] COVID-19, which was easy to spread from person to person posed an increased risk of infection to the health-care providers.

A new disease with limited information on its management, spread to close contacts making treatment providers at high risk of acquiring the infection, use of personal protection equipment proved to be a new challenge to the health care providers. Limited resources, longer shifts, disruptions to sleep-work-life balance, and occupational hazards associated with exposure to COVID-19 have contributed to physical and mental fatigue, stress, anxiety and burn-out.^[7,8] WHO had recommended social distancing as one of the ways of prevention of COVID-19 which was difficult to apply in health care settings where patients need to be examined and treated from a close distance. Further the use of personal protective equipment (PPE) was a new challenge to the health care workers who had to work long hours with the PPE leading to fatigue, dehydration, heat stress, slips, trips, and falls as well as psychological stress, and

impaired vision, movement, and communication.^[9,10,11]

There were frequent changes in the treatment protocol as notified from time to time by the concerned government authority.^[12,13] The health-care workers had to deal with the confusion and pressures of the changing protocols, increase workload of treatment of the patients with COVID-19 along with the associated social stigma and discrimination from the community.^[14,15,16,17]

Manipur, a remote state in North-East India faced its first case of COVID-19 in March 2020 and faced COVID-19 pandemic like the rest of the world and this study was done to assess the challenges faced by the junior doctors in a tertiary care hospital in Manipur while performing COVID-19 related duties.^[18]

MATERIAL AND METHODS

A cross-sectional study was conducted using a mixed method approach having both quantitative and qualitative components in one of the major government tertiary care institution in Manipur, North-East India which provides care to COVID-19 patients and in-patients services to a majority of the serious cases reported during the pandemic in the state. The study was conducted from October 2021 to March 2022.

Study population and sample size: All junior doctors comprising of Interns, Junior Residents and Post Graduate trainees who has been working in the institution since the last three (03) months were included in the study. As per record from the academic section a total of 275 junior doctors were registered. Refusal to participate, those who were on leave and those



who cannot be contacted up to 03 attempts were excluded from the study.

For the qualitative component five (05) In-depth interviews (IDI) were intended from each category of provider. A total of 15 IDI was planned which may be increased or till the point of saturation was reached.

Study Tool and Technique: For the quantitative component, a self-administered semi-structured questionnaire was used which have sections pertaining to socio-demographic profile, questions about COVID-19 related duties, training status, payment of incentives, vaccination status and COVID-19 status. The third section have questions on their satisfaction levels regarding work environment, supply of personal protective equipment (PPE), supply of drugs and consumables for patients, washroom and duty room facilities for the junior doctors and support from seniors and consultants. The responses were scored on a five-point Likert scale ranging from 'very unsatisfied' to 'very satisfied'. In depth interview guide was developed using themes through broad literature review.

Participants for the in-depth interview were purposively identified and after taking written informed consent interviews were taken. All in-depth interviews were audio recorded and each session lasted for about 40-60 minutes. The responses were transcribed and thematic analysis was done using certain colour coded categories to generate themes and sub-themes using deductive approach. Six broad categories were generated using 6 random/different colours representing each theme namely: Effect on academics and research, Resource constraints and incentives, Mental health and

psychological issues, Roles and responsibilities during COVID 19 duty, Conflicting situations, and Privacy and Hygiene concern.

Statistical Analysis: All quantitative variables were entered in MS excel for data cleansing. Data analysis was done using SPSS version 20 (IBM Corp, Armonk, NY). Descriptive statistics were generated.

Ethical Considerations: Approval was obtained from the Institutional Ethics Committee (Registration No. ECR/1333/Inst/MN/2020 (DCGI, CDSCO) & EC/NEW/INST/2021/MA/0022 (DHR) for Proposal No.309/03/2022. Informed consent was obtained from all the participants. No direct identifiers were collected and strict confidentiality was ensured.

RESULTS

A total of 163 junior doctors responded. There were 36 refusals, 12 junior doctors were on leave and the rest could not be contacted. Majority of the refusals were from among the Junior residents (24). Mean (SD) age of the respondents was 27.44±3.2 years with males constituting 46.6%. [Table 1]

Almost half of the respondents (74, 45.5%) have ever tested positive for COVID-19 whereas all of the respondents (163, 100%) had received 2 doses of COVID-19 Vaccine. [Table 2]. More than half of the respondents (94, 57.7%) were satisfied with the support received from seniors and consultants. [Table 3]



Qualitative Section:

Effect on academics and research:

“Academics were totally deranged. Clinical postings got cancelled with only few online classes so we couldn't learn much. Our final exam got postponed hence our internship started late so our batch will not be eligible for the upcoming NEET PG exam” (24 years/male Intern).

“We missed many days of our respective clinical postings in order to go for COVID duty where interns are used for taking vitals only which would never able to compensate the loss that we faced for period exposure in that respective department postings” (23 year/female Intern).

“Besides emergency cases most routine surgeries were cancelled. I did not get to perform much cases since ours is a surgical field. The hands on skill training was very much compromised due to the pandemic. Patient load was also very less”. (29 year/male Post Graduate Trainee)

Resource constraints and incentives: “The nursing staff would come just for the purpose of giving medications to patient & immediately leave leaving the doctor stranded inside alone with no intercom & hardly any communication facility with the inside team. I had experiences of patients desaturating when I'm all alone inside, crashing with no Oxygen cylinders, no emergency drugs, I have dragged oxygen concentrators from 4th floor to ground floor & vice versa all on my own, have lifted male patients as no one was available to help as the attendants would take at least 1-2 hours to put on PPE putting patients at grave danger and

situation”. (28 year/female, Post Graduate Trainee)

“The quality of PPEs were highly questionable many a times, there were times when no PPE was available, when available the sizes were not taken to consideration & working with extremely big sizes or very small. Gloves weren't available all the time & the sizes too, sometimes expired and torn gloves of poor quality were given. Scrubs were also in a bad state, no thought of size for comfort of working of doctor. Donning and doffing area were managed poorly, seemingly contaminated, no proper segregation, no immediate discarding of used PPEs”. (29years/male, Post Graduate Trainee)

“No accommodation were provided during the period of COVID duty. We have to isolate our self from the family in fear of transmitting the disease to family members”(24 years/Female, Junior Resident)

“Incentive for COVID duty are just promises/words. I have never received once since the start of the pandemic” (23 year/female, Intern)

Mental health and psychological issues: “The fear & taboo around COVID-19 was so severe. I was prohibited from entering my locality when coming back from hospital duty. I went into depression staying at my hostel room” (26 year/Female, Junior Resident)

“I have seasonal allergic rhinitis and when I used to cough/sneeze I feel that people are running away from me. A stigma in fear of COVID-19”. (24 yr/male, Intern)



“Seeing the dead bodies in body bags lining up waiting to be picked up was a very disturbing experience. I get frequent nightmares” (26 year/ female, Post Graduate Trainee)

“When entering for COVID -19 duty first time, I felt like crying on seeing many patients with serious condition – with oxygen mask unable to breath, I felt shock when I found out patient which I attended the day before in COVID ICU was found to be expired the following day” (25 year/Male, JR)

“Sleep was a privilege especially during the 1st wave, the quarantine days were spent on days of insomnia, anxiety, depressive mood.” (28 year/ Male, Post Graduate Trainee)

Roles and responsibilities during COVID 19 duty: “According to me, to fight against COVID -19 pandemic should be a collective effort. Seniors should encourage and guide us the junior doctors who are at the front-line” (29 year/male, Post Graduate Trainee)

“I have come on to take up everything as my responsibility from the time of arrival of patient, managing their documentation work/ tickets/ clerical work, assessing patient's condition/ vitals/ history, arriving at diagnosis to best of ability, deciding ICU need, formulating treatment, coordinating the same to nurses, distributing junior doctors/ interns work. Somehow (COVID case management was deemed as sole responsibility of the medicine PGT.” (27 year/female Post Graduate Trainee)

“I want the faculty (consultants) to at least to attend rounds every day at least for the ICU and

also co-ordinate amongst them to ensure no erratic/frequent change of drugs leading to confusion amongst junior doctors, nurses and patient party. Senior Residents should help junior doctors especially in explaining prognosis & stabilization of patients”. (25 year/Male, Junior Resident)

Conflicting situations: “The patient party became hostile, they were verbally and physically abusing us. Some of the equipment got destroyed also. It was horrifying and very demoralizing for us who are at the frontline and have to face the brunt of everything”. (27 year/female, Post Graduate Trainee)

“I really hope that there will be more effective communication between the authorities/senior faculties and the doctors at the frontline as there were many communication gaps leading to unnecessary misunderstandings and time waste between patients, patient parties and doctors on duty due to ineffective communication, understanding and handovers” .(25 year/male Junior Resident)

Privacy and Hygiene concern: “I faced a big difficulty in my first doffing as there was no sanitizer in doffing room, in a state hospital, inadequate supply of sanitizer for doffing PPE is a shameful thing. The washrooms lacked privacy and I fear that someone might just barge in”. (28 year/ female, Post Graduate Trainee)

“After, returning from duty, there was no water in hostel & I was running here & there searching for water”. (26 year/female, Junior Resident)



Table 1: Showing socio-demographic characteristics (n=163).

Variable	Categories	Number (%)
Gender	Male	76(46.6)
	Female	87(53.4)
Religion	Hindu	92(56.4)
	Muslim	34(20.9)
	Christian	22(13.5)
	Others	15(9.2)
Designation	Post graduate trainees	77(47.2)
	Junior residents	24(14.7)
	Internees	62(38)
Duration of COVID-19 related duty/posting	1 to upto 6 months	83(50.9)
	6 to upto 12 months	36(22.1)
	1 year and above	44(27)
Department	Medicine and allied	60(36.8)
	Surgery and allied	65(39.9)
	Pre and para clinical	38(23.3)

Table 2: Covid-19 related duty/activities executed by the participants (n=163)

Variable	Categories	Number (%)
Covid-19 related duties (multiple answers allowed)	Flu clinic	54 (33.1)
	Sampling duty	88 (53.9)
	COVID ward duty	142 (87.1)
	Accident & Trauma Center duty	79 (48.4)
	COVID ICU	80 (49)
	Others	7(4.2)
Any training received on COVID 19 management	Yes	155(95.1)
	No	8(4.9)
If yes, type of training (N=155) (multiple answers allowed)	PPE donning doffing	151(97.4)
	COVID-19 Patient care	89(57.4)
	ICU care	46(29.6)
	Others	6(3.8)
Any incentives received for COVID related duties	Yes	01(6)
	No	162(99.4)
Ever tested COVID 19 positive	Yes	74(45.4)
	No	89(54.6)
If yes, how many times (N=74)	1	53(71.6)
	2	16(21.6)
	3	01(1.3)
	4	04(5.4)
Vaccination status	2 doses	163 (100)
	0/1	0(0)

Table 3: Showing satisfaction level of the respondents related with during COVID 19 related duties (N=163)

Conditions	Very unsatisfied (%)	Unsatisfied (%)	Somewhat Satisfied (%)	Satisfied (%)	Very satisfied (%)
Work environment	7(4.3)	25(15.3)	55(33.7)	75(46)	1(0.6)
Supply of PPE	1(0.6)	11(6.7)	62(38)	84(51.5)	5(3.1)
Supply of drugs/ consumables for patients	10(6.1)	44(27)	67(41.1)	41(25.2)	1(0.6)
Washroom/ duty room facilities	13(8)	46(28.2)	52(31.9)	51(31.3)	1(0.6)
Support from seniors and consultants	1(0.6)	21(12.9)	44(27)	94(57.7)	3(1.8)

DISCUSSION

In this study although all of the respondents had to perform some COVID-19 related duty, only half of them had received training on COVID-19 patient care and a smaller proportion on ICU care. The importance of training of frontline healthcare workers in pandemic response and their heightened vulnerability during infectious disease outbreaks has been stressed. Health systems require competent, well-equipped health care workers to diagnose and treat, prevent transmission and communicate accurate health messaging to the populations.^[19,20,21] Training of doffing and donning is an important aspect for reducing the spread of COVID-19. Training of health care providers of the required skills is one of a major factor to reduce the stress faced by the health care providers.^[21] Further probing is necessary to find out the effect of the training received on the services that were rendered during COVID-19 related duties.

In our study the internees were concerned with academics who were aggravated by the loss of academic years and clinical experience. Likewise, the surgical post graduate trainees

were concerned with the compromise of the hands-on training which is required for surgical skills. Though all junior doctors were utilized for COVID-19 related duties, almost all had not received any incentives for COVID related duties at the time of data collection of this study. COVID-19 has provided extra duties to all the staffs and more so on the junior doctors at the cost of their academics.

Nearly half of the respondents had been ever tested positive for COVID-19 of which 21.6% of the respondents had the infection twice. Further studies can be done to assess the risk of infection among various categories of health care workers exposed and not exposed to COVID-19 related duties. However all of the respondent had been vaccinated with 2 doses of COVID-19 vaccine which can be attributed to the mass vaccination drive in India and more priority being given to the health care providers.^[18]

More than half (54.6%) of the respondents were satisfied with the supply of PPE. PPE not only has the ability to ward off an infection but adequate PPE can also act as a morale booster for the front-line workers. With insufficient supply of PPE and supply of inappropriate sizes



of PPE, chances of spread of infection increases along with increasing the stress of the health care providers.^[9,11] The supply and quality of the PPEs were questioned by the doctors and issue of the sizes of the PPEs were put forward by the doctors. The doffing and donning areas were managed poorly which increased the chance of transmission of the infection to the health care providers.

The Government took an active role in the management of COVID-19 infected patients and supplied oxygen, drugs and consumables and essential medicines to the hospitals.^[18] However, 43.1% of the respondents were not satisfied with the supply of drugs and consumables for the patients. Less than half of the respondents (46%) of the respondents were satisfied with the work environment. However 36.2% of the respondents were not satisfied with the washroom and/or duty room facilities. The washroom lacked privacy and the health care providers were stressed while using the washroom. The health care providers were also anguished by the lack of sanitizers, scarcity of water supply which made them stressed about getting the COVID-19 infection after entering the wards or after returning from hospital.

Management of a new disease with changing protocols requires guidance from the seniors and consultants. Of the respondents 59.5% were satisfied with the support from seniors and consultants. Along with the desire for more support from the seniors and consultants, the junior doctors felt a lack of cooperation from the nursing staff and attendants, and they performed the duties of nurses and other staffs. Some doctors even felt the burden of managing the patients was their sole responsibility. The junior residents lamented on the lack of support

from the senior members to prevent any confusion or lack of coordination with other staffs like nurses and patient attendants. Communication gaps and misunderstandings were reported with the management of COVID 19 disease. Hostility from the patient attendants and verbal and physical abuse of the health care staff were a demoralizing factor for the junior doctors who were at the front-line and facing the brunt of this hostile behaviour.^[15] The female doctors were having the fear of spreading the infection to their family members and lamented on the non-provision of accommodation during the period of COVID duty. COVID-19 as a disease had stigma and discrimination associated with it and the doctors returning home after having the COVID duty faced these issues which lead to dissatisfaction with the authorities. Stigma associated with a particular disease is very dangerous more so if directed to health care worker, as it may lead to poor health care service provision and even denial of treatment to patients.^[22,23,24,25,26]

The study highlights an important aspect of the burden of the pandemic on the mental health and psychological issues of our important healthcare workforce. The study has its limitations as we could catch only the perspectives of the junior doctors from a single institution. The viewpoints from the administration and the senior doctors also needs to be considered to get a more in-depth picture of the matter.

CONCLUSIONS

Effect on academics due to the pandemic, fear of stigma discrimination, lack of training and supportive supervision were some of the



important aspects accentuated. The need to supply adequate safety kits, regular updates on changing protocols, training and support for

both physical and mental health of our frontline healthcare workers is to be emphasized.

REFERENCES

1. Vannabouathong C, Devji T, Ekhtiari S, Chang Y, Phillips SA, Zhu M, et al. Novel Coronavirus COVID-19: Current Evidence and Evolving Strategies. *J Bone Joint Surg Am.* 2020;102(9):734-744. doi: 10.2106/JBJS.20.00396.
2. Mao R, Liang J, Shen J, Ghosh S, Zhu LR, Yang H, et al. Implications of COVID-19 for patients with pre-existing digestive diseases. *Lancet Gastroenterol Hepatol.* 2020;5(5):425-427. doi: 10.1016/S2468-1253(20)30076-5.
3. Zingone F, Savarino EV. Viral screening before initiation of biologics in patients with inflammatory bowel disease during the COVID-19 outbreak. *Lancet Gastroenterol Hepatol.* 2020;5(6):525. doi: 10.1016/S2468-1253(20)30085-6.
4. Bezzio C, Pellegrini L, Manes G, Arena I, Picascia D, Della Corte C, et al. Biologic Therapies May Reduce the Risk of COVID-19 in Patients With Inflammatory Bowel Disease. *Inflamm Bowel Dis.* 2020;26(10):e107-e109. doi: 10.1093/ibd/izaa242.
5. Sanil M, Machado G, Nayak VR. Burnout in health care providers working in the intensive care units of a tertiary care hospital, South India-a questionnaire-based survey. *Can J Respir Ther.* 2021;57:68-72. doi: 10.29390/cjrt-2021-005.
6. Reith TP. Burnout in United States Healthcare Professionals: A Narrative Review. *Cureus.* 2018;10(12):e3681. doi: 10.7759/cureus.3681.
7. Reith TP. Burnout in United States Healthcare Professionals: A Narrative Review. *Cureus.* 2018;10(12):e3681. doi: 10.7759/cureus.3681.
8. Adams JG, Walls RM. Supporting the Health Care Workforce During the COVID-19 Global Epidemic. *JAMA.* 2020;323(15):1439-1440. doi: 10.1001/jama.2020.3972.
9. MacIntyre CR, Ananda-Rajah M, Nicholls M, Quigley AL. Current COVID-19 guidelines for respiratory protection of health care workers are inadequate. *Med J Aust.* 2020;213(6):251-252.e1. doi: 10.5694/mja2.50752.
10. Zhou P, Huang Z, Xiao Y, Huang X, Fan XG. Protecting Chinese healthcare workers while combating the 2019 novel coronavirus. *Infect Control Hosp Epidemiol.* 2020;41(6):745-746. doi: 10.1017/ice.2020.60.
11. Jameson AP, Biersack MP, Sebastian TM, Jacques LR. SARS-CoV-2 screening of asymptomatic healthcare workers. *Infect Control Hosp Epidemiol.* 2020;41(10):1229-1231. doi: 10.1017/ice.2020.361.
12. Boustead K, McDowall K, Baker KF, Pareja-Cebrian L, Gibson L, Cunningham M, Murphy E. Establishing a healthcare worker screening programme for COVID-19. *Occup Med (Lond).* 2020;70(7):456-457. doi: 10.1093/occmed/kqaa114.
13. Kochhar AS, Bhasin R, Kochhar GK, Dadlani H. Diagnostic Tests for SARS-CoV-2: Implications in Head and Neck Oncology. *Oral Oncol.* 2020;107:104813. doi: 10.1016/j.oraloncology.2020.104813.
14. Ali I, Alharbi OML. COVID-19: Disease, management, treatment, and social impact. *Sci Total Environ.* 2020;728:138861. doi: 10.1016/j.scitotenv.2020.138861.
15. van Stekelenburg BCA, De Cauwer H, Barten DG, Mortelmans LJ. Attacks on Health Care Workers in Historical Pandemics and COVID-19. *Disaster Med Public Health Prep.* 2022;17:e309. doi: 10.1017/dmp.2022.275.
16. Taylor S, Landry CA, Rachor GS, Paluszek MM, Asmundson GJG. Fear and avoidance of healthcare workers: An important, under-recognized form of stigmatization during the COVID-19 pandemic. *J Anxiety Disord.* 2020;75:102289. doi: 10.1016/j.janxdis.2020.102289.
17. Rajkumari B, Akham N, Konjengbam OK, Pangambam AD, Ningthoujam SD. Post-traumatic stress disorder among COVID-19 survivors in Manipur: A cross-sectional study. *J Family Med Prim Care.* 2022;11(5):2139-2145. doi: 10.4103/jfmpc.jfmpc_1474_21.
18. Alshehri FS, Alatawi Y, Alghamdi BS, Alhifany AA, Alharbi A. Prevalence of post-traumatic stress disorder during the COVID-19 pandemic in Saudi



- Arabia. Saudi Pharm J. 2020;28(12):1666-1673. doi: 10.1016/j.jsps.2020.10.013.
19. Tsiouris F, Hartsough K, Poimboeuf M, Raether C, Farahani M, Ferreira T, et al. Rapid scale-up of COVID-19 training for frontline health workers in 11 African countries. Hum Resour Health. 2022;20(1):43. doi: 10.1186/s12960-022-00739-8.
20. Sonenthal PD, Kachimanga C, Komba D, Bangura M, Ludmer N, Lado M, et al. Applying the WHO-ICRC BEC course to train emergency and inpatient healthcare workers in Sierra Leone early in the COVID-19 outbreak. BMC Health Serv Res. 2022;22(1):197. doi: 10.1186/s12913-022-07556-8.
21. Chersich MF, Gray G, Fairlie L, Eichbaum Q, Mayhew S, Allwood B et al. COVID-19 in Africa: care and protection for frontline healthcare workers. Glob Health. 2020;16(1):46. <https://doi.org/10.1186/s12992-020-00574-3>.
22. Bhanot D, Singh T, Verma SK, Sharad S. Stigma and Discrimination During COVID-19 Pandemic. Front Public Health. 2021;8:577018. doi: 10.3389/fpubh.2020.577018.
23. Singh R, Subedi M. COVID-19 and stigma: Social discrimination towards frontline healthcare providers and COVID-19 recovered patients in Nepal. Asian J Psychiatr. 2020;53:102222. doi: 10.1016/j.ajp.2020.102222.
24. Yufika A, Pratama R, Anwar S, Winardi W, Librianty N, Prashanti NAP et al. Stigma Associated with COVID-19 Among Health Care Workers in Indonesia. Disaster Med Public Health Prep. 2021:1-5. doi: 10.1017/dmp.2021.93.
25. Nashwan AJ, Valdez GFD, Al-Fayyadh S, Al-Najjar H, Elamir H, Barakat M, et al. Stigma towards health care providers taking care of COVID-19 patients: A multi-country study. Heliyon. 2022;8(4):e09300. doi: 10.1016/j.heliyon.2022.e09300.
26. Bagcchi S. Stigma during the COVID-19 pandemic. Lancet Infect Dis. 2020;20(7):782. doi: 10.1016/S1473-3099(20)30498-9.

Source of Support: Nil, Conflict of Interest: None declare