International Journal of Contemporary Pediatrics
Ramya HS et al. Int J Contemp Pediatr. 2021 Sep;8(9):1496-1501
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20213309

Original Research Article

A cross sectional study to assess psychological impact of COVID-19 on health care workers in KIMS Bangalore

H. S. Ramya, Keerthidarshini, Sanjay L.*, Afroza Asiya

Department of Paediatrics, Kempegowda Hospital, Bengaluru, Karnataka, India

Received: 06 July 2021
Revised: 20 July 2021
Accepted: 29 July 2021

***Correspondence:**
Dr. Sanjay L,
E-mail: sanjaylpeds@gmail.com

ABSTRACT

Background: The ongoing coronavirus disease-2019 (COVID-19) pandemic has resulted in substantial psychological stress and anxiety for healthcare workers, we did a study targeting the healthcare workers to assess the magnitude of stress and anxiety in tertiary care centre.
Methods: We conducted a cross sectional survey-based study among 150 healthcare workers working at KIMS hospital, Bangalore from September 2020 to December 2020. Stress and anxiety were investigated using DASS-21 scale, association of stress and anxiety with demographic factors such as age, sex, profession, living with family/alone, past history and family history of any psychiatric illness were analysed using chi-square test.
Results: In 150 participants who were included in the study, 47 were males and 103 were females. Mean age of the subjects was 32.9±8.37 years. The number of married and unmarried subjects were similar in the two groups (79 versus 71). Majority of the subjects were staying with the family (69%) and few were staying alone (31%). 10 were ayahs, 21 ward boys, 14 interns, 59 post graduates, 46 staff nurses were included. 11 subjects gave history of substance abuse in the past (7%). 7 subjects had suffered from psychiatric illness (5%) in the past 4 more had family history of psychiatric illness and the mean score for stress recorded was 17.77±6.4, which was indicative of mild stress. The mean anxiety score was 16.25±6.61 which corresponded to severe anxiety.
Conclusions: In this study of healthcare workers, working in fever clinic, triage, wards and ICUs for patients with COVID-19, subjects reported experiencing stress and anxiety, especially ayahs, staff nurses and mainly female healthcare workers directly engaged in diagnosis, treatment, and care for patients with COVID-19.

Keywords: COVID-19, Pandemic, Stress, Anxiety, Healthcare workers

INTRODUCTION

The global health threat produced by the covid-19 pandemic, has resulted in substantial psychological stress for healthcare workers and frontline essential workers, as well as for the general public.[1] Coronavirus disease 2019 (COVID 19) has infected more than 92 million in world and more than 10 million in India, in that more than 10% HCWs are affected till September 2020.[2] Approximately 23 million deaths till December 2020 worldwide.[3] COVID 19 is a public health emergency, which not only affects physical health but also causes stress and other psychological symptoms.[4] Increasing number of cases result in over burdening of health care workers which in turn increase the psychological symptoms. The stress experienced by healthcare workers, frontline essential workers, and individuals in the general public varies depending on each individual's particular situation, experiences, and the stresses that they face.[5] Pandemic has created such a havoc that all sectors of population are

affected and traumatised, mainly healthcare workers working at high-risk exposure day in and out at COVID ICU's, COVID wards, screening centres, fever clinics, respiratory triage for the benefit of the society.[6] compared to severe acute respiratory syndrome, COVID-19 has had a lower mortality rate but has proven to be much more infectious.[7]

People with history of medical illness, psychiatric illness and co-morbid conditions are more vulnerable and pose higher risk for developing stress, anxiety and may lead to depression and also concerned about the family safety during covid duty and quarantine and subsequent transmission to family members after quarantine. Greatest risk of HCWs may be their patients or colleagues in the early stages of unsuspected infections when viral load is high. Factors associated with increased stress in health professional include perception of increased death from infection, standards of PPEs, living with family.

In this context it is necessary to study these vulnerabilities in health care workers, their psychological symptoms like anxiety and stress and help them to overcome this situation by knowing the stress level with apparent treatment. For example, counselling and medications if required in extreme cases.

Stress is a feeling of emotional or physical tension. It is the degree to which one person feels overwhelmed or unable to cope as a result of pressures that are unmanageable. Stress can lead to a variety of symptoms that include changes in mood, clammy or sweaty palms, difficulty in sleeping, low energy, palpitations.

Anxiety is a feeling of apprehension and fear characterised by palpitations, sweating, nervousness and restlessness.

In this study, anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal, it assesses difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient.

Aim of the study

To assess the magnitude of stress and anxiety level among health care workers (HCWs) treating patients exposed to COVID 19 using DASS21 scale in KIMS, Bangalore.

METHODS

Study design

This is a cross sectional, survey-based study. Demographic data and mental health measurements from 150 Health care workers were collected at KIMS, Bangalore from September 2020 to December 2020. Sample includes health care workers working in close contact with covid patients in fever clinic, triage, asymptomatic and symptomatic covid wards and the ICU. Convenient sampling was used and sample size was calculated as 150.

Sample size = 4pq/d2 = 150

P=40, q = 100-p = 60, d=8

Subjects

We included 150 health care workers randomly which included ayahs, ward boys, staff nurses, interns and post graduates who were working in COVID-19 wards in Kempegowda hospital.

Data collection

Participants were explained about objectives of study and written informed consent was obtained. Questionnaire was sent to all doctors posted for COVID duty and who have completed quarantine period. Information was collected and anonymity was maintained during data collection. Filled forms were collected back within 1 week and additional information or clarifications as and when required were obtained over the phone.

Health care workers and duties discharged

Ayahs – clean the wards, corridors and washrooms, discard the garbage, maintain biomedical waste management.

Ward boys - shifting of patients from ambulance to wards, for necessary scans/ testing, from wards to ICUs and ICUs to wards, spraying of wards and corridors where place is in contact with COVID-19 patients.

Staff nurse - provide medications, collect blood sample and send investigations, bed making and bed bath to the patients, distributing food to the patients.

Interns - generate SRF-IDs, collect swabs for COVID RT-PCR testing and RAT testing maintain case record of all patients, attend to the patients in fever clinic.

Post-graduates - monitor the patients, do all the required procedures like resuscitating the patients, emergency operative procedures, ABGs, ascitic fluid tapping, pleural fluid tapping, required dressings, attend to the patients in triage, SARI ward, fever clinic, wards and ICUs.

Individual perception of stress and anxiety was investigated using 7 items each from stress and anxiety subscale of the Depression Anxiety Stress Scale- short form (DASS-21) as given in table 1.[8] The scale provides on a 4-point rating scale, a measure of individual symptoms indicating stress or anxiety. To obtain total score, items are summed as shown in table 2.

A socio-demographic data, past and family history of psychiatric illness, medical illness and co-morbid

conditions. Depression anxiety stress scale (DASS 21) - It is a self-report scale with 21 items designed to measure depressive symptoms, anxiety symptoms and stress with 7 items per scale (Table 1).[9]

Statistical analysis

Healthcare workers characteristics were summarised as mean, standard deviation and frequencies with percentage. Prevalence of mental health disorders classified as per DASS-21 scale were presented as frequencies and percentages. Association of mental health disorders such as stress and anxiety with age, profession, and other demographic factors were analysed using chi square test.

RESULTS

Out of the 150 healthcare workers of KIMS hospital who were included in the study, 47 were males and 103 were females. Mean age of the subjects was 32.9±8.37 years, with youngest being 22 years old and oldest 54 years. The number of married and unmarried subjects were similar in the two groups (79 vs 71). Majority of the subjects were staying with the family (69%) and few were staying alone (31%).

Table 1: DASS 21.

I found it hard to wind down	0	1	2	3
I was aware of dryness of mouth	0	1	2	3
I experienced breathing difficulty	0	1	2	3
I tended to over react to situations	0	1	2	3
I experienced trembling	0	1	2	3
I felt that I was using a lot of nervous energy	0	1	2	3
I was worried about the situations in which I might panic and make a fool of myself	0	1	2	3
I found myself getting agitated	0	1	2	3
I found it difficult to relax	0	1	2	3
I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
I was close to panic	0	1	2	3
I felt that I was rather touchy	0	1	2	3
I was aware of the action of my heart in the absence of physical exertion	0	1	2	3
I felt scared without any good reason	0	1	2	3

The rating scales as follows- 0=did not apply to me at all, 1=applied to me to some degree, or some of the time, 2=applied to me to a considerable degree or a good part of time, 3=applied to me very much or most of the time.

Of the 150 subjects in the study, 10 were ayahs, 21 ward boys, 14 interns, 59 post graduates, 46 staff nurses. 11 subjects gave history of substance abuse in the past (7%). 7 subjects had suffered from psychiatric illness (5%) in the past 4 more had family history of psychiatric illness. (Table 3)

Table 2: Scores on the DASS-21 is multiplied by 2 to calculate the final score.

	Stress	Anxiety
Normal	0-14	0-7
Mild	15-18	8-9
Moderate	19-25	10-14
Severe	26-33	15-19
Extremely severe	34+	20+

Table 3: Socio demographic characteristics of population.

Characteristics (n= 150)	Mean ± SD
Age	32.9 ±8.37
Gender	
Male	47 (31.3%)
Female	103 (68.7%)
Marital status	
Married	79 (52.7%)
unmarried	71 (47.3%)
Current living status	
With family	104 (69.33%)
Outside family	46 (30.7%)
Specialization	
Ayah	10 (6.7%)
Ward boy	21 (14%)
Intern	14 (9.3%)
Post graduate	59 (39.3%)
Staff nurse	46 (30.7%)
Past history of psychiatric illness	
Yes	7 (4.67%)
Nil	143 (95.33%)
Depression	4 (2.67%)
Anxiety	4 (2.67%)
Stress	1 (0.67%)
Family history of psychiatric illness	
Yes	4 (2.67%)
Nil	146 (97.33%)
Depression	1 (0.67%)
Bipolar	1 (0.67%)
Not mentioned	2 (1.33%)

Table 4: Results obtained.

Scale	Subscale	Mean±SD
DASS21	Stress	17.77±6.4
	Anxiety	16.25±6.61

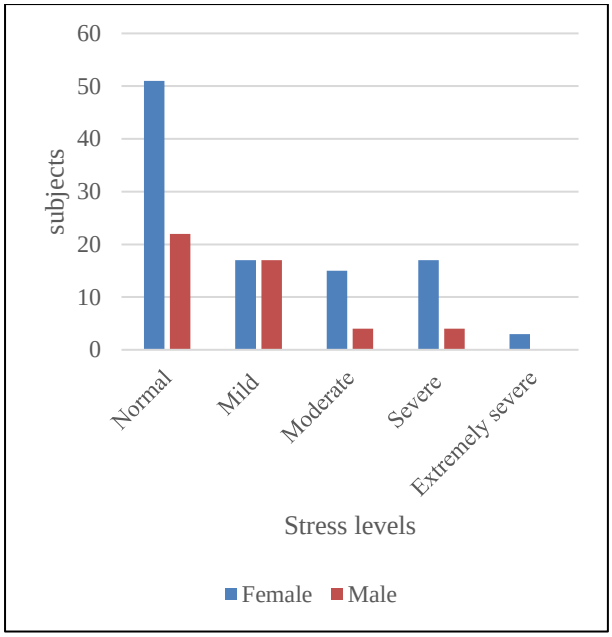

Figure 1: Comparison of stress levels in males and females.

Stress and anxiety levels were significant in healthcare workers more in ayahs and staff nurses 28% and 34% respectively p value (<0.005). Females have stress and anxiety levels more than males.

In study, only 3 post graduates had extremely severe stress, ayahs had severe stress levels compared to other groups and females had more stress, 48.7% had no stress, 22.7% had mild, 12.7% had moderate, 14% had severe and 2% had extremely severe stress levels (Table 5) (Figure 1).

In study, all ayahs had extremely severe anxiety, 11.3% had no anxiety, 5.3% had mild, 44% had moderate, 17.3% had severe and 22% had extremely severe anxiety levels. (Table 6) (Figure 2).

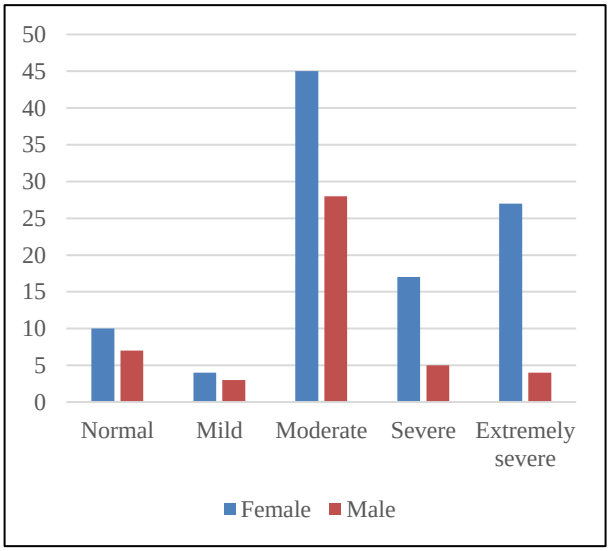

Figure 2: Comparison of anxiety levels among males and females.

DASS 21 mean scores showed mild level of stress and severe level of anxiety symptoms (Table 4).

Table 5: Comparison of stress levels among healthcare workers.

Specialization	Normal	Mild	Moderate	Severe	Extremely severe
Ayah	0	0	4	6	0
Ward boy	7	8	3	3	0
Interns	7	6	0	1	0
Post Graduates	32	15	5	4	3
Staff nurse	27	5	7	7	0

Table 6: Comparison of anxiety levels in healthcare workers.

Specialization	Normal	Mild	Moderate	Severe	Extremely severe
Ayah	0	0	0	0	10
Ward boy	0	2	11	5	3
Interns	3	0	8	2	1
Post Graduates	10	5	26	10	8
Staff nurse	4	1	21	9	11

DISCUSSION

The COVID-19 pandemic has had a serious toll on the health workers worldwide. This study was done to assess the mental stress on the health care workers of the tertiary COVID care centre in Bangalore. Subjects included were from all the working groups involved in COVID care.

Stress and anxiety levels were evaluated using the DASS 21 scale, which included 7 questions each to know the stress and anxiety. 150 subjects were involved in the study and the mean score for stress recorded was 17.77±6.4, which was indicative of mild stress. The mean anxiety score was 16.25±6.61 which corresponded to severe anxiety. This shows people involved with COVID care

suffer from significant anxiety and stress, and can take a heavy toll on their mental health. These findings are consistent with results obtained during other epidemics.[10] Out of the subjects, females had a significantly higher level of stress and anxiety (68.7%). Subjects staying with family were suffering from more anxiety and stress compared to subjects staying alone. Stress maybe because of high work load, poor sleep quality, poor health perception, low perception of infection avoidance. Greater psychological stress among health care workers is likely due to their direct contact with patients and colleagues that have become ill with COVID 19. Healthcare workers experience an elevated anxiety and stress in relation to a constant pressure to perform their duties in face of adversity potential interventions can be developed to alleviate these psychological stresses in a healthcare and frontline worker and thus help to reduce the risk of mental illness pathogenesis in these populations ($p<0.005$). This could be due to the constant worry of carrying infection to the family. Subjects suffering from previous psychiatric disorders had showed no significant difference in stress and anxiety when compared to others. Ayahs showed significant stress and anxiety compared to others, subjects with significant level of stress and anxiety were counselled regarding preventive and precautionary measures such as hand hygiene, respiratory hygiene, sanitization, social distancing, proper use of personal protective equipment and reassured about vaccination against COVID-19. Therefore, frontline workers are in need of greater protective measures to support them psychologically so that they can remain in their jobs helping their fellow citizens during the ongoing COVID-19 pandemic.[11,12]

These results were similar to study done by Preethi et al (52% participants reported experiencing severe anxiety and 24% had moderate levels of anxiety whereas females reported as high as 68% and 48% of moderate and severe anxiety, respectively) and Rachna et al (56% reported experiencing anxiety).[13,14] In contrast, to the present study, Tan et al (2020) reported only 14.5% experiencing anxiety.[15]

We conclude this study proving significant prevalence of stress and anxiety among health care workers of a tertiary care hospital. The condition of the people involved in COVID-19 care in Bengaluru is no different to others around the world. This stresses the need for providing good working environment, adequate safety precautions, good personal protection equipment and adequate workforce to decrease the mental and physical workload.

The limitation of this study included a relatively small sample size and lack of assessment of other factors that could influence stress and anxiety among healthcare workers.

CONCLUSION

In our study, healthcare workers who all worked in fever clinic, triage, wards and ICUs for patients with COVID-19, subjects reported experienced high levels of stress and anxiety, especially ayahs staff nurses and mainly female healthcare workers including post graduate doctors directly engaged in diagnosis, treatment, and care for patients with COVID-19. Ayahs and staff nurses who experienced high levels of stress and anxiety due to direct contact with patients and biomedical waste management and they were reassured that proper donning and doffing of PPE will have maximum protection which was thought earlier before the postings to COVID-19 ward, complete quarantine facilities and if they test positive appropriate treatment and support from the institute would be provided and counselling was done for these healthcare workers from the respective department for the same.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. International journal of environmental research and public health. 2020;17(5):1729.
2. Ministry of Health and family welfare, India (mohfw.gov.in). https://main.mohfw.gov.in/diseasealerts/novel-corona-virus. Accessed on 5th May, 2021.
3. John's Hopkins University Coronavirus resource centre. https://coronavirus.jhu.edu/data. Accessed on 5th May, 2021.
4. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA network open. 2020;3(3):e203976.
5. Holmes EA, O'Connor RC, Perry VH, Tracey I, Wessely S, Arseneault L et al. Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. The Lancet Psychiatry. 2020;7(6):547-60.
6. Luan R, Pu W, Dai L, Yang R, Wang P. Comparison of Psychological Stress Levels and Associated - Factors Among Healthcare Workers, Frontline Workers, and the General Public During the Novel Coronavirus Pandemic. Frontiers in psychiatry. 2020;11:1368.
7. Wu X, JIANG X, Yl XK, Li M. Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS-Cov-2) outside of Wuhan, China: retrospective case series. BMJ. 2020;368:m606.
8. Antony MM, Bieling PJ, Cox BJ, Enns MW, Swinson RP. Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety

Stress Scales in clinical groups and a community sample. Psychological assessment. 1998;10(2):176.
9. Oei TP, Sawang S, Goh YW, Mukhtar F. Using the depression anxiety stress scale 21 (DASS-21) across cultures. International Journal of Psychology. 2013;48(6):1018-29.
10. Lee AM, Wong JG, McAlonan GM, Cheung V, Cheung C, Sham PC et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. The Canadian Journal of Psychiatry. 2007;52(4):233-40.
11. Cai H, Tu B, Ma J, Chen L, Fu L, Jiang Y et al. Psychological impact and coping strategies of frontline medical staff in Hunan between January and March 2020 during the outbreak of coronavirus disease 2019 (COVID-19) in Hubei, China. Medical science monitor: international medical journal of experimental and clinical research. 2020;26:e924171-1.
12. Xu J, Xu QH, Wang CM, Wang J. Psychological status of surgical staff during the COVID-19 outbreak. Psychiatry research. 2020;288:112955.
13. Selvaraj P, Muthukanagaraj P, Saluja B, Jeyaraman M, Anudeep TC, Gulati A et al. Psychological impact of COVID-19 pandemic on health-care professionals in India–A multicentric cross-sectional study. Indian Journal of Medical Sciences. 2020;72(3):141.
14. Raj R, Koyalada S, Kumar A, Kumari S, Pani P. Psychological impact of the COVID-19 pandemic on healthcare workers in India: An observational study. Journal of Family Medicine and Primary Care. 2020;9(12):5921.
15. Tan BY, Chew NW, Lee GK, Jing M, Goh Y, Yeo LL et al. Psychological impact of the COVID-19 pandemic on health care workers in Singapore. Annals of internal medicine. 2020;173(4):317-20.

Cite this article as: Ramya HS, Keerthidarshini, L S, Asiya A. A cross sectional study to assess psychological impact of COVID-19 on health care workers in KIMS Bangalore. Int J Contemp Pediatr 2021;8:1496-501.