Original Article

Psychological impact of Covid-19 pandemic among the Healthcare workers in a North-Eastern state of India

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Abstract

Background: Previous studies done during SARS 2003 outbreak and early reports related to COVID-19 show that healthcare workers experience considerable anxiety, stress and fear. Although similar studies were done in other parts of India, there is dearth of data on this topic in the Northeastern region. **Aim:** This study aimed to assess the mental health status of Healthcare Workers during Covid-19 pandemic in the region. **Methods:** The study was conducted among the doctors and nurses of a Northeastern state of India through an online survey. PHQ-9, GAD-7 and ISI scales were used to assess depression, anxiety and insomnia among the participants. **Results:** The prevalence of depression, anxiety and insomnia among the HCWs was 74.5%, 42% and 32%, respectively. Moderate to Severe form of depression, anxiety and insomnia was experienced by 15.5%, 20.5% and 8.5%, respectively. Females and those who directly cared for Covid-19 patients were more prone to suffer from depression. Participants who reported having previous history of any psychological problems reported eight-fold, seven-fold and three-fold increased odds of developing depression, anxiety and insomnia, respectively, during the pandemic. **Conclusions:** A large proportion of HCWs reported symptoms of depression, anxiety and insomnia among the healthcare workers. Protecting the mental health of these health workers is paramount to ensure psychological wellbeing, which in turn will ensure a healthy and robust workforce. **Relevance for Patients:** Improves the productivity of Healthcare workers in terms of Patient care and Management.

Keywords: Anxiety, Covid-19, depression, insomnia, psychological impact

Introduction

In December 2019, novel coronavirus outbreak was detected in Wuhan, China, which then spread rapidly across the globe.[1] Shortly after, WHO declared the disease as a Pandemic on March 2020.[2] Throughout this crisis, healthcare workers, mainly the primary care providers remained the main persons involved in screening and management of the diseased.[3] The importance of the role of primary care providers had been highlighted through many clinical guidelines worldwide to detect suspected cases because they are typically the first point of contact for people exhibiting flu-like symptoms.[4] Burnouts and work-related stress are not new to healthcare workers. But with the advent of the pandemic, a new set of working standards and management of patients in a setting of a disease that is highly infectious and with no specific treatment, amplifies the pressure related to work.[5,6] Previous studies done during SARS 2003 outbreak and early reports related to COVID-19 show that healthcare workers experience considerable anxiety, stress and fear.[7,8] Thus, healthcare workers affected with mental health problems would

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lead to poor health system outcomes due to suboptimum patient care, which would in turn hinder the fight against Covid-19.

Protecting the mental health of these medical workers is thus important for control of the epidemic and their own long-term health.[9]

Although there are studies done in other parts of India on the psychological impacts of Covid-19 on healthcare workers, there is dearth of data on the same in this region. Thus, this study aimed to assess the mental health status pertaining to Depression, Anxiety and Insomnia of Healthcare Workers during Covid-19 pandemic in a Northeastern state of India.

Materials and Methods

Participants

This cross-sectional study was started after obtaining clearance from the Institute Ethics Committee (NEIGR/IEC/M12/F30/2020) of North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS). It was conducted among the doctors and nurses of Meghalaya through an online survey. Based on the proportion of insomnia among the doctors and nurses as 27.4% and 38.2%, respectively,[6] at 95% confidence level, the sample size was estimated to be 99 in each group of participants using nMaster 2.0. A total of 200 healthcare workers (100 doctors and nurses) were selected based on purposive sampling. Data was collected till a required sample size was achieved.

Study instruments

The questionnaire was created in Google form and the link for the survey was disseminated to the participants through Whatsapp and Email. After agreeing to participate, respondents could access the survey questionnaire.

The data was collected using semi-structured questionnaire, which consisted of the following:

1. Socio-demographic and clinical characteristics of the healthcare workers
2. Validated questionnaire on mental health status [Physical Health Questionnaire 9 (PHQ-9) for depression, Generalized Anxiety Disorder (GAD-7) for anxiety and Insomnia Severity Index (ISI) for insomnia].

PHQ-9[10] was used to assess Depression. It consisted of nine items assessing the severity of depression. A score of >5 indicates some form of depression, and as the score increases, the severity of depression also increases. Anxiety was assessed using the GAD-7[11] scale, a 7-item scale. Scores of 5, 10 and 15 are taken as the cut-off points for mild, moderate and severe anxiety, respectively. Insomnia was assessed via the ISI,[12] a 7-item self-report index assessing the severity of initial, middle and late insomnia. An ISI total score >8 indicates that insomnia is present. At the end of the survey, respondents were asked to press submit button, which automatically entered into the spreadsheet of google form.

Statistical analysis

Data was transferred to SPSS version 21.0, Armonk, NY, IBM: Corp Software for further analysis. Descriptive statistics like mean, standard deviation, frequency and proportions were used. Univariate and multivariable logistic regression was applied to test the association between the scores and the independent variables of interest. A *P* value of <0.05 was considered significant.

Results

The mean age of the participants was 31.43 ± 6.24 years. Majority (75%) of the respondents were females. Almost two-third (63.5%) of the participants were unmarried and living with family. Only 14.5% of the participants had co-morbidities. More than half of the participants were not involved in direct care of covid-19 patients and almost half (49.5%) of the patients had at least 5–10 years of serving experience [Table 1].

More than one-fourth (29.5%) of the participants reported having a history of anxiety, whereas one-fifth (20.5%) reported a history of insomnia, 15% reported a history of depression and 4.5% reported a having history of other mental illness prior to Covid-19 Pandemic [Figure 1].

After Covid-19 Pandemic started, according to PHQ-9 assessment, one-fourth of the participants did not have any depression, whereas 6.5% and 2.0% participants experienced

Table 1: Socio-demographic variables of the participants (*n*=200)

Variables	Doctors (*n*=100)	Nurses (*n*=100)	Total (*n*=200)
Age in years (Mean±SD)	30.09±5.54	32.78±6.63	31.43±6.24
Gender			
Male	40 (40%)	10 (10%)	50 (25%)
Female	60 (60%)	90 (90%)	150 (75%)
Marital Status			
Married	28 (28%)	45 (45%)	73 (36.5%)
Single	72 (72%)	55 (55%)	127 (63.5%)
Living with Family			
Yes	42 (42%)	85 (85%)	127 (63.5%)
No	58 (58%)	15 (15%)	73 (36.5%)
Presence of Co-morbidities			
Yes	16 (16%)	13 (13%)	29 (14.5%)
No	84 (84%)	87 (87%)	171 (85.5%)
Direct Covid Patient Care			
Yes	43 (52.4%)	39 (47.6%)	82 (41%)
No	57 (48.3%)	61 (51.7%)	118 (59%)
Total Years of service			
<5 years	49 (49%)	26 (26%)	75 (37.5%)
5-10 years	44 (44%)	55 (55%)	99 (49.5%)
>10 years	7 (7%)	19 (19%)	26 (13%)

moderately severe depression and severe depression, respectively.

According to GAD7 more than half (58%) of the participants had minimal anxiety, whereas 11.5% and 9% of the participants had moderate anxiety and severe anxiety, respectively. More than two-third of the participants did not suffer from insomnia, whereas only 7% and 1.5% of the participants had insomnia of moderate severity and severe insomnia [Figure 2a-c].

Females were more prone [OR (95%CI): 4.44 (1.86–10.57)] to suffer from depression as compared to males. Participants who were not in direct COVID-19 patient care were [OR (95%CI): 0.39 (0.18–0.88)] less likely to develop depression. Those who had a history of depression, anxiety, insomnia or any mental health issues prior to the pandemic were more likely [OR (95%CI): 8.58 (3.09-23.76)] to develop depression during the pandemic [Table 2].

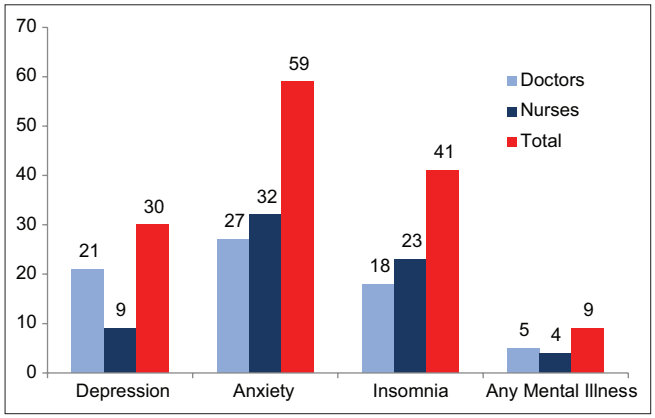

Figure 1: Self-reported History of Depression, Anxiety, Insomnia and any mental illness before Covid-19 Pandemic (n = 200)

Participants not living with family [OR (95%CI): 2.44 (1.09-5.49)] and having a history of depression, anxiety, insomnia or any mental health issues prior to the pandemic [OR (95%CI): (7.88 (4.01-15.49)] were more likely to develop anxiety during the pandemic [Table 3].

Participants not living with family [OR (95%CI): 2.34 (1.06–5.16)], having 5–10 years of working experience [OR (95%CI): 2.69 (1.17-6.21)] and having a history of depression, anxiety, insomnia or any mental health issues prior to the pandemic [OR (95%CI): 3.23 (1.69-6.17)] were more likely to experience insomnia during the pandemic [Table 4].

Discussion

Covid-19 pandemic has added tremendous pressure on the healthcare professionals. As evidenced from various literatures done during the pandemic, there is increased prevalence of psychological symptoms among the healthcare workers.[7,13-15] A study from Italy on primary care physicians reported the population to have higher proportion of burnout symptoms as compared with physicians from tertiary care hospitals, which maybe attributed to sudden organisational changes and uncertainty on how to respond to the community spread of

Table 2: Regression analysis of mental health across socio-demographic and clinical history with Depression (PHQ9)

Variables	Depression			
	COR	*P*	AOR*	*P*
Gender				
Male	Reference	0.001	Reference	0.001
Female	3.27 (1.64-6.53)		4.44 (1.86-10.57)	
Marital status				
Married	Reference	0.071	Reference	0.417
Unmarried	1.81 (0.94-3.46)		1.41 (0.61-3.29)	
Living with Family				
Yes	Reference	0.122	Reference	0.136
No	1.73 (0.86-3.47)		2.07 (0.79-5.40)	
Total Years of experience				
<5 years	Reference		Reference	
5-10 years	0.46 (0.22-0.95)	0.038	0.80 (0.32-1.96)	0.630
>10 years	0.56 (0.19-1.63)	0.294	0.44 (0.11-1.83)	0.265
Presence of Co-morbidities				
Yes	Reference	0.566	Reference	0.178
No	0.56 (0.20-1.57)		0.45 (0.14-1.43)	
Direct Covid Care				
Yes	Reference	0.024	Reference	0.023
No	0.45 (0.22-0.90)		0.39 (0.18-0.88)	
Previous History of Depression/Anxiety/Insomnia/Any Mental illness				
No	Reference	<0.001	Reference	<0.001
Yes	7.93 (2.98-21.09)		8.58 (3.09-23.76)	

*Adjusted for Gender, Marital status, Living with family, Total years of experience, Presence of co-morbidities, Direct covid care, Previous history of mental illness

Table 3: Regression analysis of mental health across socio-demographic and Clinical History with Anxiety (GAD7)

Variables	Anxiety			
	COR	*P*	AOR*	*P*
Gender				
Male	Reference	0.187	Reference	0.141
Female	1.56 (0.80-3.05)		1.82 (0.81-4.07)	
Marital status				
Married	Reference	0.486	Reference	0.130
Unmarried	0.81 (0.45-1.45)		0.53 (0.24-1.20)	
Living with Family				
Yes	Reference	0.197	Reference	0.030
No	1.46 (0.81-2.62)		2.44 (1.09-5.49)	
Total Years of experience				
<5 years	Reference		Reference	
5-10 years	0.72 (0.39-1.32)	0.291	0.91 (0.41-2.01)	0.823
>10 years	1.20 (0.49-2.94)	0.681	0.86 (0.25-2.87)	0.810
Presence of Co-morbidities				
Yes	Reference	0.054	Reference	0.224
No	0.45 (0.20-1.01)		0.55 (0.21-1.43)	
Direct Covid Care				
Yes	Reference	0.675	Reference	0.899
No	1.13 (0.63-2.00)		0.95 (0.48-1.90)	
Previous History of Depression/Anxiety/Insomnia/Any Mental illness				
No	Reference	<0.001	Reference	<0.001
Yes	7.73 (4.04-14.78)		7.88 (4.01-15.49)	

*Adjusted for Gender, Marital status, Living with family, Total years of experience, Presence of co-morbidities, Direct covid care, Previous history of mental illness

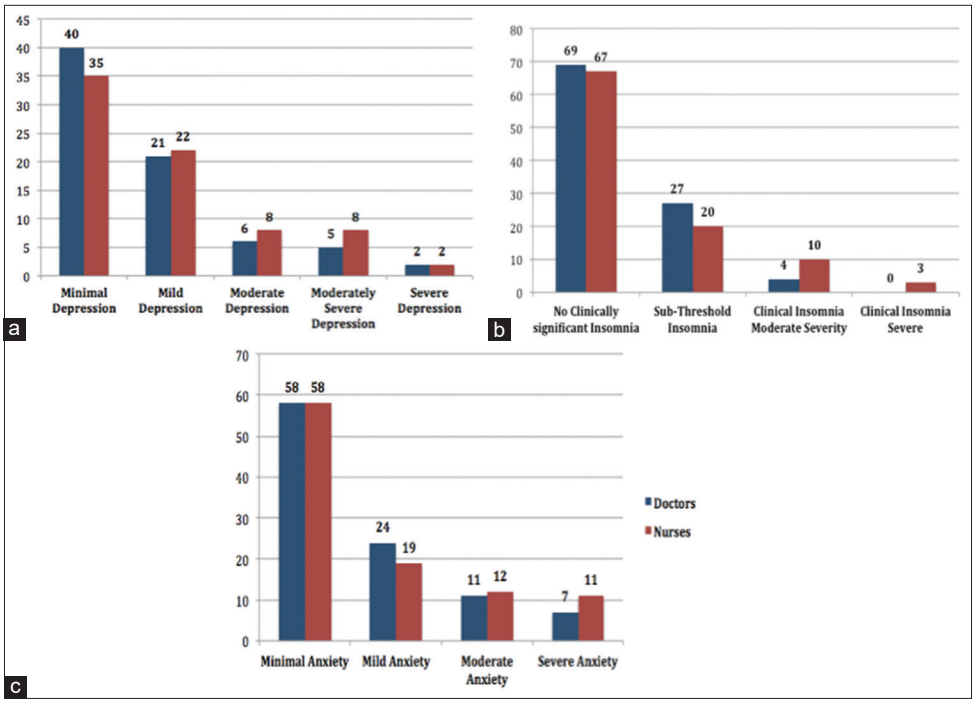

Figure 2: (a-c) Showing mental health status among the participants during the pandemic (*n*=200)

covid-19, thus increasing the psychological distress among the primary care physicians.[16]

Our study included healthcare workers from a tertiary care setting as well as primary care physicians in the state. We observed that a high proportion of the study participants reported symptoms of depression, anxiety and insomnia (74.5%, 42% and 32%, respectively), whereas moderate to severe form of depression, anxiety and insomnia was experienced by 15.5%, 20.5% and 8.5%, respectively. Our findings are similar to other studies done among the healthcare professionals.[7,13] Other studies from Italy and China observed lower prevalence of depression, anxiety and

Table 4: Regression analysis of mental health across socio-demographic and Clinical History with Insomnia (ISI)

Variables	Insomnia			
	COR	*P*	AOR*	*P*
Gender				
Male	Reference	0.164	Reference	0.080
Female	1.68 (0.80-3.49)		2.07 (0.91-4.68)	
Marital status				
Married	Reference	0.910	Reference	0.523
Unmarried	1.03 (0.55-1.92)		0.77 (0.34-1.71)	
Living with Family				
Yes	Reference	0.077	Reference	0.034
No	1.73 (0.94-3.18)		2.34 (1.06-5.16)	
Total Years of experience				
<5 years	Reference		Reference	
5-10 years	1.37 (0.71-2.66)	0.345	2.69 (1.17-6.21)	0.020
>10 years	2.01 (0.79-5.11)	0.140	3.20 (0.95-10.68)	0.059
Presence of Co-morbidities				
Yes	Reference	0.046	Reference	0.088
No	0.44 (0.19-0.98)		0.45 (0.18-1.12)	
Direct Covid Care				
Yes	Reference	0.588	Reference	0.494
No	0.84 (0.46-1.54)		0.79 (0.40-1.55)	
Previous History of Depression/Anxiety/Insomnia/Any Mental illness				
No	Reference	<0.001	Reference	<0.001
Yes	3.31 (1.78-6.16)		3.23 (1.69-6.17)	

*Adjusted for Gender, Marital status, Living with family, Total years of experience, Presence of co-morbidities, Direct covid care, Previous history of mental illness

insomnia.[17,18] The disparity in the findings maybe because this study was done in the early phase of the pandemic in the state, when knowledge about the infectious agent and its treatment was still in progress.[17] Additionally shortages of personal protective equipments (PPEs), long-term workload, high flow influx of suspected and confirmed cases, the risk of contracting the infection and transmitting to family members during the initial phase of the pandemic may have magnified the psychological problems of the healthcare workers.[19-22]

In this study, we observed that the majority of the healthcare workers who reported any psychological symptoms, experienced mild symptoms for depression, anxiety and insomnia, whereas moderate and severe symptoms were less common. Pappa S *et al.*,[23] in a systematic review and meta-analysis of 13 studies, also observed similar findings and highlighted the need for early detection and effective treatment of the milder symptoms before they evolve into severe and persistent psychological problem for the healthcare workers. It was noted that people with sub-threshold or milder forms of psychological disturbances also wanted to find ways to help others, which in turn benefits the healthcare teams.[9]

We observed that females were more prone [OR (95%CI): 4.44 (1.86–10.57)] to suffer from depression as compared to their male counterparts. This reflects the already established gender gap in literature.[23] Other studies also showed similar results.[7,24] Another risk factor observed for developing symptoms of depression was caring directly for Covid-19 positive patients. Que J *et al.*,[17] in their study, postulated that the higher risk of psychological problems among the healthcare workers maybe related to the increased risk of infection as a consequence of exposure to patients with COVID-19 and tedious work involved in caring for them.

We observed that staying away from family was a risk factor for anxiety [OR (95%CI): 2.44 (1.09–5.49)] and insomnia [OR (95%CI): 2.34 (1.06–5.16)] during the pandemic among the participants. Wilson W *et al.,*[25] in their study, observed the healthcare workers who lived in hostels or other temporary accommodations had two-fold increased odds of developing depression or anxiety symptoms. Living away from home and feeling of loneliness has already been established as an important risk factor for psychiatric symptoms.[26]

Participants having 5–10 years of working experience [OR (95%CI): 2.69 (1.17–6.21)] was observed to be a risk factor for developing insomnia during the pandemic. But, no association was found between years of experience and depression and anxiety. Lai J *et al.*[7] reported higher prevalence of depression, anxiety and distress symptoms in nurses, where 71.5% of them had fewer years of work experience. Suryavanshi N *et al.*[14] and Wilson W *et al.,*[25] in their studies, found no association between years of experience and psychological symptoms.

In our study, we observed that participants who reported having previous history of any psychological problems reported eight-fold, seven-fold and three-fold increased odds of developing depression, anxiety and insomnia, respectively, during the pandemic. Two studies[27,28] reported similar findings

where worsening of psychiatric symptoms was observed among patients with pre-existing psychiatric disorders. However, studies on knowledge about the impact of the current pandemic and earlier pandemics on those who already have psychological problems are scarce.[29]

Supportive interventions for psychological disorders by tele-psychiatric consultations, online counseling, distribution of reading materials for education and promotion of mental health, setting up helpline numbers and so on might go a long way in mitigating the psychological problems experienced by the healthcare workers. Also, providing safe hospital policies and provision of adequate resources will have a far-reaching effect for the majority of healthcare workers who have developed or yet to develop sub-threshold psychological symptoms as resources and capacity to counsel large number of healthcare workers may be limited.[24,25]

One of the main limitations of our study was a cross-sectional online survey and hence the temporal association could not be ascertained. Secondly, the results were self-reported via online questionnaire and hence there is a question of objectiveness in our study, which warrants the confirmation with the clinical significance. Furthermore, availability of different questionnaires for measuring the psychological status makes it difficult to arrive at a standard threshold for comparison with other studies.

From the above observations, it could be concluded that there is a substantially high burden of depression, anxiety and insomnia among the healthcare workers. Female gender, staying away from their family, directly caring for covid-19 patients and those with a previous history of any psychological problems were significant predictors. While outbreaks of emerging infectious diseases occur regularly, they provoke an intense response on healthcare provider. With the progression of the pandemic as a bio-disaster, the primary care physicians faced lots of obstacles beginning with demand–supply mismatch in available beds, medicines, PPEs and mechanical ventilators, which in turn generated anxiety by working in environment with so much pressure coupled with lack of rest. However, there was a detrimental situation where there was lack of healthcare providers who can provide care when they themselves got infected with the disease, which added more fear among the primary care physicians, amidst the reality that there was already a shortage of physicians during the increasing pandemic. Most primary care physicians felt stigmatised and feared infecting their families or friends, which in turn increased their stress. Hence, considering the fact that mental well-being is crucial for sustainable healthcare services in primary care, protecting the mental health of these health workers is paramount to ensure psychological well-being, which in turn will ensure a healthy and robust workforce.[30]

Key Messages

1. High proportion of the study participants reporting symptoms of depression, anxiety and insomnia
2. Female gender, staying away from their family, directly caring for covid-19 patients and having a previous history of any psychological problems were significant predictors for developing psychological problems during the pandemic
3. Mental well-being is crucial for sustainable healthcare services in the community during the pandemic.

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Conflicts of interest

There are no conflicts of interest.

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