

## Original Article

# Nurses as Warriors: Challenges and Impacts among Kerala Nurses during Coronavirus Disease-2019 Pandemic

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## INTRODUCTION

In December 2019, a new betacoronavirus, severe acute respiratory syndrome coronavirus-2, was found in Wuhan, China. On March 11, 2020, the World Health Organization declared the virus a pandemic after it quickly spread over the globe.<sup>[1]</sup> Corona Virus Disease 2019 (COVID-19) produces a runny nose, dry cough, dizziness, a sore throat, and body aches, which might be accompanied by headaches and a fever.<sup>[2]</sup> As the largest group of health workers, nurses are at the vanguard of the health-care system in response to the COVID-19 pandemic, providing direct care to patients at close physical distances and, as a result, are frequently exposed to these viruses, and are at high risk of illness.<sup>[3]</sup> Nurses

In December 2019, the global outbreak of coronavirus disease-2019 (COVID-19) was announced. The pandemic has cast a spotlight like never before on health-care professionals in general, and nurses in particular. Nurses have been dubbed “warriors” by the general public for their determination to provide frontline care to patients with the disease, despite the risk of exposure and a lack of professional resources. The goal of the study was to assess the obstacles and consequences faced by Kerala nurses during the COVID-19 pandemic.

A cross-sectional study was conducted from January to June 2021 among Kerala nurses. A total of 1630 nurses were chosen using a randomized sampling technique. The data were gathered using a semi-structured self-reported questionnaire. The information was entered into a database and analyzed using SPSS program version 16.0.

: After analyzing the data, seven themes emerged: (a) love for the profession; (b) frustration for being labeled as “COVID Nurses”; (c) fear of infection and transmission; (d) personal protective equipment uncertainty; (e) workplace safety especially against hospital violence; (f) burnout in nurses; and (g) job stress.

Nurses undertook a hazardous rescue mission and played an essential contribution in COVID-19 pandemic. Over the course of intensive work, they underwent significant psychological changes. Nurses burnout and occupational stress must be addressed with effective interventions. In order to mitigate the pandemic, the administration should also promote a healthy workplace and have a positive attitude and harmonious connection with the frontline personnel.

*Anxiety, burnout, coronavirus disease-2019 pandemic, Kerala, nurses, personal protective equipment, stress, workplace safety*

are the most trusted group of health-care professionals, delivering the majority of care 24 h a day, 7 days a week, 365 days a year.<sup>[4]</sup> Nurses have a significant role in dealing with COVID-19 patients since they are the ones who perform the screenings, implement triage, treat patients, connect with caregivers, provide health education on coronavirus prevention and protection, and deal with critical circumstances.<sup>[5]</sup> Microbe transmission among nurses is affected by hand disinfection, mask

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wear, overcrowding, and a lack of single rooms for isolation, which is aggravated by the fact that some nurses are uninformed of infection control procedures.<sup>[6]</sup>

Kerala is a one-of-a-kind state in India, with development outcomes that are much greater than those of other states and equivalent to those of developed countries.<sup>[7]</sup> Lini Puthussery “Angel of Clemency” who succumbed to a rare Nipah virus infection during its outbreak is a true warrior among Kerala nurses. Many nurses are apprehensive about their employment and its personal impact, despite their professional duty to care for the community during a pandemic or epidemic. Key concerns have included the risk of infection, transmission to family members, stigma connected with their job’s risks, and constraints on personal freedom.<sup>[8]</sup>

This study aimed to investigate challenges and impacts among Kerala nurses during COVID-19 pandemic. This information might be utilized to instruct nursing personnel and assist them to minimize occupational exposure, fear, and anxiety during an outbreak.

## MATERIALS AND METHODS

### Study design

A cross-sectional study was conducted using an online platform among Kerala nurses. The study period was from January to June 2021. The data were collected from all the districts of Kerala.

### Eligibility criteria

All nurses were required to be included in the study. Nurses who were not present at the time of the trial were excluded (because of sick leave or annual leave). Only participants who are able to understand English and access Internet could participate in the study.

### Sample size and sampling technique

The study was made on a sample size of 1725 nurses. There were 95 nurses who did not respond. The ultimate sample size was 1630 nurses, assuming a 5.5% nonresponse rate. The study participants include mainly private hospital nurses and a few from government hospitals who were ready to participate in the survey. The samples were chosen using a randomized sampling technique done through nurses’ group present on social network and all information were given voluntarily.

### Data collection and instruments

As the study took place during the COVID 19 epidemic, the current isolation policy advocates for limiting face to face contact and avoiding large gatherings, therefore decided to collect the data online. Using Google Forms, an online semi-structured questionnaire was created. Informed consent was obtained through the Google

Forms before they started filling their questionnaire. The link was sent to all of the investigator’s contacts via E-mail, WhatsApp, and Facebook. Participants were asked to reach out to as many individuals as possible with the survey. Participants are automatically led to research material after receiving and clicking the link.

The questionnaire was used to gather information on nurses’ knowledge, attitudes, and practices, as well as their psychological reactions to the COVID-19 outbreak. Age, gender, level of experience, education, marital status, and residence area were among the sociodemographic characteristics. The study also focuses on changes in the working environment, occupational safety, particularly in the case of hospital violence, uncertainty about personnel protective equipment, their experiences, worries, changes in sleep pattern, any type of stigma, available counseling options, and training for epidemic response. Stress is also evaluated among subjects using Expanded Nursing Stress Scale (ENSS).<sup>[9]</sup> It is a valid and reliable tool targeting nursing stress.

Once they agree to participate in the survey, they filled up a self-reported questionnaire. The data on the server were transmitted into a database established by the online platform at the end of the survey, and it was ready to be analyzed.

### Ethical considerations

The respondents’ anonymity was protected via the software used to send out and collect the questions, which filled the completed questionnaires without keeping track of the respondents’ identities. Participants were given the option of participating in the study by filling out the survey or refusing to do so. Respondents gave their consent to participate in the study by completing and submitting the survey.

### Data analysis

The IBM SPSS Statistics for Windows, Version 16.0. Armonk, NY: IBM Corp was used to statistically analyze the acquired data. The qualitative data were compared using the Chi-square test ( $\chi^2$ ). When  $P < 0.05$ , the test findings were considered significant.

## RESULTS

In all, 1725 nurses were included in the study, 95 nurses did not respond. The final sample size was 1630 nurses, assuming a 5.5% of nonresponse rate. The median age of the participants was 32 years, in the range of 24–55 years. Out of the total nurses, more than half of them (1483; 91%) were women. Regarding participant’s marital status, 1434 (88%) were married. Among the participants, 178 (60%) and 652 (40%) lived in staff quarters and homes, respectively. Study participants

include mainly private hospital nurses (1434; 88%) and a few from government hospitals (196; 12%) who were ready to participate in the survey. Educational status among the participants included BSc (1206; 74%), MSc (277; 17%), and GNM (147; 9%). Finally, 1011 (62%) of the participants had <10 years of work experience.

The concern among Kerala nurses during COVID 19 pandemic was measured using 21 questions. The participants were given two options for answering these specific questions: yes or no. The questions include participants who are aware of the existing COVID protocol gave a perfect score. About 96.6% of participants had a feeling of contributing greater good to society and involving in COVID control activities. Majority of them were frustrated for being labeled as COVID nurses. About 50.7% of nurses faced difficulty in reaching the workplace. About 74.3% feared about contracting the disease. Many of them were uncomfortable by the personal protective equipment and 94.7% gave a response of sense of security with these personal protective equipment. Almost all had a concern about safety of their family and friends. Almost 97.7% of nurses experienced physical exhaustion. Depression, changes in appetite, and recent anxiety attacks were also often mentioned by the participants. Only half of them received a reasonable wage. About 28.8% of them were a victim of COVID. About 76% of nurses had access to enough resources to deal with the pandemic. Counseling resources were only available for 54.97% of nurses. Almost everyone agreed to the fact that the pandemic had changed their working atmosphere totally [Table 1].

Stress among the nurses was measured using ENSS. It is a valid and reliable tool targeting nursing stress. The data were gathered using age as a variable in relation to stress [Figure 1]. The responses were divided into three categories: mild, moderate, and severe. Nurses under the age of 30 were found to be under mild stress. Those above the age of 50, on the other hand, said they were under severe stress [Table 2].

## DISCUSSION

The goal of the study was to look into the challenges and effects of the COVID-19 pandemic on Kerala nurses. A total of 1630 nurses were studied. Nurses' knowledge, attitudes, and practices, as well as their psychological reactions to the COVID-19 outbreak, were evaluated in this study.

Of the 1630 nurses, those who were aware of the existing COVID protocol gave a 100% score. A similar study conducted in Spain on COVID 19 care protocol reported difficulty in adapting so frequently to new

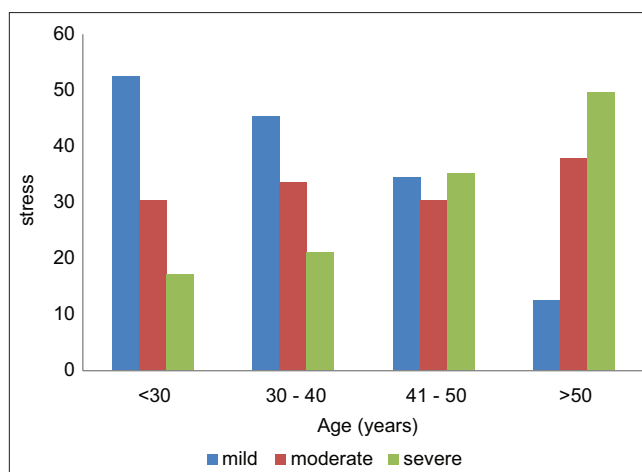


Figure 1: Correlation between stress and age

protocol.<sup>[10]</sup> Almost 96.6% of participants felt that they were doing more good for society by participating in COVID control actions. These findings are in line with a research conducted in Canada, which found that people felt glad to be able to step forward when their country and people were under distress and that they felt like heroes as a result.<sup>[11]</sup> About 89.4% of nurses were frustrated for being labeled as “COVID Nurse.” This label places emphasis on the virus rather than the health professionals compacting the pandemic.<sup>[12]</sup> About 50.7% of nurses reported trouble in reaching the workplace. About 74.3% of those surveyed were concerned about contracting the disease. In a study done in the United States, participants evaluated their perceived risk of contracting the virus as high, feared going to work, and preferred to care for patients with other medical or surgical conditions rather than coronavirus patients.<sup>[13]</sup> This study was also consistent with that conducted in Italy.<sup>[14]</sup> The personal protection equipment made 91.8% of the participants uncomfortable. These findings are in accordance with the research done in Wuhan, China<sup>[15]</sup> and Pakistan.<sup>[16]</sup> Majority of the participants had a sense of security with the personal protective equipment alike with the study conducted in China.<sup>[17]</sup> Almost 98% of participants were concerned about families' and friends' safety, which coincided with the study from Albania.<sup>[18]</sup> More than half of them reported changes in appetite. The present study identified that 65.5% had recent anxiety attacks. This is in contrast with the study done in Kerala where a lower prevalence of anxiety was reported.<sup>[19]</sup> It may be due to the difference in the study period. Many participants experienced a higher level of emotional exhaustion. Nurses have been found in several studies to experience burnout from exposure to stressful events.<sup>[20]</sup> Our study echoed of having severe physical exhaustion with the increased workload. Less than half of the subjects were worried about lack of staffing and

**Table 1: The concerns among Kerala nurses during the coronavirus disease-19 pandemic (n=1630)**

Feeling in the pandemic period	Yes, n (%)	No, n (%)
1. Are you aware of the existing COVID protocol?	1630 (100)	0
2. Are you proud that by participating in COVID control activities, you are contributing to the greater good of society?	1573 (96.6)	57 (3.4)
3. Have you ever being frustrated for being labeled as a COVID nurse?	1457 (89.4)	173 (10.6)
4. Do you experience difficulty in reaching workplace?	826 (50.7)	804 (49.3)
5. Do you fear about contracting COVID-19?	1211 (74.3)	419 (25.7)
6. Were you uncomfortable by the personal protective equipment?	1495 (91.8)	135 (8.2)
7. Did the personal protective equipment provide you a sense of security?	1532 (94.7)	98 (6)
8. Are you concerned about families' and friends' safety?	1608 (98.7)	22 (1.3)
9. Have you noticed any changes in your appetite?	963 (59.1)	667 (40.9)
10. Have you had any recent anxiety attacks?	1067 (65.5)	563 (34.5)
11. Do you feel depressed lately?	1536 (94.3)	94 (5.7)
12. Do you get a sense of physical exhaustion?	1591 (97.7)	39 (2.3)
13. Do you worry about the lack of staffing?	774 (47.5)	856 (52.5)
14. Do you receive a reasonable wage?	826 (50.7)	804 (49.3)
15. Do you have any regrets about being a nurse?	275 (16.9)	1355 (83.1)
16. Are you a victim of COVID?	468 (28.8)	1162 (71.2)
17. Is your hospital equipped with enough resources?	1238 (76)	392 (24)
18. Are there any counseling resources available?	895 (54.97)	736 (45.1)
19. Are you trained for dealing with the outbreak?	531 (32.6)	1099 (67.4)
20. Do you think the pandemic changed your working atmosphere totally?	1604 (98.5)	26 (1.5)
21. Do you feel the health workers need better workplace safety, especially against hospital violence?	1315 (80.7)	315 (19.3)

COVID-19: Coronavirus disease-2019

**Table 2: Stress evaluation among Kerala nurses using Expanded Nursing Stress Scale**

Variables	Stress		
	Mild (%)	Moderate (%)	Severe (%)
Age			
<30	856 (52.5)	495 (30.3)	279 (17.2)
30-40	739 (45.3)	548 (33.6)	343 (21.1)
41-50	562 (34.4)	497 (30.4)	571 (35.2)
>50	204 (12.5)	619 (37.9)	807 (49.6)

receiving a reasonable wage. Only 16.9% regret about being a nurse. A relative cross-sectional study done in Shanghai, China, also gave the same report.<sup>[21]</sup> In our study, 28.8% of nurses were victims of COVID. Another study also covers the same issue.<sup>[22]</sup> Only 76% of nurses had sufficient resources to deal with the pandemic. Based on the amount of severely ill patients, medical facilities are not evenly dispersed across the country. This is a challenge for medical personnel, particularly nurses.<sup>[23]</sup> Only 54.97% of nurses had access to counseling resources. The study reflects of having 32.6% of trained nurses to deal with the outbreak. In any catastrophe or disease outbreak response, training is a vital component of nurses' readiness and competence. During a disease epidemic, nurses are frequently assigned new responsibilities and forced to perform additional tasks that, in some cases, go beyond the scope of their normal nursing duties.<sup>[24]</sup> Almost everyone

agreed that the epidemic had completely altered their working environment. A similar response was also obtained from a study conducted in Italy.<sup>[25]</sup> About 80.7% of health workers need better workplace safety, especially against hospital violence.

The nurses' stress levels were assessed using the ENSS. Age as a variable in relation to stress was used to collect the data. Mild, moderate, and severe responses were split into three categories. Mild stress was discovered in nurses under the age of 30. Those over 50, on the other hand, felt they were under a lot of pressure. Following the COVID-19 pandemic in Toronto, health care personal reported very high levels of burnout, psychological distress, and post-traumatic stress disorder symptoms (Maunder *et al.*, 2006).<sup>[26]</sup>

### Limitations

There are still some limits to be explored. First, the researcher was unable to conduct face-to-face interviews because of the risk of spread of infection as it is a pandemic. In the future, a long-term study on the experience of staff nurses caring for COVID-19 patients could be investigated. Second, while this study focuses on frontline nurses, other professionals such as doctors and logistic support employees might be explored further. Third, participants in the study must be able to communicate in English and have access to the Internet.



## CONCLUSION

According to the findings of the current study, the nurses in the COVID-19 unit are true warriors. During the epidemic, study participants reported high levels of burnout, anxiety, depression, and fear. Frustration at being labeled as “COVID Nurses,” emotional stress from working longer hours, and uncertainty regarding personal safety equipment are among the issues addressed by the respondents. Periodical psychological counseling for nurses and health care workers during COVID-19 pandemic is advisable.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- Gordon JM, Magbee T, Yoder LH. The experiences of critical care nurses caring for patients with COVID-19 during the 2020 pandemic: A qualitative study. *Appl Nurs Res* 2021;59:151418.
- Ariapooran S, Ahadi B, Khezeli M. Depression, anxiety, and suicidal ideation in nurses with and without symptoms of secondary traumatic stress during the COVID 19 outbreak. *Arch Psychiatr Nurs* Forthcoming 2022. Available from: <https://doi.org/10.1016/j.apnu.2021.05.005>.
- Jahangiri M, Malakoutikhah M, Choobineh A, Zare A. Nurses' uncertainty about medical gloves safety during the COVID-19 pandemic. *J Healthc Qual Res* 2021;36:294-300.
- De Raeve P, Adams E, Xyrichis A. The impact of the COVID-19 pandemic on nurses in Europe: A critical discussion of policy failures and opportunities for future preparedness. *Int J Nurs Stud Adv* 2021;3:100032.
- Sharma RP, Pohekar SB, Ankar RS. Role of a nurse in COVID-19 pandemic. *J Evol Med Dent Sci* 2020;9:2550-5.
- Tadesse DB, Gebrewahd GT, Demoz GT. Knowledge, attitude, practice and psychological response toward COVID-19 among nurses during the COVID-19 outbreak in northern Ethiopia, 2020. *New Microbes New Infect* 2020;38:100787.
- World Health Organization. From Brain Drain to Brain Gain Migration of Nursing and Midwifery Workforce. New Delhi: WHO; 2017. p. 7-8. Available from: [https://www.who.int/workforcealliance/031616-108India\\_web.pdf?ua=1](https://www.who.int/workforcealliance/031616-108India_web.pdf?ua=1). [Last accessed on 2021 Nov 12].
- Fernandez R, Lord H, Halcomb E, Moxham L, Middleton R, Alananzeh I, *et al.* Implications for COVID-19: A systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. *Int J Nurs Stud* 2020;111:103637.
- Said RM, El-Shafei DA. Occupational stress, job satisfaction, and intent to leave: Nurses working on front lines during COVID-19 pandemic in Zagazig City, Egypt. *Environ Sci Pollut Res Int* 2021;28:8791-801.
- Tort-Nasarre G, Alvarez B, Galbany-Estragués P, Subías-Miquel M, Vázquez-Segura E, Marre D, *et al.* Front-line nurses' responses to organisational changes during the COVID-19 in Spain: A qualitative rapid appraisal. *J Nurs Manag* 2021;29:1983-91.
- Mohammed S, Peter E, Killackey T, Maciver J. The “nurse as hero” discourse in the COVID-19 pandemic: A poststructural discourse analysis. *Int J Nurs Stud* 2021;117:103887.
- Pasay-An E, Alshammari F, Mostoles R Jr., Gattud V, Cajigal J, Buta J. A qualitative study on nurses' experiences with social stigma in the context of COVID-19. *Enferm Clin (Engl Ed)* 2021;Jun 12:1-8. Available from: <https://doi.org/10.1016/j.enfcli.2021.05.004>. [Last assessed on 2022 Jan 08].
- Gray K, Dorney P, Hoffman L, Crawford A. Nurses' pandemic lives: A mixed-methods study of experiences during COVID-19. *Appl Nurs Res* 2021;60:151437.
- Ünver S, Yeniğün SC. COVID-19 fear level of surgical nurses working in pandemic and surgical units. *J Perianesth Nurs* 2021;36:711-6.
- Xu F, Tang JP, Lu S, Fang HW, Dong L, Zhou YX. Coping and growing in dilemma: Clinical work experience of front-line nurses in Wuhan during the early stage of COVID-19 epidemic. *Jpn J Nurs Sci* 2021;18:e12428.
- Shaikat N, Ali DM, Razzak J. Physical and mental health impacts of COVID-19 on healthcare workers: A scoping review. *Int J Emerg Med* 2020;13:40.
- Xu S, Yang Q, Xie M, Wang J, Shan A, Shi F. Work experience of triage nurses in emergency departments during the prevalence of COVID-19. *Int Emerg Nurs* 2021;56:101003.
- Kamperi F, Sinaj E. Nurses role in the COVID-19 pandemic, knowledge and attitudes of nursing staff – Implications for the future. Thesis 2020;9:165-83.
- Sukumaran AB, Manju L, Narendran M, Jose R, Deena DS, Beevi N, *et al.* Psychological response of healthcare workers and stigma experienced during early COVID 19 pandemic period in Kerala. *Int J Med Public Health* 2021;11:33-7.
- Galanis P, Vraka I, Fragkou D, Bilali A, Kaitelidou D. Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. *J Adv Nurs* 2021;77:3286-302.
- Cui S, Jiang Y, Shi Q, Zhang L, Kong D, Qian M, *et al.* Impact of COVID-19 on anxiety, stress, and coping styles in nurses in emergency departments and fever clinics: A cross-sectional survey. *Risk Manag Healthc Policy* 2021;14:585-94.
- Savitsky B, Radomislensky I, Hendel T. Nurses' occupational satisfaction during COVID-19 pandemic. *Appl Nurs Res* 2021;59:151416.
- Firouzkouhi M, Alimohammadi N, Kako M, Abdollahimohammad A, Bagheri G, Nourai M. Ethical challenges of nurses related COVID-19 pandemic in inpatient wards: An integrative review. *Ethics Med Public Health* 2021;18:100669.
- Labrague LJ, de Los Santos JA. Fear of COVID-19, psychological distress, work satisfaction and turnover intention among frontline nurses. *J Nurs Manag* 2021;29:395-403.
- Pagnucci N, Scateni M, De Feo N, Elisei M, Pagliaro S, Fallacara A, *et al.* The effects of the reorganisation of an intensive care unit due to COVID-19 on nurses' wellbeing: An observational cross-sectional study. *Intensive Crit Care Nurs* 2021;67:103093.
- Maunder RG, Lancee WJ, Balderson KE, Bennett JP, Borgundvaag B, Evans S, *et al.* Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. *Emerg Infect Dis.* 2006;12:1924-32. <https://doi.org/10.3201/eid1212.060584>.