

RESEARCH ARTICLE



" A Battle within" COVID-19 Pandemic and Psychological Impact on Health Care Personnel in Southern India

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Abstract

The aim of the present study was to investigate the prevalence and factors associated with psychological challenges faced by different cadres of Health care personnel during the covid 19 in various centers across southern India. A self-report survey methodology was used to gather the following data from doctors, dentists, nurses, and paramedical staff in various hospitals across India after obtaining consent. The sociodemographic information, comorbidities, and work details such as exposure to Covid patients, and nature of job were collected. The psychological impact of the covid 19 pandemic was self-reported using DASS 21 severity score. Statistical Analysis was done using the chi-square test. Results: Among the 620 participants, 155 each belonged to the doctors, dentists, nurses, and paramedical staff. The prevalence of depression, anxiety, and stress was 31 % and 32.4%, and 13.7%, respectively. Depression and anxiety showed a statistically significant association among the groups (p -value <0.05). Depression and anxiety were more common in nurses as compared to other personnel. Professionals associated with dedicated Covid care services reported a higher prevalence of depression, anxiety, and stress 41.8%, 43.3 %, and 24.8% than others with incidences of 27.8%, 29.2%, and 10.4 % respectively. This association was significant with a p -value <0.05 . Conclusions: The psychological impact of the Covid19 pandemic is significant on health care professionals of any cadre. This battle within has to be managed as a priority, to enable the frontline workers to fight effectively against future waves of pandemics.

Keywords: COVID-19; Healthcare personnel; Psychological impact

Introduction

COVID -19 is an infectious disease caused by a new strain of corona virus, first reported on 31 December 2019 in Wuhan, China⁽¹⁾. In a very short time, it spread across the continents alarmingly, making WHO declare this outbreak as a Pandemic in March 2020. This infection has not only burdened the health care system but also has caused a tremendous downfall in socio-economic areas all over the world. The direct burden of the disease includes morbidity, mortality, time away from work and family, risk of infecting others. Indirect consequences of disease such as social distancing, staying at home, quarantine, change in work and educational pattern, lockdown, loss of work, and wages have posed challenging conditions that the current generation has never faced before. In the initial period of a pandemic, 58.5 % of 1210 participants among the general population of china reported moderate to severe psychological changes as an immediate response^(2,3).

Health care personnel face a unique challenge due to their profession in addition to problems faced by the general population⁽⁴⁾. In general, health care workers are vulnerable to mental health problems due to being associated with the care of sick, suffering patients, and morbid situations. In the context of Pandemic, health care personnel have lots of additional factors such as the increased risk of exposure, high infectivity, fear of spreading an infection to near and dear ones, lack of PPE (personal protection equipment) absence of clear guidelines, job insecurity, which further worsen the situation⁽⁵⁾. As a result, the prevailing pandemic situation is likely to pose a serious threat to the mental health of medical personnel around the globe by elevating rates of anxiety, depression, and negative societal behaviors⁽⁶⁾. The health care personnel have not only to fight the pandemic but also cope with the impact on their mental health, the battle within.

Mental health consequences due to COVID 19 in the initial days have been studied by previous studies^(7,8). Currently, at the peak of the COVID-19 outbreak, there is a gap in the information about who is likely to get affected significantly among different health care professionals. Given this, the present study is planned to evaluate the effect of COVID-19 on the Psychological Impact of the COVID 19 pandemic by assessing the prevalence of Depression, Anxiety, and Stress among Health care personnel of different cadres.

Depression Anxiety and stress score (DASS 21) is an established questionnaire to assess psychological health⁽⁹⁾. It has been validated in different studies to be reliable.

Objective of the study

- To estimate the prevalence of Depression , anxiety and stress among different cadre of health care professionals in the current COVID19 pandemic.

- To identify factors significantly associated with depression anxiety and Stress in the study group.

Methodology

This cross-sectional descriptive study was conducted after ethical clearance from Vydehi Institute of Medical Sciences and Research Centre Bangalore, India. The Duration of the study was three months from October 2020 to December 2020. This was an online survey study, the questionnaire was sent to participants in Google forms by Email, Whatsapp. Health care professionals, such as Doctors, Dentists, Nurses, and Lab technicians, aged 18-60 years of age across different hospitals across southern India were included in the study. Participants with self-reported preexisting psychological disorders were excluded from the study. Entry into the study was purely voluntary after providing online consent. The Snowball technique was used for sampling. A pilot study of 20 health care professionals and the sample size was calculated by the formula $n = 2 \pm 2[Z_{1-\alpha/2} * K + Z_{1-\beta}]^2 / d^2$ where \pm = standard deviation (4.5) and a 95% confidence interval was applied. The sample size was calculated to include 155 participants in each group of doctors, dentists, nurses, and lab technicians. After collecting demographic data, sociodemographic information, comorbidities, work details such as exposure to Covid patients, nature of the job, the participants were asked to fill in the pre-validated Depression Anxiety Stress Scale -21 (DASS scale -21) provided through Google forms. The scale consists of the three scales Depression, anxiety, and stress containing seven items interspersed within the questionnaire. Scoring was done using the numbers ranging from 0 (did not apply to me at all) to 3 (mostly applied to me) within the past 1 week of filling the questionnaire.

Statistical methods

Data were analyzed using SPSS version 19. Continuous variables were presented as mean \pm SD. Categorical variables were presented as frequency and percentage. A Chi-square test was performed to see the association between Depression, Anxiety, and stress between the groups and also between personnel, directly and indirectly, involved in Covid work. P value < 0.05 was considered statistically significant.

Results

This observational study included 155 participants from four groups of health care professionals, Doctors, Dentists, Nurses, Paramedical staff.

The self-reported prevalence of depression, anxiety, and stress were 192 (31%) and 201 (32.4%), and 95 (13.7%) respectively in the whole group. The percentage of mild to moderate depression, anxiety, and stress were 25.6, 23.3, and 9.7. At the same time 5.3%, 9.2%, and 4% of participants

reported severe to extremely severe symptoms.

Participants were men and 315 were women (Table 1)

Among 305 men, 93 participants reported depression, 91 had anxiety, and 37 reported stress accounting for 30.5%, 29.8%, and 12.1% respectively. In women, 99 (31.4%), 110 (34.9%), 48 (15.4%) reported depression, anxiety, and Stress respectively.

Participants were divided into two subsets based on age group between 18-40 years and 40-60 years of age. 437 participants belonged to the 18-40 years age group and 183 belonged to 40-60 years of age. Depression, anxiety, and stress were noted in 138 (31.6%), 147 (33.5%), and 61 (14.1%) in age 18-40 years. The group of 40-60 years of age showed depression in 54 (29.5%), anxiety in 54 (29.1%), and stress in 24 (18.1%).

Table 1. Demographic Data

Description		Number (%)
Total participants		620 (100)
Age (yrs)	18-40	437 (70.4)
	41-60	183 (29.6)
Gender	Male	305 (49.1)
	Female	315 (50.9)
Co morbidities	Yes	101 (16.3)
	No	519 (83.7)
Involvement in covid care	Direct	141 (22.7)
	Indirect	479 (77.3)

Comorbidities such as cardiovascular, respiratory, renal diseases, and diabetes were reported in 101 participants. People with comorbidities had Depression, anxiety, and stress in 33(32.7%), 40 (39.6%), and 17 (6.8%) respectively. Participants with no reported comorbidities had a prevalence of depression in 159(30.6%), anxiety in 161 (31%), and stress in 68 (13.1%). The self-reported prevalence of depression, anxiety, and stress were 192 (31%) and 201 (32.4%), and 95 (13.7%) respectively in the whole group. The percentage of mild to moderate depression, anxiety, and stress were 25.6, 23.3, and 9.7. At the same time 5.3%, 9.2%, and 4% of participants reported severe to extremely severe symptoms

Evidence of depression, anxiety, and stress was present in 35 (22.6%), 35 (22.6%), and 24 (15.5%) among doctors respectively (Table 2). The numbers for similar parameters in Dentists and nurses were 51 (32.9%), 50 (32.7%), 20 (12.9%) and 56 (36.1%), 61 (39.4%), 18(14.8%) respectively. The lab technicians and paramedical staff reported a prevalence of depression anxiety and stress in 50 (32.3%), 55(35.5%), and 23 (13.7%) cases. Statistical significant association in Depression and Anxiety between the groups was found $p < 0.05$.

Professionals involved in dedicated direct Covid care were 141 out of a total of 620 participants other 479 were indirectly involved in the care of Covid patients (Table 3). Professionals associated with dedicated Covid care services reported a prevalence of depression, anxiety, and stress of 82 (41.8%), 61 (43.3 %), and 35 (24.8%). In the other group, the same parameters were 133 (27.8%), 140 (29.2%), and 50 (10.4 %) respectively. Statistical significant association in Depression, Anxiety, and stress between the groups was found $p < 0.05$.

Discussion

This was the first descriptive observational study that analyzed the psychological impact of the Covid 19 pandemic among specific subgroups of health care personnel such as doctors, dentists, nurses, and paramedical professionals.

Women accounted for a slightly larger number of participants 50.8 vs. 49.2% as compared to men. Women also reported a higher prevalence of depression anxiety and stress as compared to men as in many other studies⁽¹⁰⁾. But this association was not statistically significant in our study.

Among the subsets of age group the participants aged 18-40 years participants showed a higher prevalence of depression anxiety and stress as compared 41-60 years, however, this was not statistically significant.

Only 16.9 % of the participants reported comorbidities. The impact of comorbidity on a range of outcomes, such as mortality, health-related quality of life, functioning, and quality of health care is very well established⁽¹¹⁾. The presence of comorbidities in our study was not associated with the increased prevalence of psychological problems.

COVID 19 pandemic has posed unprecedented challenges on both the physical and mental well-being of health care workers⁽¹²⁾. In a systematic review, Healthcare workers generally reported more anxiety, depression, and sleep problems compared with the general population^(6,13). More than one of every five healthcare workers suffered from anxiety and/or depression; nearly two in five reported insomnia⁽¹⁴⁾. However, the recent data is showing increasing prevalence as the pandemic continues relentlessly. Lai j et al reported a considerable prevalence of depression 50.4%, anxiety 44.6%, insomnia 34.0%, and distress 71.5% among health care workers exposed to coronavirus disease 2019⁽¹⁵⁾. In the present study, the prevalence of depression, anxiety, and stress was 31 % and 32.4%, and 13.7%, respectively. Depression and anxiety showed a statistically significant association among the groups (p -value < 0.05).

Some studies from India have reported prevalence similar to our study but there is no clarity about validated scoring system/questionnaire⁽¹⁶⁾.

Another study from India using the DASS score system reported a similar picture as the present study but included only doctors in study⁽¹⁷⁾.

Table 2. DASS - 21 Scores in the Study population

		GROUPS					Chi square Value	P Value
	CATEGORY	Medical N (%)	Dental N (%)	Nursing N (%)	Paramedical N (%)	Total N (%)		
DEPRESSION	Normal	120(77.4)	104(67.1)	99(63.9)	105 (67.7)	428 (69.0)	23.60a	0.023
	Mild	12 (7.7)	19 (12.3)	12 (7.7)	21 (13.5)	64 (10.3)		
	Moderate	14 (9.0)	25 (16.1)	37 (23.9)	19 (12.3)	95 (15.3)		
	Severe	4 (2.6)	3 (1.9)	0 (.0)	3 (1.9)	10 (1.6)		
	Extremely Severe	5 (3.2)	4 (2.6)	7 (4.5)	7 (4.5)	23 (3.7)		
ANXIETY		Medical N (%)	Dental N (%)	Nursing N (%)	Paramedica N (%)	Total N (%)	25.15a	0.014
	Normal	120(77.4)	105(67.7)	94(60.6)	100(64.5)	419(67.6)		
	Mild	8 (5.2)	6 (3.9)	6 (3.9)	12 (7.7)	32(5.2)		
	Moderate	15 (9.7)	32 (20.6)	40(25.8)	25 (16.1)	112(18.1)		
	Severe	5 (3.2)	4 (2.6)	10 (6.5)	12 (7.7)	31(5.0)		
STRESS		Medical N (%)	Dental N (%)	Nursing N (%)	Paramedica N (%)	Total N (%)	4.39a	0.99
	Normal	131(84.5)	135(87.1)	137(88.4)	132 (85.2)	535 (86.3)		
	Mild	11(7.1)	11(7.1)	9(5.8)	11 (7.1)	42 (6.8)		
	Moderate	7(4.5)	4(2.6)	3(1.9)	4 (2.6)	18 (2.9)		
	Severe	5 (3.2)	5(3.2)	5(3.2)	7(4.5)	22 (3.5)		
	Extremely Severe	1(0.6)	0 (0)	1(0.6)	1(0.6)	3 (0.5)		
TOTAL		155(100.0)	155(100.0)	155(100.0)	155(100.0)	620(100.0)		

Dentists involved in certain treatments, for example, high-speed drilling procedures, generate infectious aerosols. These aerosols Generating Procedures (AGPs) are at the highest risk of transmission of coronavirus⁽¹⁸⁾.

Nurse sub-group in our study showed a significant prevalence of depression anxiety and stress of 36.1%, 39.4%, and 14.8% respectively as compared to other subgroups which correlate with other studies²⁰. Possible reasons could be Nurses being the immediate attending care for patients and higher duration of exposure during the work.

Medical technicians are also involved in Covid care directly/indirectly such as collecting and handling swabs, samples, providing radiological, operating theatre, dialysis services. There are no studies about the pandemic effect on the mental health of lab technicians, however many studies have included them as part of health care professionals. This is the first study that analyzed the prevalence of Depression

anxiety and stress in this group specifically.

Personnel associated with direct care of proved cases of COVID 19 showed a statistically significant higher prevalence of depression, anxiety, and stress than those involved indirectly $p < 0.05$. These results correlate with many other studies from China and across the world^(15,19). One of the studies from India involving analysis of junior doctors showed an increased prevalence of psychological changes but didn't show any relationship with direct Covid care⁽²⁰⁾.

It has been realized beyond doubt that preparing our health care personnel to cope with emotional challenges and build resilience is the need of the hour. Prevalence of such challenges calls for preventive measures such as counseling and definitive /online support⁽²¹⁾. Telephone support line/online support was found to be a good use of occupational health service resources in the interim while more tailored advice and services could be established⁽²²⁾.

Table 3. Comparison of DASS-21 in participants directly involved in care of COVID patients

Depression category	Direct COVID Care Involvement	Normal N(%)	Mild N(%)	Moderate N(%)	Severe N(%)	Extremely Severe N(%)	TOTAL N(%)	Chi square Value	P value
	NO	346(72.2)	52 (10.9)	66(13.8)	4(0.8)	11(2.3)	479(100)		
	YES	82 (58.2)	12(8.5)	29(20.6)	6(4.3)	12(8.5)	141(100)	26.19 ^a	<0.001
	Total	428(969.0)	64(10.3)	95(15.3)	10(1.6)	23(3.7)	620(100)		

Anxiety category	Direct COVID Care Involvement	Normal N(%)	Mild N(%)	Moderate N(%)	Severe N(%)	Extremely Severe N(%)	TOTAL N(%)	Chi square Value	P value
	NO	339(70.8)	24 (5)	85 (17.7)	17 (3.6)	14 (2.9)	479(100)		
	YES	80 (56.7)	8 (5.7)	27(19.1)	14 (9.9)	12 (8.5)	141(100)	20.29 ^a	<0.001
	Total	419 (67.6)	32(5.2)	112(18.1)	31 (5)	26 (4.2)	620(100)		

Stress category	Direct COVID Care Involvement	Normal N(%)	Mild N(%)	Moderate N(%)	Severe N(%)	Extremely Severe N(%)	TOTAL N(%)	Chi square Value	P value
	NO	429 (89.6)	29(6.1)	9 (1.9)	12 (2.5)	0 (0)	479(100)		
	YES	106 (75.2)	13 (9.2)	9 (6.4)	10 (7.1)	3 (2.1)	141(100)	25.66	<0.001
	Total	535 (86.3)	42(6.8)	18 (2.9)	22 (3.5)	3 (0.5)	620(100)		

Strength and Limitations

This study was conducted in different hospitals and medical colleges which gives good sampling. The study specifically addresses the psychological impact of the Covid pandemic among different subgroups of health care professionals.

Limitations include the need for larger numbers, understanding, and interpretation of the questionnaire as this being an online survey.

Conclusion

The impact of the Covid pandemic on the psychological well-being of Health care professionals is real and can have

adverse effects. The mental health of health care professionals should be a priority in this fight of mankind against the Covid pandemic.

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