ORIGINAL ARTICLE

Prevalence of depression, anxiety and stress among healthcare workers during COVID-19 outbreak in a tertiary care hospital in South Kerala: A cross sectional study

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Abstract

Background: Corona Virus Disease 2019 (COVID-19) is a pandemic that has been having a huge impact on physical, mental and psychological well-being of people all over the world especially Healthcare Workers (HCWs). *Aim and Objectives*: To estimate the prevalence of depression, anxiety and stress among HCWs. *Material and Methods:* A cross sectional study was conducted in a tertiary care teaching hospital in South Kerala among 200 HCWs (doctors, interns and nurses). Depression, Anxiety, Stress Scale-21 (DASS 21) was used to estimate levels of depression, anxiety and stress among HCWs and Perceived Stress Score-10 (PSS 10) was used for assessing level of stress among study participants. *Results:* Mean age of study participants was 32.3±2.4 years, 67% participants were females and average working hours per day among study participants were 10 hours. DASS scoring showed, extremely severe depression among 29(14.5%) and severe anxiety among 35(17.5%). PSS scoring showed, majority 162(81%) experienced moderate level of stress, high stress among 23(11.5%) study participants. DASS questionnaire showed severe stress was higher among nurses (28%); moderate stress was higher among interns (40%) and no stress was observed more among doctors (44%). On the other hand, PSS questionnaire results showed higher stress among doctors (12%). *Conclusion:* Covid-19 pandemic had significant impact on mental health of HCWs, hence psychological counselling and attention need to be given to HCWs in improving their mental health.

Keywords: COVID-19, Depression, Anxiety, Stress, Health Care Workers

Introduction

Corona Virus Disease 2019 (COVID-19) is a pandemic that has been having a huge impact on physical and psychological well-being of people all over the world. The disease was first identified in late December 2019, when clusters of pneumonia of unknown etiology started appearing in the city of Wuhan in China. The disease then started to spread beyond Wuhan to all regions of China and later worldwide.

A wide array of clinical symptoms is seen in COVID-19 infection like, fever, cough, dyspnea, myalgia, confusion, headache, sore throat, rhinorrhoea, chest pain, diarrhea, nausea and vomiting [1]. The psychological impact of COVID-19 pandemic was focussed much later. Health care workers (HCWs) had long work shifts due to the increased demand for health care and needed to isolate themselves from family and friends due to the fear of spread of infection [2].

The COVID-19 pandemic had caused physical and mental health related problems among HCWs. Increased duty hours and disrupted biological rhythm might have led to insomnia. While inadequate supply of personal protective equipment, problematic media coverage, occupational exposure to COVID-19 patients and stigma might have

aggravated stress [3]. Healthcare providers on the front line of COVID-19 were working while isolating themselves from family and friends without emotional support leading to anxiety and stress [4].

According to the evidence presented by the researchers, a vast proportion of HCWs have experienced anxiety, depression, stress, sleep disorders and other psychological problems during this outbreak. Stress is a condition where the external or environmental demands exceed the adaptation capacity of individuals which causes biological and psychological alterations which place them at the risk of disease [5].

Anxiety is considered as a physiological and psychological condition which includes various somatic, cognitive, behavioural, as well as emotional components. All of these components together may lead to the creation of an unpleasant feeling which has been associated with fear, worry and uneasiness [5]. Main symptoms of depression are feeling of sadness, guilt, helplessness and loss of hope, restless attitude, irritation, and anhedonia [6].

The objective of this study was to estimate the prevalence of depression, anxiety and stress among HCWs. Results of this study may help to plan appropriate interventions such as behaviour counselling or therapy to prevent a detrimental outcome for HCWs.

Material and Methods

This was a hospital based cross sectional study conducted in a tertiary care teaching hospital in South Kerala, India during the period March to June, 2022. Doctors, interns and nurses were the study participants. Sample size was calculated based on the prevalence of stress obtained from a similar study conducted by Chatterjee *et al.* [3]. The minimum sample size was calculated as 150, Two hundred study participants were finally enrolled in the study using simple random sampling.

Depression, Anxiety, Stress Scale-21 (DASS 21) was used to estimate the levels of depression, anxiety and stress among the HCWs in our study. It is a 4-point Likert scale and consists of 3 subscales with 7 items each that evaluate depression, anxiety and stress. Score obtained from scale varies from 0-21 for each subscale. Depression subscale score of 0-4 is considered as normal, 5-6 points as mild depression, 7-10 points as moderate depression, 11-13 points as severe depression and 14 and above as very severe depression. In anxiety subscale, score of 0-3 is considered normal, 4-5 points as mild, 6-7 as moderate, 8-9 points as severe, 10 and above as very severe. For stress subscale, score of 0-7 is considered as normal, 8-9 points as mild, 10-12 points as moderate, 13-16 points as severe, 17 and above as very severe. Perceived Stress Score-10 (PSS 10), a 10 point questionnaire was also applied on study participants to assess their level of stress. The HCW who were found to have higher levels of depression, anxiety and stress were informed about the same and were advised to undergo psychological consultation and counselling therapy; as it would help them in alleviating the problems at an early stage and improve the overall wellbeing. Data were entered in Microsoft Excel and analysed using Statistical Package for Social Sciences (SPSS) version 21. Mean, standard deviation and percentages were calculated and Chi square test was used to study association.

Results

The total number of study participants in our study was 200. Out of them, 66 were doctors which accounted for 33%; 74 study participants were medicalinterns, which accounted for 30% and the remaining 60 study participants were nurses, which accounted for 37 % (Fig. 1). Majority of the study participants (104) were staying at home which accounted for 52% and the remaining 96 study participants were staying in either hostel or quarters which accounted for 48 %.

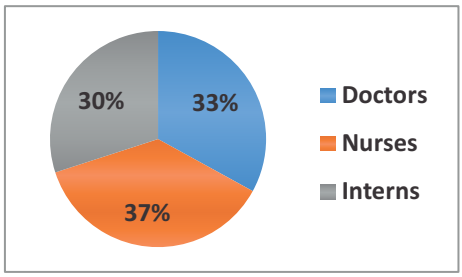

Figure 1: Job wise distribution of the study participants (n=200)

The mean age of the study participants was 32.3±2.4 years. The average age of the doctors enrolled in the study was 39. The mean age of the interns was found to be 25 years and the average age of the nurses enrolled in the study was 31 years. Majority of the study participants were females. Female study participants were 135(67%) and the remaining 65(33%) were males. HCWs were asked about the years of experience in their respective field and it was found that 142 study participants had an experience ofless than five years which accounted for 71%. Twenty seven of the study participants had a work experience of 5 to 10 years (13.5%) and the remaining 31 study participants had more than 10 years (15.5%) experience. The average working hours per day among the study participants was 10 hours with interns working the highest number of hours per day. The mean hours of work per day for interns was found to be 14 and a half hours a day while doctors worked for 8 and a half hours and nurses worked for 6 and half hours. The average hours of sleep per day among the study participants was found to be 6 hours. There was not much difference found among the sleeping hours per day among the three categories of HCWs in our study. Sixty-six percent (132 out of 200) participants had previous history of COVID 19 infection. Three-fourth of the study participants (73%) did not exercise regularly. Among the 200 study participants, 29 were having co-morbidities (14.5%). Hypertension was the commonest co-morbidity which was present in 15 study participants. Diabetes was present among 13 study participants, while hypothyroidism and dys-lipidaemia were present among 4 each.

Prevalence of depression among study participants: Out of the total 200 study participants, majority (n=69) were found to have moderate depression (34.5%) followed by severe depression (n=44) which accounted for 22% (Table 1). Out of the total 200 study subjects, majority (n=162) experienced moderate level of stress which accounted for 81% (Table 2). DASS was calculated separately for doctors, nurses and interns. Absence of depression was higher among doctors (35%). Severe depression was seen more among interns which accounted for 32.4% and very severe depression was observed more among nurses which accounted for 27%. Absence of anxiety was also higher among doctors (31.8%)

compared to interns and nurses (Table 3). Perceived stress score was calculated separately for doctors, interns and nurses. It was found that lower stress was more among doctors (18.18%) compared to interns and nurses in our study (Table 4).

Table 1: Distribution of study participants based on DASS-21 scores (N=200)

Category	Normal	Mild	Moderate	Severe	Extremely severe	Total
Depression	41(20.5%)	17(8.5%)	**69(34.5%)**	44(22%)	29(14.5%)	200
Anxiety	39(19.5%)	10(5%)	37(18.5%)	35(17.5%)	**79(39.5%)**	200
Stress	**66(33%)**	31(15.5%)	**67(33.5%)**	31(15.5%)	5(2.5%)	200

Table 2: Distribution of study participants based on PSS -10 score (N=200)

Category	Frequency	Percentage
Low stress	15	7.5
Moderate stress	162	81
High stress	23	11.5
Total	200	100

Table 3: Comparison of DASS-21 score among doctors, interns and nurses

	Grading	Doctors (N=66)	Interns (N=74)	Nurses (N=60)
Depression	**Absent n(%)**	**23(34.8)**	14(18.91)	**4(6.66)**
	Mild n(%)	7(10.6)	5(6.7)	5(8.33)
	Moderate n(%)	23(34.8)	24(32.4)	21(35)
	Severe n(%)	6(9.09)	**24(32.4)**	14(23.33)
	Extremely severe n(%)	7(10.6)	7(8.10)	**16(26.66)**
Anxiety	**Absent n(%)**	**21(31.8)**	15(20.27)	3(5)
	Mild n(%)	2(3.03)	7(9.45)	1(1.66)
	Moderate n(%)	15(22.72)	10(13.51)	12(20)
	Severe n(%)	7(10.06)	13(17.56)	**15(25)**
	Extremely severe n(%)	21(31.8)	**29(39.1)**	**29(48.33)**
Stress	**Absent n(%)**	**29(43.9)**	21(28.3)	16(26.66)
	Mild n(%)	13(19.69)	13(17.56)	5(8.33)
	Moderate n(%)	17(25.7)	**30(40.54)**	20(33.33)
	Severe n(%)	6(9.09)	8(10.81)	**17(28.33)**
	Extremely severe n(%)	1(1.5)	2(2.7)	**2(3.33)**

Table 4: Comparison of PSS -10 score among doctors, interns and nurses

Designation	Level of stress		
	Low stress N(%)	Moderate stress N(%)	High stress N(%)
Doctors (N=66)	**12(18.18)**	46(69.69)	**8(12.12)**
Interns (N=74)	**1(1.35)**	**65(87.83)**	8(10.81)
Nurses (N=60)	**2(3.33)**	**51(85)**	7(11.66)

Discussion

Present study was conducted among randomly selected 200 HCWs of a tertiary medical college in South Kerala for identifying depression, anxiety and stress among them during the COVID-19 outbreak. No similar studies have been conducted in this area among HCWs for this particular objective. In our study, out of the 200 study participants, 67% were females, mean age of participants was 32 years, 71% participants had <5 years work experience and 14.5% had some associated comorbidities. In a study conducted by Nguyen *et al.* [7] among 761 medical and non-medical HCWs working in the health facilities in Vietnam during COVID-19, 58.2% were females, 30.2% had 5-10 years work experience and 12% had some chronic diseases.

The prevalence of extremely severe depression, extremely severe anxiety and extremely severe stress according to DASS-21 grading in our study accounted to 14.5%, 39.5% and 2.5% respectively. This was similar to the study conducted by Lenzo *et al.* [8] where the overall prevalence of moderate-to-extremely severe depression, anxiety, and stress among participants, as per DASS-21, were 8%, 9.8%, and 8.9%, respectively.

According to our study, PSS 10 scoring showed that majority (n=162) experienced moderate level of stress which accounted for 81% while high level stress was seen in 11.5% and low stress accounted for 7.5%. Study by Babu *et al.* [1] showed that 67.3% participants had moderate level of perceived stress, 25.9% had mild perceived stress levels and 6.8% manifested high levels of stress. Similar to our study, in a study by Kadam *et al.* [11] among college students, sleep disturbances were common among students who felt depressed with no interest in life. Our study participants included 33% doctors; 30% interns and 37% nurses. Total prevalence of depression, anxiety and stress according to DASS -21 score including mild to extremely severe category was 79.5%, 80.5% and 67% respectively, while a systematic review and meta-analysis study conducted by Saragih *et al.* [12] among 38 studies on the main mental health problems among HCWs during the COVID-19 pandemic including 43.7% nurses, 27.9% doctors, and 7.0% allied HCWs showed the pooled prevalence of mental health problems for depression, anxiety and distress was 37%, 40% and 37%, respectively. In a study conducted by Deepthi *et al.* [13] among medical students, 9.3% of students were reported to have severe anxiety and 4.2% severe depression according to Hospital Anxiety and Depression Scale (HADS) while in our study, 17.5% and 22% were reported to have severe stress and severe depression according to DASS-21 scale. According to the study by Atif *et al.* [14], 34% and 24.8% doctors had mild to moderate anxiety and depression, which was similar to our study finding with 22% and 34% doctors showing moderate anxiety and depression. Similar to our study, Chakraborti *et al.* [15] showed that there is considerable amount of stress among medical students and internees in a medical college set-up according to PSS-10. Das *et al.* [16] study showed moderately severe and severe depression was noted among 14.2% and 3.8% of the doctors, respectively. Systematic review analysis by Danet [17] showed greater anxiety among frontline professionals, with the most affected being the nursing personnel, with 40%.

Overall the HCWs experienced higher levels of depression, stress and anxiety in our study with 32.4% interns showing severe depression, 25% nurses showing severe anxiety and 28.33% nurses with severe stress according to DASS scoring. This study cannot be generalized as this was conducted only at a single centre. A systematic review and meta-analysis incorporating many similar studies with same objective carried out at different study settings among the HCWs may produce more insight into the problem and can derive more empirical solutions to the problems identified.

Conclusion

This study was a modest effort in identifying the depression, anxiety and stress among the HCWs during the COVID 19 outbreak. Extremely severe anxiety was highest among nurses; severe depression was observed more among the interns. Majority of the doctors were found to have no depression or mild depression. This can be attributed to the difference in the hours of work, hours of sleeping and practice of regular exercise among the various HCWs. The extremely severe anxiety scores among nurses and interns in our study could be attributed to their lack of procedural experience, less years of work experience, decreased confidence in decision making, more hours of work and relatively younger age of the nurses and interns compared to doctors. Overall the HCWs experienced higher levels of depression, stress and anxiety in our study. This may be attributed to the unexpected occurrence of outbreak which has affected everyone's life; especially HCWs in many ways including fear of the disease and death, increased hours of duty, decreased hours of sleep, inadequate time for recreational activities as well as inadequate exercise and poor diet.

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