

ORIGINAL RESEARCH

## **Depression, Anxiety and Stress in healthcare workers (HCWs) during COVID-19 pandemic- an observational study from central India**

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### **ABSTRACT**

**Background:** Since March-April 2020, India and its overburdened health care services have faced a new challenge of COVID-19 pandemic. HCWs, along with stress of rigorous duties and long work hours have faced additional stress like fear of infection, transmission, alienation and rejection. Burden not only undermines the quality of life of HCWs but also impacts the quality of health services provided by them, increase practice errors, leading to worse outcomes and additional costs. As our hospital was one of the busiest tertiary care centers of central India with maximum patient load, during this pandemic, we initiated this study to assess how mental health of the HCWs is being affected. To measure the level of Depression, Anxiety & Stress in Health care workers (Resident doctors & Consultants) working in a tertiary care centre in central India. To compare the depression, anxiety & stress scores between various factors related to the work profile.

**Material and Methods:** It was a Cross sectional study carried out in a tertiary care center in central India. 145 HCWs (resident doctors and consultants) working in COVID wards and ICUs were included in the study. After taking an informed consent, socio-demographic details were obtained and DASS-21 (Depression, anxiety and stress scale) was applied.

**Results:** 78 (53.7%) of HCWs were males and 67 (46.2%) were females. Majority 97 (66.8%) were from medicine allied branches and 48 (33.1%) from surgery allied branches. Majority [110 (7.6%)] were 1<sup>st</sup> and 2<sup>nd</sup> year residents. 72 (49.6%) had more than 4 months of duty. 84 (57.9%) had 1-60 hours of ICU duty. The prevalence rates of depression, anxiety and stress were 62%, 66%, and 56% respectively. Out of these extremely severe grades of depressive, anxiety and stress symptoms were seen in 30%, 18% and 10% respectively. Significantly higher scores were observed in residents of surgery allied branches (54 +/- 32.5), HCWs who had no previous experience (52.18 +/- 31.8), 1<sup>st</sup> (56.6 +/- 34.6) and 2<sup>nd</sup> (43.2 +/- 27.6) year residents, total duration of duty upto 2 months (59.12 +/- 36.4) and ICU duty of 100 hours (62.1 +/- 33.2). However the scores decreased in HCWs who had duties of more than 2 months and ICU duty of more than 100 hours.

**Conclusion:** More than half of HCWs had depression, anxiety & stress. Significantly higher scores were seen in junior residents, more number of ICU work hours and total

**duration of duties, and the HCWs with no prior experience. Reducing the duty hours, adequate training in intensive care settings and sensitization about various methods to regulate emotions might help to reduce the stress in HCWs in such difficult times.**

**Keywords: Covid-19, Health care workers, Depression, Stress, Anxiety.**

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## **INTRODUCTION**

Since March-April 2020, India and its overburdened health care services have faced a new challenge of COVID-19 pandemic. Other than multiple physical hardships, Healthcare workers (HCWs) have faced multiple psychological hardships in this battle against COVID-19. HCWs, along with stress of rigorous duties and long work hours have faced additional stress like fear of infection, transmission, alienation and rejection.<sup>[1]</sup> Burden not only undermines the quality of life of HCWs but also impacts the quality of health services provided by them, increase practice errors, leading to worse outcomes and additional costs. Stress reaction symptoms have been reported in about 10% of healthcare workers during and after previous outbreaks. HCWs may exhibit symptoms such as apprehensive response to stressors, depression, irritability, aggression, fatigue, insomnia, and increased substance use or self-medication as coping mechanisms.<sup>[2]</sup> During the 2019-2020 COVID pandemic, various studies conducted across different socio-cultural backgrounds have shown evidence supporting a higher than normal incidence of Depression, anxiety and stress in HCWs.<sup>[3]</sup> As our hospital was one of the busiest tertiary care centers of central India with maximum patient load, during this pandemic, we initiated this study to assess how mental health of the HCWs is being affected.

## **Aim and Objectives**

1. To measure the level of Depression, Anxiety & Stress in Health care workers (Resident doctors & Consultants) working in a tertiary care centre in central India.
2. To compare the depression, anxiety & stress scores between various factors related to the work profile.

## **MATERIALS & METHODS**

**Study design:** Cross sectional

**Study center:** A tertiary care center in central India.

**Study Population:** 145 HCWs (resident doctors and consultants) working in COVID wards and ICUs from a tertiary care center in central India.

### **Inclusion criteria:**

Resident doctors and consultants working in COVID wards and Intensive Care Units (ICUs) willing to consent

### **Exclusion criteria:**

Individuals not willing to give consent

### **Methods of Data Collection and Questionnaire:**

After taking an informed consent, socio-demographic details were obtained and DASS-21 (Depression, anxiety and stress scale) was applied. The Depression, Anxiety and Stress Scale - 21 Items (DASS21) is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress (4). Each of the three DASS21 scales contains 7 items, divided into subscales. Scores are calculated by summing the scores for the

relevant items. Scores obtained on the DASS 21 needs to be multiplied by 2 to calculate the final score.

### Statistical Analysis:

150 participants agreed to participate, of which 5 forms were found incomplete. The data was analyzed using SPSS 21.0. The data obtained was tabulated, analyzed, and presented using descriptive statistics-means (standard deviations) or as number (percentages). To compare continuous variables, independent t-test was used, and for comparing categorical variables, Chi-square test, ANOVA has been used. Value of  $p < 0.05$  was considered statistically significant.

## RESULTS

**Table 1: Demographic data- frequency & percentage**

Sex	Male	<b>78 (53.7%)</b>
	Female	67 (46.2%)
Branch	Medicine Allied	97 (66.8%)
	Surgery Allied	48 (3.1%)
Prior work experience	Yes	63 (43.4%)
	No	82 (56.5%)
Relationship status	In a relationship	53 (36.5%)
	Single	92 (63.4%)
Designation	1 <sup>st</sup> year resident	59 (40.6%)
	2 <sup>nd</sup> year resident	51 (35.1%)
	3 <sup>rd</sup> year resident	31 (21.3%)
	4 <sup>th</sup> year resident	2 (1.3%)
	Faculty	2 (1.3%)
Months of duty	<1	18 (12.4%)
	1-2	30 (20.6%)
	3-4	25 (17.2%)
	>4	72 (49.6%)
Hours of ICU duty	Nil	25 (17.2%)
	1-60	84 (57.9%)
	61-100	18 (12.4%)
	>100	18 (12.4%)

**Table 2: Frequency as per the grade of depressive symptom score**

Depression Grades	Frequency (n=145)	Percent
Normal	55	37.9
Mild	16	11.03
Moderate	15	10.3
Severe	16	11.03
Extremely severe	43	29.6

Around 2/3<sup>rd</sup> of doctors had depressive symptoms. 30% of doctors had extremely severe grade of depressive symptoms

**Table 2: Frequency as per the grade of anxiety symptom score**

Anxiety Grades	Frequency (n=145)	Percent
Normal	48	33.1
Mild	6	4.1
Moderate	49	33.7
Severe	16	11.03
Extremely severe	26	17.9

2/3<sup>rd</sup> of doctors had moderate grade of anxiety symptoms. Nearly 1/5<sup>th</sup> had extremely severe grade of anxiety symptoms.

**Table 3: Frequency as per the grade of stress symptom score**

Stress Grades	Frequency (n=145)	Percent
Normal	63	43.4
Mild	21	14.4
Moderate	18	12.4
Severe	29	20
Extremely severe	14	9.6

More than half of doctors had stress. Nearly 10% had extremely severe degree of stress.

**Table 4: DASS scores across different branches**

Branch	DASS score (Mean + standard deviation)
Medicine allied	43.2 +/- 29.8
Surgery allied	54 +/- 32.5
*p value – 0.04	

DASS: Depression, anxiety and stress scale \*chi square test.

Total score was more in surgery allied branches as compared to medicine allied branches. The difference was statistically significant.

**Table 5: DASS scores across prior experience**

Prior experience	DASS score (Mean + standard deviation)
Yes	40.28 +/- 28.92
No	52.18 +/- 31.8
*p value – 0.02	

DASS: Depression, anxiety and stress scale \*chi square test

DASS score was more in doctors with no prior experience as compared to ones having a prior experience. The difference was statistically significant.

**Table 6: DASS scores across total duration of duty**

Total Duration of duties	DASS score (Mean + standard deviation)
<1 month	52.6 +/- 23.5
1-2 month	59.12 +/- 36.4
3-4 month	45.7 +/- 26.3
>4 months	40.7 +/- 30.68
*p value- 0.039	

DASS: Depression, anxiety and stress scale \*ANOVA

Maximum DASS score was observed in doctors who had 1 – 2 months of total duration of duty. However the score decreased in groups having more than 2 months of total duration of duty. The difference in means among the groups was statistically significant.

**Table 7: DASS scores across the year of residency / faculty**

Designation	DASS score (Mean + standard deviation)
Faculty	33+/-24
Third year residents	33.3+/-23.8
Second year residents	43.2+/-27.6
First year residents	56.6+/-34.6
*p value – 0.006	

DASS: Depression, anxiety and stress scale \*ANOVA

The highest score was observed in first year residents and lowest in third year residents & faculties. The difference in means among the groups was statistically significant.

**Table 8: DASS scores across total duration of duty in ICU**

ICU duty	Mean + standard deviation
Nil	36.7+/-28.6
1-60 hours	47+/-31.32
60-100 hours	62.1+/- 33.2
>100 hours	44.2+/-27.2
*p value- 0.06	

DASS: Depression, anxiety and stress scale; ICU: Intensive Care Unit; \*ANOVA.

Our study population depicted a higher representation from males, medicine allied and resident doctors (especially first year residents). Most of the population were single, had no prior experience in intensive care and were exposed to longer duty hours.

## DISCUSSION

With a sudden and exponential presence of COVID-19 outbreak world over, HCWs amongst many others were prone to multiple new stress inducing factors, it is surely beyond doubt that this acute and unprecedented crisis had an inevitable impact on the physical and mental health of HCWs. The aim of the present study was to assess the prevalence of depression, anxiety and stress amongst HCWs involved in caregiving of COVID 19 patients. In our study population, focussing on a tertiary healthcare centre in central India, converted into a COVID care facility, the participants included resident and consultant doctors. The mean age for participants was 27.28 +/- 2.69 years and the male female ratio was 1.16. Majority of participants (n=97) were from medicine and allied branches and 48 participants were from surgery and allied branches.

The prevalence of depression, anxiety and stress in our study sample were 62%, 66%, and 56% respectively. Out of these extremely severe grades of depressive, anxiety and stress symptoms were seen in 30%, 18% and 10% respectively. This depicts the severity of psychological impact on health care workers working in Covid-19 settings. These were

different from other studies. A study,<sup>[5]</sup> conducted in tertiary care centre in north India reported the prevalence of depression, anxiety and stress of 85%, 72%, and 82% respectively while other study conducted in East Indian state reported the prevalence of 35%, 39% and 33% respectively.<sup>[6]</sup> These differences could be attributed to variety in settings, difference in subjective perception, and the level of preparedness. However the results of our study were similar to a study conducted in other south East Asian country.<sup>[7]</sup>

Higher scores were observed in residents of surgery allied branches (54 +/- 32.5) as compared to residents of medicine allied branches (43.2 +/- 29.8). This difference was statistically significant (p value of 0.04). The difference between DASS scores between the residents with previous experience of working in such setting (40.2 +/- 28.92) and the ones who had no such previous experience (52.18 +/- 31.8) was statistically significant (p value of 0.02). The DASS scores in first year residents (56.6 +/- 34.6) and second year residents (43.2 +/- 27.6) were higher compared to third year residents (33.3 +/- 23.8) and faculty (33 +/- 24). This difference was statistically significant. All of the above results depict the positive role of work experience in managing stress and emotional dysregulation. The reason for lower score in medicine allied branches could be previous experience of managing critical cases in intensive care unit. An Indian study found similar findings regarding statistically significant higher scores in Junior Residents as compared to faculties. However no statistically significant difference in DASS scores was observed across different disciplines of medical staff.<sup>[8]</sup>

The mean DASS scores were higher in HCWs having total duration of duties of less than 2 months as compared to HCWs having worked for more than 2 months. Similarly higher scores were found in HCWs having worked in ICUs for less than 100 hours as compared to HCWs having worked in ICUs for more than 100 hours. These differences were statistically significant. As most new trainee residents were inducted into intensive care parallel to their joining, and hence with time, professional expertise improved and showed some decline in DASS 21 scores. In couple of studies, more work hours were related to more stress scores.<sup>[9,10]</sup>

Our study highlights the impact of covid-19 on mental health of HCWs working in centres providing medical services to covid-19 infected patients. More than half of HCWs had depressive, anxiety and stress. Higher DASS scores were found in HCWs not having previous experience of working in Intensive care setting, residents of surgery allied branches, first and second year residents and HCWs having longer working hours.

## CONCLUSION

Study results are suggestive of significant impact on mental health of HCWs; with high levels of depression, anxiety & stress. There is a need to be vigilant of the after effects of the pandemic and also be expectant of avoiding such situations in future. Regular courses, hands-on training in ICU care, recruitment of trained, experienced HCWs, proper work distribution with duty rotations and breaks may be used to reduce the stress on HCWs. Need of hour is to screen HCWs for any issues they might be facing, encourage them to talk about the same, offer consultations, helpline numbers to those affected. Also, we need to expand research and studies into this arena, taking into account more parameters and a larger HCW population.

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