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A cross-sectional comparative study of anxiety and depression among doctors working in covid care centres during the first and second waves of COVID-19 pandemic in Chennai, Tamil Nadu

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ABSTRACT

Background: Doctors are at significant risk of developing psychological morbidity during the coronavirus diseases 2019 (COVID-19) Pandemic due to the shortage of resources and changing medical protocols. The fear, stigma, prejudice, and marginalization toward COVID-19 added with the physical discomfort of using personal protective equipment kits leads to mental exhaustion among doctors. **Aims and Objectives:** The aim of the study was to estimate and compare the prevalence and level of anxiety and depression along with its risk factors among doctors working in COVID Care centers during the COVID-19 pandemic's First and Second wave. **Materials and Methods:** A cross-sectional study among 200 doctors working in the COVID care centers using mailed questionnaires was conducted. A convenient sampling method was used to include the study participants. Collected data were entered in an MS Excel spreadsheet and analyzed using SPSS version 21.0. **Results:** During the first wave of the COVID-19 pandemic, the observed prevalence of the symptoms of depression and anxiety respectively among doctors was 42% and 56% whereas it increased to 83% and 82%, respectively, during the second wave. **Conclusion:** The present study highlighted the high prevalence of anxiety and depression among doctors. As the COVID-19 pandemic continues to sweep the world, the global doctors' community have to be sensitized to the prevalence of psychological disorders and a necessary appropriate psychological support strategy needs to be developed.

Key words: Psychological morbidity; COVID-19; Physician; Pandemic

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INTRODUCTION

Globally, the practice of any kind of medicine is challenging for the current smarter generation than any other works. The health-care professionals especially doctors not only have unique professional satisfaction but also have long working hours, and heavy workloads. In addition, the fear of career development increases the level of work stress and burnout which make doctors more prone to developing psychological morbidities such as anxiety and depression.[1,2]

In early December 2019, an outbreak of coronavirus diseases 2019 (COVID-19), caused by a novel severe acute respiratory syndrome coronavirus-2 (SARS-COV-2) occurred in Wuhan city, Hubei Province, China.[3] On January 30, 2020, the World Health Organization declared the outbreak as a Public Health Emergency of International

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Concern.[4] The first COVID-19 case was reported in India (Kerala) on January 30, 2020. The first COVID-19 case in Tamil Nadu was reported on March 7, 2020.[5]

COVID-19 was declared a pandemic by the WHO on March 11, 2020. This global pandemic led to worldwide as well as nationwide lockdown which, in turn, had the most gargantuan influence on the mental health of the citizenry.[6,7]

Healthcare workers (HCWs) are at significant risk of developing psychological morbidity not only due to the shortage of resources and changing medical protocol but also because they must forge a calm companionship with their partner and children during the COVID-19 Pandemic.[8]

Most HCWs especially doctors lost their source of income due to the global economic slowdown, lack of funds within hospitals, delayed salaries, and indefinite periods of a shutdown of private clinical practice. The fear, stigma, prejudice, and marginalization toward COVID-19 added to the physical discomfort of using personal protective equipment (PPE) kits and lead to mental exhaustion.[9,10]

The level of stress they put themselves through daily during this pandemic is immense and, therefore, there is no surprise their mental health is affected.

In spite of the end of the two waves of COVID-19 in India, the chances of the emergence of another outbreak are highly given the rapid continuous mutations of the causative agent and the careless attitude of the general public toward the disease.[11]

Globally, only few researchers have studied the psychological impact of COVID-19 on healthcare professionals during the pandemic. Among them only very few had compared the psychological morbidity among frontline doctors during the first and second waves of COVID-19.

Aims and objectives

1. To estimate the prevalence of anxiety and depression among doctors working in COVID care centers during the COVID-19 pandemic's first and second waves and to assess the level of anxiety and depression among them
2. To find out the risk factors associated with anxiety and depression
3. To compare the level of anxiety and depression among doctors during the first and second waves of the COVID-19 pandemic.

MATERIALS AND METHODS

A cross-sectional study was conducted among doctors working in COVID care centers, dedicated COVID-19 health centers, and designated COVID-19 hospitals in Chennai city of Tamil Nadu. All the doctors who were currently working in outpatient departments designated COVID-19 wards, screening camps, fever clinics, and intensive care units were considered frontline doctors and included in the study. Those doctors with previously diagnosed psychiatric illnesses and those who were not willing to participate were excluded from the study. The study duration was 2 months for each wave (i.e.,) from September 2020 to October 2020 for the first wave and from May 2021 to June 2021 for the second wave of COVID-19. The sample size was calculated based on the assumption of a 50% prevalence of psychological morbidity among doctors. The calculated adequate sample size was 100 using the formula 4 PQ/L.[2] Hence, a total of 200 doctors were included in the study with 100 each during the first and second waves.

Data collection

After approval from Institutional Research Committee and Institutional Ethics Committee, a standard validated structured questionnaire consisting of the following three sections was used as the study instrument to collect the information from study participants.

- Section-A Demographic profile of the study population including personal details about education, occupation and socioeconomic status
- Section-B Hamilton anxiety rating scale[12] consists of 14 questions
- Section-C Hamilton depression rating scale[13] consists of 17 questions (Each item is scored on a scale of 0–4. 0=not present, 4=severe).

The questionnaire developed in Google forms format was circulated by snowball technique through Gmail, WhatsApp, and Telegram apps among doctors working in the COVID Care centers and hospitals. The doctors filled out the Google form after ticking the informed consent for undergoing this study. Data from Google forms were downloaded as an MS Excel spreadsheet (XLS format). The data were summarized as mean and standard deviation for quantitative variables and frequency and proportions for qualitative variables. The prevalence was estimated as a percentage. Statistical tests such as Chi-square test and Z-value test for finding out the association were applied to test for statistical significance using SPSS version 20.0.

RESULTS

A total of 200 frontline doctors were surveyed during first and second waves of COVID-19. During the first wave of the COVID-19 pandemic, the mean age of the doctors who participated in the survey was 32.11±8.06 years. About 51% and 49% of the surveyed doctors were females and males, respectively. About 51% were doctors with PG degrees. Half of them were working in Government COVID Care Centres. During the second wave of the COVID-19 pandemic, the mean age of the doctors was 34.63±12.02 years. 54% were males. 53% were doctors with UG degrees alone. About 53% of the doctors were working in private COVID care centers.

Based on the Interpretations of Hamilton Anxiety Rating Scale, the overall prevalence of anxiety among doctors during the first wave of COVID-19 was 56% whereas it was 83% among doctors during the second wave. About 27% and 31% of the doctors in the second wave of the COVID-19 pandemic had severe and moderate anxiety symptoms whereas this was only 8% and 18% during the first wave (Figure 1).

Similarly, using the Interpretations of Hamilton Depression Rating Scale, the overall prevalence of depression among doctors during the first wave and second wave of COVID-19 pandemic was 42% and 82%, respectively. Around 35% of the doctors had severe depression during the second wave which was very high compared to the first wave (5%) (Figure 2).

In the present study, the education qualification of doctors was found to have a statistically significant ($P<0.05$) association with depression during the first wave of COVID-19 (Table 1). During the second wave, encountering/attending COVID-19 patients had a statistically significant association with depression (Table 2).

Statistically, a significant difference was observed while comparing the prevalence of severe anxiety and depression among doctors during the first and second waves of the COVID-19 pandemic (Table 3).

DISCUSSION

In the present study, the mean age of the doctors was 33.37±10.04 years, majority (51.5%) of the participants were males. The study conducted by Das et al.,[14] among 422 frontline doctors working in tertiary care hospitals of different regions of India also reported similar findings where the mean age of the study population was 27.61±4.98 years and male dominant distribution (55.5%).

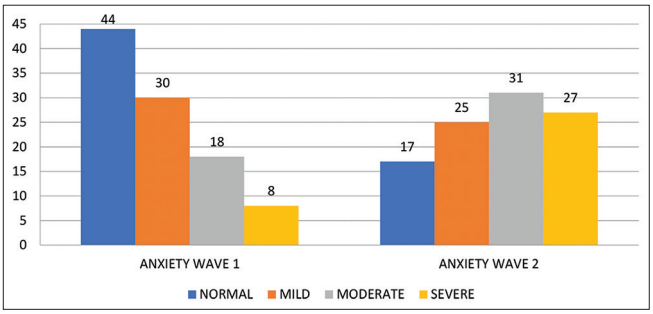

Figure 1: Comparing the prevalence of anxiety among doctors during the first and second wave of COVID-19 pandemic (n=200)

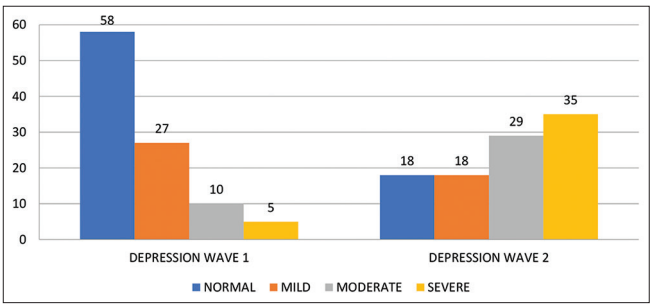

Figure 2: Comparison of the prevalence of depression among doctors during the first and second waves of COVID-19 pandemic (n=200)

This slightly higher proportion of males among the study participants could be explained by the general willingness of male doctors to work in challenging situations.

The present study reported an almost equal proportion of undergraduate and postgraduate doctors. This was in contrast to Das et al.,[14] and Chatterjee et al.,[15] where postgraduate trainees (45.5%) and doctors with postgraduate qualifications (63.2%) were the majority. During the beginning of the COVID-19 pandemic in Chennai, many doctors with UG qualifications volunteered to do COVID duties and also special recruitment of duty doctors with UG qualifications was done in both Government and private sectors.

The present study observed a slightly higher proportion (51.5%) of the study participants working in Private COVID care centers. Chatterjee et al.,[15] in their study, reported that the majority (66.4%) of the doctors were working in the government sector. This could be due to the variations in socio-economic development between the regions where these two studies were conducted. Chatterjee et al.,[15] was conducted in West Bengal and the present study was conducted in Chennai city of Tamil Nadu a metropolitan capital city where there are more private multi-specialty hospitals in comparison to government health facilities.

The present study observed a high overall prevalence of anxiety (56% and 83%) and depression symptoms

Table 1: Factors determining anxiety and depression among doctors during the first wave of COVID-19 pandemic (n=100)

Variable for first wave	Anxiety		P<0.05, Significant	Depression		P<0.05, Significant
	With	Without	Chi-square	With	Without	Chi-square
Age						
<40 years of age	23	61	0.353	10	74	0.061
>40 years of age	3	13		5	11	
Gender						
Male	11	40	0.211	5	46	0.114
Female	15	34		10	39	
Educational qualification						
UG	15	36	0.286	4	47	0.038*
PG	11	38		11	38	
Working place						
Government	14	36	0.410	6	44	0.288
Private	12	38		9	41	
Attending COVID-19 patients						
Daily	13	36	0.543	10	39	0.114
Occasionally	13	38		5	46	

Significant *P<0.05

Table 2: Factors determining anxiety and depression among doctors during the second wave of COVID-19 pandemic (n=100)

Variable for second wave	Anxiety		P<0.05, Significant	Depression		P<0.05, Significant
	With	Without	Chi-square	With	Without	Chi-square
Age						
<40 years of age	45	31	0.419	48	28	0.478
>40 years of age	13	11		16	8	
Gender						
Male	31	23	0.529	37	17	0.209
Female	27	19		27	19	
Educational qualification						
UG	33	20	0.237	36	17	0.255
PG	25	22		28	19	
Working place						
Government	27	20	0.539	29	18	0.404
Private	31	22		35	18	
Attending COVID-19 patients						
Daily	39	25	0.280	47	17	0.008**
Occasionally	19	17		17	19	

Significant *P=0.05, **P=0.01

Table 3: Percentage comparison of anxiety and depression among doctors during the first and second wave of COVID-19 pandemic (n=200)

Outcome (%)	Covid-19 first wave (%)	Covid-19 second wave (%)	Z-value	P-value*
Anxiety	8	27	3.5358	0.0002
Depression	5	35	5.3033	0.00001

*Z test

(42% and 82%) among doctors working in COVID-19 care centers during the first and second wave of the pandemic, respectively. A similarly high prevalence was reported by Das et al.,[14] where the prevalence of depression symptoms was 63.5%. The higher proportion of study participants working in the private sector in the present study and multi-specialty hospitals being the study setting in Das et al.,[14] explains the above-mentioned findings. Chatterjee et al.,[15] observed a comparatively lower prevalence of depression and anxiety among doctors which was 35% and 33%, respectively, which could be due to a higher proportion of study participants working in the Government sector where there are pre-defined duty hours and other protocols are followed strictly.

The study conducted by Um et al., in Korea during Middle East Respiratory Syndrome (MERS) outbreak among doctors reported a 46% prevalence of depression.[16] The present study also observed a similarly high prevalence of depression during both waves of the COVID-19 pandemic. The reported high prevalence of depression among doctors during epidemic/outbreak could be due

to the quarantine measures followed during outbreak/epidemic which restricts the movement of the doctors and other outside recreational activities with their families. Furthermore, during an outbreak/epidemic of infectious disease, the neighbors tend to stigmatize and discriminate the health-care professionals especially doctors due to fear of the spread of infection which contributes to the high prevalence of depression.[17]

In describing the psychological issues faced by frontline HCWs in responding to the SARS-CoV-2 crisis based on the western publication's reports, Danet systematically reviewed their psychological impact in 2021 which flashed high levels of stress, fear, anxiety, depression, sleep disturbance, and burnout, due to changing strategies and also unmasked high level when compared with the rest of healthcare professionals in the Asian area.[18] Due to a lack of manpower, HCWs had to work for long hours wearing PPE kits with no food/water/urination leading to physical discomfort. This could be the possible reason for the high prevalence of anxiety symptoms among doctors working in COVID-19 centers during this pandemic.

Similar findings were also reported by Preti et al.,[19] who reviewed the psychological impact of epidemic/pandemic outbreaks (i.e., SARS, MERS, COVID-19, Ebola, and influenza A) on HCWs based on 44 studies and observed the prevalence of depressive symptoms ranging between 27.5% and 50.7%. The prevalence of severe anxiety symptoms was 45%. This could be due to the fear among HCWs of the risk of acquiring infection by attending to patients and transmission of the infection to their near and dear ones.

The present study observed a statistically significant association ($P<0.008$) between daily encounters with COVID-19 patients and depression among doctors. Similarly, the Quintana-Domeque et al.,[20] studies conducted among medical doctors in Catalonia, Italy, and the UK observed the odds of anxiety (OR=1.44 [95% CI, 1.21–1.70]) and depression (OR=1.27 [95% CI, 1.07–1.52]) was higher among doctors who worked 40 h or more last week compared with doctors who worked <40 h. Another study by Alonso et al.,[21] reported that HCWs frequently exposed to COVID-19 patients had higher odds of mental health disorders among them. (OR=3.98, 95% CI: 3.27–4.85). This could be explained by long working hours a week which increases the risk of getting an infection due to exposure for longer periods of time.

Limitations of the study

The present study adopted a nonprobability sampling technique. Hence, the results of should be interpreted with caution while generalizing them to a larger population. An in-depth interview of the study participants to explore the reasons for the anxiety and depression could not be done due to time constraints and the state lockdown protocols which restricted the in-person access to the study subjects.

CONCLUSION

The present study reported a high prevalence of anxiety and depression symptoms among doctors working in COVID-19 centers. As the COVID-19 pandemic continues to sweep, this problem needs to be addressed. Stigmatization of the doctors working in COVID care centers by society is strongly discouraged. Senior doctors with good experience and knowledge should provide psychological and moral support to the junior doctors working in COVID care centers. The government in consultation with a professional body of doctors should roll out proper guidelines and formulate strategies to handle such psychological morbidity.

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RN- Concept and design of the study, prepared first draft of manuscript; **BA and VA-** Interpreted the results; reviewed the literature and manuscript preparation; **VA-** Concept, coordination, and interpretation, preparation of manuscript and revision of the manuscript; **AK and AR-** Statistical analysis.

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