

A Global Public Health Priority: Mental Health and Well Being of Healthcare Workers

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Abstract:

Background: Healthcare workers (HCWs) are experiencing tremendous pressure from COVID-19 as compared to general population, especially those who might be in contact with confirmed or suspected cases. This cross-sectional study has been conducted for better understanding of psychological conditions of Health Care Workers during pandemic including individual and social perspectives of providing insight into possible individual, social and occupational approaches.

Methods: A cross sectional study has been performed on healthcare workers working in a tertiary care institute of Jaipur.

Results: Majority of the nurses (47.5%), lab technicians (32.35%) were suffering from insomnia. Anxiety was mostly seen among nurses (48.89%), doctors (22.22%), medical residents (20%) and lab technicians (8.89%). The study detected depressive symptoms in 38.24% of healthcare workers.

Conclusions: This study has shown burden of psychological problems among different healthcare workers during COVID-19 pandemic. The findings of this study will help to improve understanding of influence of pandemics on psychological health among healthcare workers and will suggest implementation of steps like psychological interventions and support for healthcare workers.

Keywords: Health care workers, insomnia, anxiety, depression.

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Introduction

COVID-19 is a contagious disease caused by severe acute respiratory syndrome coronavirus-2 (SARS-COV 2) [1]. First case was identified in Wuhan, China. The disease has since spread worldwide; leading to ongoing pandemic [2]. India had recorded its first case of COVID-19 in Thrissur district, Kerala on January 30, 2020. Since then despite effective containment, isolation, treatment measures taken by Government of India including timely lockdown measures, there has been an ever increasing trend in number of cases.[3]

India began its vaccination programme on 16 January 2021. On 19 January 2021, nearly a year after the first reported case in the country, Lakshadweep became the last region of India to report its first case. By February 2021, daily cases had fallen to 9,000 per-day. However, by early-April 2021, a major second wave of infections took hold in the country with destructive consequences; Multiple factors have been proposed to have

potentially contributed to the sudden spike in cases, including highly-infectious variants of concern such as Lineage B.1.617, a lack of preparations as temporary hospitals were often dismantled after cases started to decline, and new facilities were not built [4], and health and safety precautions being poorly-implemented or enforced during weddings, festivals (such as Holi on 29 March, and the Haridwar Kumbh Mela which was linked to linked to at least 1,700 positive cases between 10 and 14 April including cases in Hindu seers), sporting events, state and local elections in which politicians and activists have held in several states, and in public places.

An economic slowdown put pressure on the government to lift restrictions, and there had been a feeling of exceptionalism based on the hope that India's young population and childhood immunisation scheme would blunt the impact of the virus. Models may have underestimated

projected cases and deaths due to the under-reporting of cases in the country. Healthcare workers (HCWs) are experiencing tremendous pressure from COVID-19 as compared to general population, especially those who might be in contact with confirmed or suspected cases. Mental health issues such as anxiety, depression and sleep disorders are most likely to affect healthcare workers (HCWs) especially frontline workers. Studies on Indian doctors reported significant mental health problems due to COVID-19 [5,6,7]. 52.8% of the health care workers in India were reported to have COVID-19 pandemic-related burnout [8].

India with its several densely populated states, shortage of medical professionals, inadequate equipment, scarcity of health centres, and paucity of testing facilities failed to contain the disease. [9]Consequently the pressure on the health system mounted. Inadequate number of public health care centres along with escalating COVID-19 treatment expenses in the private health care centres worsened the situation. The already dwindling patient doctor relationship reached a worrying level of distrust. Healthcare workers in general and public healthcare workers, in particular, suffered acute helplessness.

Although many studies have investigated prevalence of psychological problems among healthcare workers during COVID-19, very few have investigated distribution of psychological problems among different groups of healthcare workers. This cross-sectional study has been conducted for better understanding of psychological conditions of HCWs during pandemic including individual and social perspectives of providing insight into possible individual, social and occupational approaches.

Aims and Objectives

1. To find out prevalence of psychological problems among healthcare workers (HCWs) during COVID-19 pandemic.
2. To compare psychological problems between medical and non-medical personnel during COVID-19 pandemic.

Material and Methods

Study Design: A cross sectional study has been performed on healthcare workers working in a tertiary care institute of Jaipur.

Study Setting: This study has been carried out among various medical and non-medical healthcare workers working in COVID designated areas of a tertiary care institute of Jaipur from Jan 2022 to Dec 2023.

This institute has a COVID-19 treatment centre, well-equipped with an isolation ward, quarantine

centre, fever clinic, and COVID-19 testing facility. Written informed consent has been taken from those who have worked in the COVID designated areas before administering questionnaire. Questionnaire has been filled by interview method after explaining the purpose of study in detail and obtaining due consent. All the data collected for this study has been kept confidential. Participants were free to refuse or terminate their participation at any stage of the study.

Sampling Technique

Participants were selected using convenient sampling among those HCWs who have worked in the COVID designated areas from Jan 2022 onwards. About 50 doctors, 110 nurses, 150 medical residents, 20 lab technicians and 90 non-medical personnel have served in COVID treatment centre of this institute, all of which were approached to act as a participant in this study.

Study Population

This study included medical (physicians, medical residents, nurses, lab technicians) and non-medical personnel (allied health professionals, pharmacist, technicians, clerical staff and other maintenance staff).

Doctors comprised of trained professionals who have at least a bachelor's degree in medicine and surgery (MBBS). Medical residents included those professionals who are undergoing their postgraduate degree after MBBS. Nurses comprised of qualified professionals with at least a diploma in nursing. Lab technicians included qualified professionals with at least a graduate degree in lab technology. Non-medical staff included pharmacists, computer operators, clerical staff, dieticians and other staff involved in maintenance of COVID designated areas.

Data Collection Tools

Socio demographic data has been collected including age, gender, religion, education, socio economic status (BG Prasad classification) etc. Pre-designed, pre-tested validated questionnaires used in this study are GAD-7 scale (Generalised Anxiety Disorder Scale), Patient Health Questionnaire (PHQ-9) and Insomnia Severity Index (ISI).

The GAD-7 scale (Generalised Anxiety Disorder Scale) was used to measure symptoms of anxiety. Cut off points of 5, 10 and 15 were classified as mild, moderate and severe anxiety, respectively. [10] This is calculated by assigning scores of 0, 1, 2 and 3 to the response categories, respectively, of "not at all", "several days", "more than half the days" and "nearly every day". GAD-7 total score for the seven items ranges from 0 to 21. Score from 0-4 depicts minimal anxiety, 5-9 is mild anxiety,

10-14 is moderate anxiety and 15-21 is severe anxiety.

We identified depressive symptoms, using nine item Patient Health Questionnaire (PHQ-9) [11,12]. Cut off points 5, 10 and 15 have been classified as mild, moderate and severe depression respectively. A PHQ- 9 score >10 was previously reported to have a sensitivity of 88% and specificity of 88% for major depression [13]. It was calculated by assigning scores 0, 1,2,3 to respectively “not at all”, “several days”, “more than half the days” , “nearly every day”. Interpretation of total score is as 1-4 is minimal depression, 5-9 is mild depression, 10-14 is moderate depression, 15-19 is moderately severe depression and 20-27 is severe depression. Symptoms of insomnia have been measured by Insomnia Severity Index (ISI). Cut off points of 8, 15 and 22 have been classified as sub-threshold, moderate and severe insomnia respectively [14]. The insomnia severity index has seven questions. We added the scores for all seven items to obtain the total score. Total score categories were 0-7 is no clinically significant insomnia, 8-14 is sub threshold insomnia, 15-21 is clinical insomnia (moderate severity), 22-28 is clinical insomnia (severe).

The tools have been used in Indian settings in the past [15-17].

Inclusion Criteria

All medical and non-medical personnel who have worked in COVID designated areas at a tertiary care institute of Jaipur from Jan 2022 onwards and who consented for the study.

Exclusion criteria

1. Those who do not consent for the study.
2. Those who do not complete assessment.
3. Those HCWs who were not directly involved as frontline workers in care of COVID -19 patients.

4. Participants having any history of neurological or psychiatric illness.

Ethical Consideration-Due clearance has been taken from Ethical Committee.

[Letter no./MGMC&H/IEC/JPR/2022/676]

Plan of Analysis

Data has been analysed by using Microsoft excel version 365 using descriptive statistics such as frequency, percentage and other necessary statistical tests. Chi-square test has been used for correlating the association of a particular variable with anxiety, depression, and insomnia. p value lesser than 0.05 has been considered as significant by statistics.

Observation and Results:

Table 1 shows socio-demographic profile of study participants. Among 170 HCWs, study participants include 57.65% i.e. 98 males and 42.35% i.e. 72 females.

Most of the HCWs i.e. 71 were in age group of 30-40 years i.e. 41.77% followed by 59 HCWs in age group of 20-30 years i.e. 34.70%, 36 HCWs in age group of 40-50 years i.e. 21.17% and 4 HCWs in 50-60 years of age group i.e. 2.35%. According to this study, 127 HCWs were married i.e. 74.7% followed by 41 HCWs who were single i.e. 24.12% and 2 HCWs who were divorced i.e. 1.18%. This study revealed that 141 HCWs were Hindus i.e. 84.94% followed by 13 Muslim HCWs i.e. 7.65%, 12 Christian HCWs i.e. 7.06% and 4 Sikh HCWs i.e. 2.35%. This study showed that 127 HCWs i.e. 74.71% was having no significant medical history and only in 43 HCWs i.e. 25.29%, significant medical history was there. If we look at socio-economic class, 56 i.e. 32.94% HCWs belonged to class 2 followed by 54 i.e. 31.76% HCWs who belonged to class 3.

Table 1: Socio-demographic profile of study participants

Characteristics studied	Medical HCWs n=132	Non-Medical HCWs n=38	Total N=170
Sex			
• Male	73[55.30]	25[65.79]	98[57.65]
• Female	59[44.70]	13[34.21]	72[42.35]
Age			
• 20-30yrs	44[33.33]	15[39.47]	59[34.71]
• 30-40yrs	58[43.94]	13[34.21]	71[41.77]
• 40-50yrs	28[21.21]	8[21.06]	36[21.17]
• 50-60yrs	2[1.52]	2[5.26]	4[2.35]
Marital status			
• Single	34[25.76]	7[18.42]	41[24.12]
• Married	97[73.48]	30[78.95]	127[74.70]
• Divorced, separated or widowed	1[0.76]	1[2.63]	2[1.18]
Religion			
• Hindu	111[84.09]	30[78.94]	141[82.94]

<ul style="list-style-type: none"> • Christian • Muslim □ • Sikh 	9[6.82] 10[7.58] 2[1.52]	3[7.90] 3[7.90] 2[5.26]	12[7.06] 13[7.65] 4[2.35]
Medical history No significant medical history Medical history present	97[73.49] 35[26.51]	30[78.95] 8[21.05]	127[74.71] 43[25.29]
<ul style="list-style-type: none"> • Hypertension • Diabetes mellitus • Asthma • Migraine 	6[17.14] 11[31.43] 7[20.00] 11[31.43]	2[25.00] 4[50.00] 1[12.50] 1[12.50]	8[18.61] 15[34.88] 8[18.61] 12[27.90]
Socio economic status(BG Prasad Classification)			
<ul style="list-style-type: none"> • Class 1 • Class 2 • Class 3 • Class 4 • Class 5 	29[21.97] 48[36.36] 42[31.82] 11[8.33] 2[1.52]	2[5.26] 8[21.06] 12[31.58] 14[36.84] 2[5.26]	31[18.24] 56[32.94] 54[31.76] 25[14.71] 4[2.35]

Table 2: Psychological parameters studied among medical healthcare workers

Groups studied	Insomnia (n=34)	Anxiety (n=45)	Depression (n=45)
Doctors	2[5.89]	10[22.22]	4[8.89]
Medical residents	5[14.70]	9[20.00]	9[20.00]
Nurses	16[47.06]	22[48.89]	27[60.00]
Lab technicians	11[32.35]	4[8.89]	5[11.11]

X²value= 13.76 , p value =0.03

Table 2 shows psychological parameters among medical and non-medical healthcare workers. This study revealed that insomnia was mostly seen among nurses (47.06%) followed by lab technicians (32.35%), medical residents (14.70%) and doctors (5.89%). Anxiety was mostly seen among nurses (48.89%), followed by doctors

(22.22%), medical residents (20%) and lab technicians (8.89%). Nurses showed highest percentage of depression (60%), among the entire healthcare workers studied which was followed by medical residents (20%), lab technicians (11.11%) and doctors (8.89%). The above results were found to be statistically significant (p<0.05).

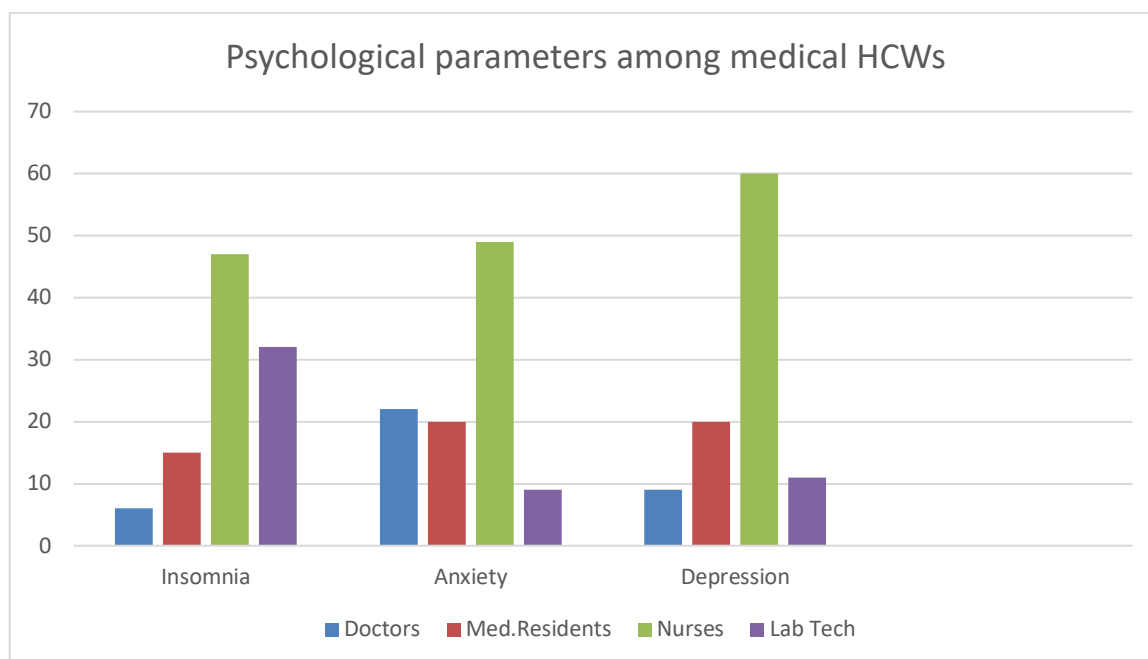


Figure 1: Psychological parameters among medical HCWs

Table 3: Comparison of psychological parameters among medical and non-medical healthcare workers

Group studied	Insomnia (n %)		Anxiety (n %)		Depression (n %)	
	Present	Absent	Present	Absent	Present	Absent
Medical healthcare workers(n=132)	34[25.76]	98[74.24]	45[34.09]	87[65.91]	45[34.09]	87[65.91]
Non- medical healthcare workers(n=38)	9[23.68]	29[76.32]	21[55.26]	17[44.74]	20[52.63]	18[47.37]
Total (N=170)	43[25.29]	127[74.71]	66[38.82]	104[61.18]	65[38.24]	105[61.76]
X ² value, p value	0.0671, 0.795		5.57, 0.02		4.29, 0.04	

Table 3 shows comparison of psychological parameters among medical and non-medical healthcare workers. According to this study, insomnia was seen among 23.68% non-medical HCWs and 25.76% medical HCWs. But the results were found to be statistically insignificant ($p > 0.05$). Anxiety was seen more among non-medical HCWs as compared to medical HCWs i.e. 55.26% non-medical HCWs and 34.09% medical HCWs. The results were found to be statistically significant ($p < 0.05$). This study revealed that depression was seen more among non-medical HCWs as compared to medical HCWs i.e. 52.63% non-medical HCWs and 34.09% medical HCWs. The results were found to be statistically significant ($p < 0.05$).

Discussion:

This study enrolled 170 participants and revealed a prevalence of mental health symptoms among healthcare workers who worked during COVID-19 pandemic in tertiary care hospital of Jaipur. Working in the frontline was an independent risk factor for worse mental health outcomes in all dimensions of interest. In this study the number of males (57.65%) employed as healthcare workers were more than females (42.35%). This is in contrast to some studies, which have reported greater number of females. [18] Together our findings present concerns about psychological well-being of physicians, nurses, technicians, and other medical and non-medical personnel involved in COVID-19 outbreak.

Our study mirrored the trend seen in another cross sectional study conducted in China by Jianbo Lai et al which showed that nurses reported more severe degrees of all measurements of medical health care workers and the result was found to be statistically significant. Frontline nurses treating patients with COVID-19 are likely exposed to the highest risk of infection because of their close and frequent contact with patients and working longer hours than usual. [19] One of the studies conducted by Sandeep Grover et al showed evaluation of depression (using PHQ-9 questionnaire), anxiety (using GAD-7 scale) and other psychological issues (using self-designed questionnaire). It showed that

higher level of anxiety and depression were seen among doctors as compared to other HCWs. [20]

This study revealed a statistically significant difference in anxiety as well as depression between medical and non-medical healthcare workers, whereas no significant difference in insomnia between medical and non-medical healthcare workers. Another similar study conducted by Ravindranathsunil et al. in Indian setting showed that there was statistically significant difference in insomnia between clinical and non-clinical healthcare workers, whereas no significant difference in anxiety, depression and stress between clinical and non-clinical healthcare workers which is in contrast to our study. [21] The prevalence rate of anxiety according to our study came out to be around 38.82%. These results were almost similar with the meta-analysis conducted by Singh et al of five Indian studies on healthcare workers, which reported the prevalence of anxiety symptoms to be 35.4% [22]

According to this study prevalence of anxiety was more in non-medical HCWs i.e. 55.26% as compared to medical HCWs i.e. 34.09% and the results were found to be statistically significant. The results of our study are similar to one of the study conducted in Singapore by Benajmin YQ Tan et al, which found out that non-medical healthcare workers had higher prevalence of anxiety. [23]

Our study detected depressive symptoms in 38.24% of healthcare workers. But these results somewhat higher than the results of few Indian studies which have reported prevalence of depressive symptoms among healthcare workers ranging from 11.4% to 31.4%. [24,25]

The prevalence rate of insomnia in our study was found to be 25.29% among healthcare workers (statistically insignificant) which was in contrast with 36.1% insomnia among healthcare workers in a study done in China conducted by chenxizhang. [26] Stress involves increased psychological and physical activation in response to demand, and the activated hypothalamus-pituitary-adrenal system is incompatible with normal sleep [27]. The resulting sleep disorders may appear to lead to further increases in HPA system, thereby promoting vicious cycle of stress

and insomnia. Factors related to insomnia during COVID-19 outbreak included worry about being infected, perceived unhelpfulness and extreme uncertainty regarding effective disease control of COVID-19 outbreak. The strength of our study is inclusion of paramedical staff and non-medical personnel, collation of wide range of probable risk factors and also inclusion of socio demographic variation of healthcare workers. As this study is cross sectional, therefore it has predictive limitations. Well-designed longitudinal studies in future might help track the long term effects of pandemic on mental health of HCWs.

Conclusion

This study has shown burden of psychological problems among different healthcare workers during COVID-19 pandemic. Specific screening strategy should be applied for these HCWs as adverse mental health condition will further affect their service delivery and subsequent patient service. The findings of this study will help to improve understanding of influence of pandemics on psychological health among healthcare workers and will suggest implementation of steps like psychological interventions and support for healthcare workers.

Summary

The present study was conducted to determine psychological impact of COVID-19 pandemic on HCWs in a tertiary care hospital of Jaipur. It was a cross sectional study performed on 170 HCWs which included 132 medical HCWs and 38 non-medical HCWs who have worked in COVID designated areas. Data collection tools included socio-demographic proforma, GAD-7 scale (Generalised anxiety disorder scale), PHQ-9 (Patient health questionnaire) and ISI (Insomnia severity index). The present study revealed that prevalence of psychological parameters studied was more among nurses than other medical HCWs. Insomnia was seen among 47.06% nurses. Anxiety was seen among 48.89% nurses and depression was seen among 60% nurses. These results were found to be statistically significant. Comparison of psychological parameters among medical and non-medical HCWs showed that prevalence of anxiety and depression was higher among non-medical HCWs which were found to be statistically significant. This study revealed that participation in front line work is an important risk factor for anxiety, insomnia and overall psychological problems.

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