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Psychosocial Morbidity Among Doctors Working in Intensive Care Unit in Tertiary Care Hospitals in Chennai - A Cross Sectional Study

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ABSTRACT

Introduction: Intensivists routinely works in a demanding, highly complicated environment where mortality and morbidity are common events and it affects their own physical as well mental health.

Objective: The aim was to assess psychological factors and the various influencing factors on psychological health among study participants.

Methods: The list of tertiary care hospitals in Chennai were collected and Ten hospitals were selected randomly by lottery method and 15 doctors who were working in Intensive Care Units (ICU) were selected from each hospital by systematic random sampling to arrive at the calculated sample size of 150. The Data was collected using the Pretested semi structured questionnaire and validated DASS-21 Scale.

Results: The prevalence of Depression, Anxiety and Stress was found to be 78.6%, 86% and 60.6% respectively among ICU doctors. It was found that, having a history of either diabetes or hypertension and working more than 8 hours per day was an important predictor for depression and stress respectively with statistically significant association (P<0.05).

Conclusions: Routine screening of physical health and mental health for doctors involved in the diagnostic as well as treatment aspects of work towards patients in Intensive Care Unit (ICU) should be conducted periodically.

Key words: Depression, Stress, Poor sleep quality, Mental health, Intensivists

BACKGROUND

Occupational stress is a major health problem among doctors. Intensivists routinely work in a demanding, highly complicated environment where mortality and morbidity are common events and errors can lead to serious situation in the working place. Doctors and other health care workers used to work in high stressful condition which affects their own physical as well mental health[1,2]. The factors that affect a person's mental health or social wellness are said to be psychological factors which includes altered mood status (anxiety, depression and stress) and social factors (socioeconomic status, education, employment, religion, family, relationship with others and changes in personal activities). Among these psychosocial factors, depressive disorders, anxiety and stress play a vital role[3,4].

Working situation in Intensive Care Unit like caring extremely morbid patient, palliative care to debilitated patient, exploring the poor condition of the patient to their attenders and revealing the deceased patient status into their attenders are all very challenging and difficult thing[5]. Doctors and other health care workers are all involving directly in diagnosing and treating the morbid patients, which leads to continuous stress and anxiety. Doctors are more risk of

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getting infection from patient, and further it was carried to their family members, these are all some complicated situation where they have to work regularly[6]. Disease-related mortality, heavy workload, overtime duties and usage of personnel protection equipment (PPE) cause physical and psychological distress. Stress reaction symptoms such as anxiety, depression, feeling physically weak and antagonistic behaviour have been reported more among healthcare workers during and in the aftermath of previous outbreaks[7]. Before COVID-19, ICU doctors are already in a serious threat due to work pattern and stress in this environment, pandemic condition gave additional burden to ICU doctors[8,9].

Stress is an integral part of mental health and is probably one of the prominent issues in today's society. Anxiety is a disorder commonly associated with unease and fear, exhibiting symptoms such as fatigue, palpitations and restlessness[10]. While considering the causes we have to take into account, environmental, genetic, psychological, social and biological factors as well. Anyone who is exposed to anxiety and worry tend to lose their self-confidence and become depressed with the humiliation faced which in turn increase their occupational stress with degrading work performance. Reduced work performance by itself intensifies one's anxiety and this continued cycle of events eventually destroys people's mental and physical abilities leading to unstable neuropsychiatric disorders. Physicians and nurses are affected by a plethora of workplace stressors, because of their duty to provide proper and effective treatment to sick patients[11,12].

The healthcare workers are facing a greater portion of violence from patient and caregiver that will affects their physical and psychological well-being and limits their work performance and job satisfaction[13]. Particularly doctors are being victims of verbal and physical violence in many occasions by patient and their relatives. Many studies reveal about workplace violence and its impact on psychological health among healthcare workers[14,15].

Based on this perspective, we aimed to assess the psychosocial health of doctors working in the ICU and strengthen the mental wellbeing of the doctors.

METHODOLOGY

This was a descriptive cross-sectional study conducted among doctors working in Intensive Care Unit (ICU) in tertiary care hospitals in Chennai, Tamil Nadu during August 2021 to January 2022.

Sample size: From a study done by N.A. Uvais et al, Perceived Stress among Doctors Working in Intensive care Units was found to be 20.6%[16]. Taking this as P value and applying in the formula Z^2PQ/L^2 where P= 20.6. Q= 79.4 and absolute precision (L) was taken as 7%, the required sample size was calculated as 134. Taking 10% as non-response the final sample size was calculated and rounded off to 150 (n=150).

Sampling technique: Multistage sampling method. The list of tertiary care hospitals in Chennai was collected. In the 1st Stage, using simple random sampling by using lottery method, 10 hospitals were selected randomly and 15 doctors working in Intensive Care Units (ICU) were selected by systematic random sampling from each hospital till the required sample size of 150 is reached. The Data was collected using the pre-validated DASS-21 Scale for assessing depression, anxiety and stress after obtaining informed consent[17]. Pretested semi structured questionnaire was used to collect data regarding sociodemographic details, their work pattern, social relationships and psychological factors. The data was filled by the investigator himself using the interview schedule. Collected data were entered using MS EXCEL and analysed using SPSS-version 21 and chi-square value, p value and odds ratio were done to find out the association between depression, anxiety, stress and related variables.

Inclusion criteria: Doctors who had training in ICU patient management and had working experience at least 6 months in intensive care unit were included in the study.

Exclusion criteria: Doctors who were on drug therapy for psychiatric illness and medical interns were excluded from the study.

Data collection tools: A pretested semi structured questionnaire was utilized to obtain information about the socio demographic data and occupational details.

DASS– 21 questionnaire was used to assess psychological aspect of the participants. It is divided into three subscales that assess depression, anxiety, and stress. On a 4-point Likert scale ranging from 0 (does not apply to me) to 3 (applies to me most of the time), the participants were asked to rate their experience with each symptom. The scores are summed up in each subscale and are categorized into mild, moderate, severe and extremely severe, According to DASS– 21 scale a validated tool for use to measure depression, anxiety and stress among adult population[17].

Human subject protection and ethical consideration: Approval from the Institutional Human ethics committee of Sree Balaji medical college and hospital was obtained. Patient's information was kept confidential and anonymous.

RESULT

A total of 150 doctors working in ICU had completed this study with consent. Out of all participants (n=150), 104 (69.3%) were aged below 30 years and doctors aged above 30 years are 46 (30.7%). Male participants are predominantly higher 84 (56%), when compared with females 66 (44%). Totally 89(59.3%) were unmarried and 61 (41.7%) were

married. Out of all participants, 119 (79.3%) and 52 (34.9%) consumed tobacco in any form and alcohol in any form respectively. (Table 1)

Table 1 shows the association between depression and related variables. More than 87% of those who were more than 30 years of age suffered from depression. Around 90% of those who consume alcohol suffered from depression and the association between them was found to be statistically significant (P<0.05) with an odds ratio of 3.57. It was found that, persons suffering from depression had 3.17 times increased odds of having inadequate sleep. (OR = 3.17). Participants who are suffered from depression 2.2 times odds of had their social life affected due to ICU duties (95% CI – 0.6-8.2). Among ICU doctors those who have Difficulty in taking lifesaving decisions were associated with depression with odds ratio of 3.1(95 CI – 1.1-9.9). Other variables which had a statistically significant association (P<0.05) with depression were physical inactivity, working more than 8 hours per day and having a history of T2DM/HTN with an odds ratio of 2.48, 2.25 and 3.59 respectively.

On bivariate analysis, variables which were found to have statistically significant association with depression were analysed using multiple logistic regression analysis to eliminate the confounders. It was found that, having a history of either diabetes or hypertension was an important predictor for depression with an adjusted odds ratio of 3,48 (95% CI – 1.3-8.8) (Table 2).

Table 1: Association between depression and related variables among study participants (N = 150)

Variable	Depression			Chi-square	P Value	Unadjusted Odd's Ratio (95% CI)
	Yes (n = 118) (%)	No (n=32) (%)	Total (n=150) (%)			
Age						
>30 years	40 (33.8)	6 (18.7)	46(30.7)	2.717	0.099	2.22 (0.84-5.83)
<30 years	78 (66.2)	26 (81.3)	104 (69.3)			
Gender						
Female	52 (44.1)	14 (43.7)	66 (44.0)	0.001	0.974	1.013 (0.4-2.2)
Male	66 (55.9)	18 (56.3)	84 (56.0)			
Marital Status						
Unmarried	67 (56.7)	22 (68.7)	89 (59.3)	1.49	0.221	0.59 (0.2-1.3)
Married	51 (43.3)	10 (31.3)	61 (40.7)			
Tobacco consumption						
Yes	90 (76.2)	29 (90.6)	119 (79.3)	3.16	0.75	0.33 (0.09-1.17)
No	28 (23.8)	3 (9.4)	31 (20.7)			
Alcohol Consumption						
Yes	47 (39.8)	5 (15.6)	52 (34.7)	6.51	0.011*	3.57 (1.28-9.94)
No	71 (60.2)	27 (84.4)	98 (65.3)			
Sleep Hours						
<6 hours	84 (71.2)	14 (43.7)	98 (65.3)	8.36	0.004*	3.17 (1.4-7.0)
>6 hours	34 (28.8)	18 (56.3)	52 (34.7)			
Physical Activity						
Inactive	81 (68.6)	15 (46.8)	96 (64.0)	5.17	0.023*	2.48 (1.1-5.4)
Active	37 (31.4)	17 (53.2)	54 (36.0)			
Hours of work per day						
>8 hours	61 (51.7)	10 (31.3)	71 (47.3)	4.22	0.040*	2.25 (1.02-5.4)
<8 hours	57 (48.3)	22 (68.7)	79 (52.7)			
History of T2DM/HTN						
Yes	69 (58.4)	9 (28.1)	78 (52.0)	9.29	0.002*	3.59 (1.5-8.4)
No	49 (41.6)	23 (71.9)	72 (48.0)			
Social life affected due to ICU duties						
Yes	111 (94.1)	28 (87.5)	139 (92.7)	1.59	0.206	2.2 (0.6-8.2)
No	7 (5.9)	4 (12.5)	11 (7.3)			
Difficulty in taking lifesaving decisions						
Yes	110 (93.2)	26 (81.3)	136 (90.7)	4.26	0.039*	3.1 (1.1-9.9)
No	8 (6.8)	6 (18.7)	14 (9.3)			

* P Value < 0.05 - Statistically significant at 95% Confidence Interval, OR – Odd's Ratio, χ^2 – Chi-square

Table 2: Multiple Logistic Regression analysis to find out the predictors of depression among study participants

Variable	P Value	Adjusted Odds Ratio	95% CI
Alcohol Consumption	0.087	2.57	0.8-7.5
Sleep < 6 hours	0.104	2.808	0.8-9.7
Physically inactive	0.58	1.412	0.4-4.8
> 8 hours work per day	0.080	2.23	0.9-5.5
History of T2DM/Hypertension	0.009*	3.48	1.3-8.8
Difficulty in taking major life saving decisions	0.250	2.178	0.57-8.1

* P Value < 0.05 - Statistically significant at 95% Confidence Interval, OR – Odd's Ratio, AOR – Adjusted Odd's Ratio

Table 3: Association between anxiety and related variables among study participants (N = 150)

Variable	Anxiety			Chi-square	P Value	Unadjusted Odd's Ratio (95% CI)
	Yes (n = 129) (%)	No (n=21) (%)	Total (%) (N = 150)			
Age						
>30 years	40 (31.0)	6 (28.6)	46 (30.7)	0.050	0.822	1.12 (0.4-3.1)
<30 years	89 (69.0)	15 (71.4)	104 (69.3)			
Gender						
Female	60 (46.5)	6 (28.5)	66 (44.0)	2.35	0.12	2.17 (0.7-5.9)
Male	69 (53.5)	15 (71.5)	84 (56.0)			
Marital Status						
Unmarried	75 (58.1)	14 (66.6)	89 (59.3)	0.544	0.461	0.69 (0.26-1.83)
Married	54 (41.9)	7 (33.4)	61 (40.7)			
Tobacco consumption						
Yes	101 (78.3)	18 (85.7)	11 (79.3)	0.606	0.436	0.60 (0.1-2.1)
No	28 (21.7)	3 (14.3)	31 (20.7)			
Alcohol Consumption						
Yes	46 (35.6)	6 (28.6)	52 (34.7)	0.40	0.527	1.38 0.5-3.8)
No	83 (64.4)	15 (71.4)	98 (65.3)			
Sleep Hours						
<6 hours	87 (67.4)	11 (52.3)	98 (65.3)	1.80	0.17	1.88 (0.74-4.78)
> 6 hours	42 (32.6)	10 (47.7)	52 (34.7)			
Physical Activity						
Inactive	85 (65.9)	11 (52.3)	96 (64.0)	1.43	0.23	1.75 (0.6-4.4)
Active	44 (34.1)	10 (47.7)	54 (36.0)			
Hours of Work per day						
> 8 hours	65 (50.3)	6 (28.5)	71 (47.3)	3.44	0.063	2.53 (0.92-6.95)
< 8 hours	64 (49.7)	15 (71.5)	79 (52.7)			
History of T2DM/Hypertension						
Yes	71 (55.1)	7 (33.4)	78 (52.0)	3.40	0.065	2.44 (0.92-6.46)
No	58 (44.9)	14 (66.4)	72 (48.0)			
Social Life affected due to ICU duties						
Yes	11 (8.5)	4 (19.1)	15 (10.0)	3.39	0.065	0.31 (0.08-1.13
No	121 (91.5)	14 (80.9)	135 (90.0)			
Difficulty in taking lifesaving decisions						
Yes	124 (96.1)	12 (57.1)	136 (90.7)	13.92	0.000*	7.7 (2.3-26.0)
No	8 (3.9)	6 (42.9)	14 (9.3)			

* P Value < 0.05 - Statistically significant at 95% Confidence Interval, OR – Odd's Ratio, χ^2 – Chi-square

The frequency of anxiety among ICU working doctors is shown in Table 3 along with its association with other related variables. Participants above the age of 30 were shown to have a higher level of anxiousness (87%). Anxiety was experienced by 90 percent of the female gender. Participants who were married had a higher level of anxiety (88.5%) than those who were not married (84.3%). In this study, it was discovered that there will be significant association between ICU doctors suffered from anxiety and difficulty in taking lifesaving decisions during duty hours which was statistically significant (P<0.05).

The association between stress and related variables shown in the table 4. It was found that more than 71% of those who were physically inactive suffered from stress which was found statistically significant with p value of 0.045*. Around 90% of those who consume tobacco in any form suffered from stress and the association between them was found to be statistically significant (P<0.05) with an odds ratio of 0.12. It was found that, persons suffering from stress had 3.03 times increased odds of having either Type 2 diabetes or hypertension (OR = 3.03). Among ICU doctors those who were had stress had 4.43 times odds of having difficulty in taking lifesaving decisions during their duties (OR = 4.43). Other variables which had a statistically significant association (P<0.05) with stress were working more than 8 hours per day and alcohol consumption with an odds ratio of 2.80 and 0.12 respectively.

On bivariate analysis, variables which were found to have statistically significant association with depression were analysed using multiple logistic regression analysis to eliminate the confounders. It was found that, having a history of either diabetes or hypertension and person who were working more than 8 hours per day was an important predictor for stress with an adjusted odds ratio of 3.47 (95% CI – 1.36-5.25) and 2.21 (95% CI – 1.1-5.49) respectively (Table 5).

Out of 150 ICU doctors, after scoring done for severity of depression, anxiety and stress using DASS-21 scale, 26.7% of ICU working doctors had moderate depression symptoms, 22.7% were reported severe and 19.3% were reported extremely severe depressive symptoms. For Anxiety Severity , 42% of total participants were reported extremely severe anxiety, 28% were considered to have moderate and 12% were considered to have severe anxiety(fig:2).For stress scale, 22.7% of total participants were reported Moderate stress, 19.3% were considered to have severe stress, 4% were considered to have extremely severe stress.(Table 6).

Table 4: Association between stress and related variables among study participants (N = 150)

Variable	Stress			Chi-square	P Value	Unadjusted Odd's Ratio (95% CI)
	Yes (n = 91) (%)	No (n=59) (%)	Total (N = 150) (%)			
Age						
>30 years	33 (36.2)	13 (22.1)	46 (30.7)	3.40	0.065	2.01 (0.95-4.26)
<30 years	58 (63.4)	46 (77.9)	104 (69.3)			
Gender						
Female	41 (45.1)	25 (42.4)	66 (44.0)	0.104	0.74	1.11 (0.57-2.16)
Male	50 (54.9)	34 (57.6)	84 (56.0)			
Marital Status						
Unmarried	51 (56.1)	38 (64.4)	89 (59.3)	1.03	0.30	0.70 (0.35-1.38)
Married	40 (43.9)	21 (35.6)	61 (40.7)			
Tobacco consumption						
Yes	63 (69.2)	56 (94.9)	119 (79.3)	14.4	0.000*	0.12 (0.03-0.41)
No	28 (30.8)	3 (5.1)	31 (20.7)			
Alcohol Consumption						
Yes	41 (45.1)	11 (18.6)	52 (34.7)	11.02	0.001*	3.5 (1.64-7.76)
No	50 (54.9)	48 (81.4)	98 (65.3)			
Sleep Hours						
<6 hours	66 (72.5)	32 (54.2)	98 (65.3)	5.28	0.021*	2.22 (1.11-4.43)
>6 hours	25 (27.5)	27 (45.8)	52 (34.7)			
Physical Activity						
Inactive	64 (70.3)	32 (54.2)	96 (64.0)	4.02	0.045*	2.0 (1.01-3.95)
Active	27 (29.7)	27 (45.8)	54 (36.0)			
Hours of Work per day						
>8 hours	52 (57.1)	19 (32.2)	71 (47.3)	8.93	0.003*	2.80 (1.41-5.57)
<8 hours	39 (42.9)	40 (67.8)	79 (52.7)			
History of T2DM/Hypertension						
Yes	57 (62.6)	21 (35.5)	78 (52.0)	10.48	0.001*	3.03 (1.53-5.99)
No	34 (37.4)	38 (64.5)	72 (48.0)			
Social Life affected due to ICU duties						
Yes	8 (8.8)	7 (11.8)	15 (10.0)	0.37	0.540	0.716 (0.24-2.09)
No	83 (91.2)	52 (88.2)	135 (90.0)			
Difficulty in taking lifesaving decisions						
Yes	87 (95.6)	49 (83.1)	136 (90.7)	6.66	0.010*	4.43 (1.3-14.9)
No	4 (4.4)	10 (16.9)	14 (9.3)			

*Statistically significant at 95% Confidence Interval (CI), OR – Odd's Ratio

Table 5: Multiple Logistic Regression analysis to find out the predictors of stress among participants

Variable	P Value	Adjusted Odds Ratio	95% CI
Tobacco Consumption	0.761	0.75	0.12-4.49
Alcohol Consumption	0.28	2.2	0.5-9.4
Sleep < 6 hours	0.101	2.8	0.81-9.8
Physically inactive	0.568	1.43	0.41-4.9
> 8 hours work per day	0.045*	2.219	1.1-5.49
History of T2DM/Hypertension	0.009*	3.47	1.36-5.25
Difficulty in taking lifesaving decisions	0.055	3.93	0.97-15.9

*Statistically significant at 95% Confidence Interval, CI – Confidence Interval

DISCUSSION

The working environment in the intensive care units pose a lot of burden on the psychosocial wellbeing of the doctors. They may suffer from problems like depression, anxiety and stress which were screened among the ICU doctors in the present study. The study yielded interesting findings which are discussed below compared with studies done in India and elsewhere.

In the present study the prevalence of depression was found to be 78.6%. In a study done by Elhadi M et al in Libya, the prevalence of depression was found to be 48.5% among emergency physicians[18]. Comparatively lower prevalence (28%) was found in studies conducted by Embriaco N et al in France and Lee MJ et al in South Korea (27.5%)[19,20]. In Asian countries like China, in a study done by Peng X et al, the prevalence was found to be 68%[21]. These variations in the prevalence of depression among various studies may be attributed to the fact that, these studies were done in different geographical settings and the socio-environmental factors would have been different between different study areas. In the present study alcohol was found to be an important factor which was associated with depression. Similar results were obtained in a study done by Wozniak M et al in Switzerland, in which high prevalence of alcohol consumption was found in ICU doctors suffering from depression[22]. The high prevalence of depression among ICU doctors might have been since they face situations like working continuously more than 8 hrs of duty in ICU without sufficient sleep, physical inactivity and altered social life.

Table 6: Frequency of Depression, Anxiety and Stress among Doctors working in ICU (N = 150)

Variable	Doctors (%)
Depression	
No depression	32 (21.3)
Mild	15 (10)
Moderate	40 (26.7)
Severe	34 (22.7)
Extremely Severe	29 (19.3)
Anxiety	
No anxiety	21 (12)
Mild	9 (6)
Moderate	42 (28)
Severe	18 (12)
Extremely Severe	60 (42)
Stress	
No stress	59 (39.3)
Mild	22 (14.7)
Moderate	34 (22.7)
Severe	29 (19.3)
Extremely Severe	6 (4)

In the present study an alarming high prevalence of anxiety (86%) was found among the study participants. In a study done by Peng X et al in China the prevalence of anxiety was found to be 58.5% among ICU health care workers[21]. In a study done by Elhadi M et al the prevalence of anxiety was found to be 49%[18]. Though COVID cases are decreasing all over the world, the impact of COVID 19 is still present especially among doctors working in ICU, as evident from a study done by Greenberg N et al, in which 13% of the study participants suffered from suicidal tendencies rather than working in ICU units due to the fear, anxiety and stress they endured during the COVID pandemic[23]. It was found that the anxiety level was higher among ICU doctors. This could be due to the fact that they are dealing with the extremely morbid patients and they need to do lifesaving interventions and treatments which could make them more anxious.

The present study reported the prevalence of stress among the study participants to be 60.6%. In a study done by Amte R et al in India, the prevalence of stress was found to be 40% among critical care doctors[24]. A study done by Chatta HA et al in Lahore, 65% of the ICU doctors suffered from stress[25]. In a study done by Coomber S et al in UK, the prevalence of stress was found to be 29%[1]. These findings highlight the fact that, 30% to 60% of the doctors working in the ICU suffer from stress. The above finding could be due to ICU doctors had poor self-health care as well mental health, suffering from any other comorbidities, poor sleep and unable to spend time with peers and their family members. Measures have to be targeted towards various stakeholders of the hospitals, to reduce the workload and burden of work in the ICU doctors and provide regular screening by experts of mental health to diagnose any psychosocial problems among them.

Poor Sleep quality of the individual was found to be important factor which had significance association with depression and stress. Similar findings were obtained in a study done by Chen Y et al[26]. This show that individual with poor sleep quality have an increased odds of suffering from depression and stress. Research shows that lack of adequate sleep could alter the mood status of the individual resulting in depression[26] which could have been the cause of the association between sleep and depression found in this study. In present study, Participants with comorbidity(T2DM/Hypertension) having higher level of depression and stress. Similar results found in a study done by Chen Y et al shows that persons with history of hypertension had higher level of depression with p value 0.03(95% CI = 1.01-1.26) [26]. Prevention and counselling measures have to targeted towards those persons to reduce the psychological morbidity. In the present study, around 33% of the study participants suffered from sleep problems and statistically significant association was found between stress and sleep quality. Similar results were obtained in a study done by Sarcogultu KT et al, in which 40% of the study participants suffered from poor sleep quality[27]. Stress and sleep have a bidirectional relationship[28] which is evident from this study. Measures have to be taken to control the same.

CONCLUSION

The Doctors working in Intensive Care Unit are more prone for stress and other psychological health problems. Routine screening of doctors involved in the diagnostic as well as treatment aspect of work towards patients in Intensive Care Unit (ICU) should be conducted periodically and to ensure them about alternate cope-up strategy to cope-up the stress and anxiety. Some recommendation to cope up their stress and depression by doing relaxation exercise, connected with their family and outer world, looking after their physical health, challenging pressure situation and doing work out of their interest.

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