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ASSESSMENT OF PSYCHOSOCIAL MORBIDITY AMONG MEDICAL INTERNS DURING COVID-19 PANDEMIC IN CHENNAI DISTRICT, TAMIL NADU – A CROSS-SECTIONAL STUDY

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ABSTRACT
Background: Medical interns develop apprehensions about the vulnerability of their exposure to infection while treating COVID-19 patients, which may further affect their work patterns and efficiency. Studies have shown that the outbreak of infectious diseases would result in mental health issues. Because of this, our study aims to assess psychosocial factors such as anxiety, depression, stress, relationships with peers, and changes in personal roles among medical interns at a private medical college. **Methodology:** This cross-sectional was conducted among 248 medical interns using a simple random sampling method. Depression, anxiety, and stress were assessed using a standardized 21-item depression, anxiety, and stress questionnaire (DASS– 21). A pretested semi-structured questionnaire was used to acquire information regarding the study participants' socio-demographic data and social elements. **Results:** The overall prevalence of Depression [58%], Anxiety [70%], and Stress [44%] were found among the 248 study participants. Around [70.6%] of the study participants reported that their social life had been affected. The prevalence of various factors associated with depression, anxiety, and stress were assessed. **Conclusion:** This study reports higher levels of psychosocial distress among the study participants. Adequate knowledge about the pandemic and stress management measures will be the top priority among these budding medicos during such unfavorable pandemic situations.

INTRODUCTION

The global Coronavirus (COVID-19) pandemic caused international health concerns and significant psychological distress. The (COVID-19) pandemic has been by far the largest outbreak of atypical pneumonia since the severe acute respiratory syndrome (SARS) epidemic in 2003 [1]. The cumulative number of illnesses and deaths surpassed SARS just weeks after the initial outbreak. During such a health crisis,

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healthcare services are overburdened, leaving frontline personnel vulnerable to psychological discomfort and other mental health issues. Healthcare professionals spend hours each day putting on and removing airtight protective equipment, which adds to their exhaustion from the COVID-19 outbreak's increased workload. The National Medical Commission recognizes the qualifications of approximately 542 medical institutions in India [2]. Nearly 50,000 students graduate each year after completing a year of internship before receiving their MBBS degree [3]. Medical interns are the lifeline of teaching hospitals, which exposes them to many challenging situations, especially during the pandemic. They develop a dread of contracting the disease and infecting their family members, leading to reluctance to work. Increased unjustified violence against doctors in recent years, for no reason other than their own, adds to their woes. This condition raises issues regarding healthcare employees' mental health, psychological adjustment, and recuperation. During the COVID-19 pandemic, medical interns have faced unique difficulties that have increased their emotional distress compared to other medical staff. The pandemic has drastically increased their workload, including heavier patient numbers and longer hours, putting them under significant stress. The fear of contracting the virus and shortages of crucial supplies like PPE have made them highly concerned for their safety. Additionally, interns have witnessed an overwhelming number of patient deaths and suffering, which has had a profound emotional impact, requiring them to provide compassionate care in the face of high mortality rates. These emotional disturbances can, in turn, negatively impact the quality of patient care as stressed and exhausted interns may find it challenging to maintain optimal focus, make sound clinical judgments, and communicate effectively with patients. This, combined with constantly changing treatment protocols, isolation from their support systems, and increased responsibilities during a crucial time in their careers, has created a demanding and emotionally challenging environment for medical interns amidst the pandemic. Recognizing and addressing these psychosocial issues is imperative to safeguard the mental health of medical interns, ensuring their ability to deliver high-quality patient care during these unprecedented times. In response to the COVID-19 outbreak, local and national mental health institutions have broadly implemented psychological aid services, including telephone, internet, and application-based counseling or intervention. However, Constant evaluation and mental health therapies aimed at front-line healthcare employees, on the other hand, are relatively rare. Studies done in the past have focused on quality of life during COVID among qualified professionals and people from various other medical fraternities, including paramedics. There is a dearth of literature regarding the stress, anxiety, and depression faced among medical interns unprepared to deal with such stressful situations. Based on the above background, this study was conducted to assess mental health outcomes among medical interns treating COVID-19 patients by quantifying the degree of depression, anxiety, sleeplessness, and distress symptoms, as well as identifying potential risk factors linked with these symptoms.

METHODOLOGY

Study design and study area

This cross-sectional descriptive study was done in tertiary care hospitals in Chennai district, Tamil Nadu.

Study area and study population

The cross-sectional descriptive study was conducted in tertiary care hospitals in the Chennai district of Tamil Nadu. The study's population was medical interns working in tertiary care hospitals.

Sampling method and sample size calculation:

The sample size was estimated using Dobson's formula 4PQ/l2. This was based on a previous study among medical interns by M. Carrascos et al., which showed that 80.8% of respondents were worried about contracting the virus [4]. Using this as Prevalence (P) in the formula, a sample size of 248 was estimated with a 5% absolute precision. Among the 15 zones in Chennai, 4 zones were selected randomly by lottery, and 1 medical college from each zone was chosen randomly from the college database by lottery. The average number of interns in each college was 200 (College A), 110 (College B), 150 (College C), and 180 (College D). Medical interns were selected randomly based on the probability proportionate to each college's sampling method (PPS).

Inclusion criteria: All medical interns working in private medical colleges were selected for the study and were non-gender specific.

Exclusion criteria: Interns with active COVID-19 infection and those on drug therapy for any mental disorder were excluded from the study.

Data collection tools

A pretested semi-structured questionnaire was used to acquire information regarding the study participants' socio-demographic data and social elements. Depression, anxiety, and stress were assessed using a standardized 21-item depression, anxiety, and stress questionnaire (DASS– 21). It is further divided into three subscales that measure depression, anxiety, and stress. The participants were asked to score their experience with each symptom on a 4-point Likert scale ranging from 0 (does not apply to me) to 3 (applies to me most of the time). Each subscale's scores are added together and classified as mild, moderate, severe, or extremely severe [5]. The DASS–21 has been approved for use in measuring depression, anxiety, and stress in adults [6]. For the assessment of social factors, 10 questions were pretested and validated in the pilot study, and they were acceptable with a Cronbach's alpha of 0.81. All the 10 dichotomous questions were measured on a yes/no scale, and a score of 0 (No) was given for a negative response and 1(Yes) for a positive response. The maximum score that could be obtained was 10, and the lowest was 0. The median score was calculated to categorize the social life of the participants. The median score obtained was 6. Therefore, those who scored more than 6 were considered to have COVID-19 affecting their social life, and those who scored ≤6 was considered to have an everyday social life. The questionnaire was developed, tested, and used to collect data for the present study. A score was assigned to each item in the questionnaire to assess social factors, and the median value for the total score of all participants was determined. Participants with a score less than the median value were considered to have an everyday social life. In contrast, those with a score above the median value were considered to have Covid-19 affecting their social life.

Medical intern: In medicine, a doctor who has completed medical school and is engaged in a year of additional training at a hospital before residency [7]. Psychosocial factors affect a person psychologically and socially. They include several domains, such as mood status (anxiety, depression, and stress) and social factors (Education, employment, relationships with others) [8].

Data analysis method: The data was imported into a Microsoft Excel sheet and analyzed with SPSS 25. The outcome variables (Social status, Depression, Anxiety, and Stress) in the study are all categorical and were expressed as frequency and percentage. Chi-square test and logistic regression were used to identify the association between the selected variables and presented as tables.

Ethical consideration:

The purpose of this study was explained, and informed consent was obtained from each participant. The proposal for this study was presented before the Institutional Ethical Committee, Sree Balaji Medical College and Hospital, and approval was obtained before the study was carried out. A participant information sheet explaining the study was provided, and written informed consent was obtained from each participant before the start of the study. Participant's information was kept confidential and anonymous throughout the study.

RESULTS

The study included 248 participants working in a tertiary care hospital in Chennai district, Tamil Nadu. It assessed socio-demographic determinants, the prevalence of depression, anxiety, stress, and social life during the COVID-19 pandemic, and the association of these factors with mental health. Table 1 shows the socio-demographic characteristics of the study participants. Among the 248 study participants, 51.2% were found to be males, and 48.8% were females. Most participants (70.6%) in the study were less than 24 years of age, and about (29.4%) were aged 25 and above. Most of the participants belonged to the nuclear family (76%)

Table 1: Socio-demographic of the participants (n=248)

Variable		Frequency	%
Gender	Male	127	51.2
	Female	121	48.8
Age	≤24 years	150	70.6
	>24 years	98	29.4
Type of family	Nuclear	188	76
	Joint	60	24

Figure 1 shows details regarding the prevalence of Depression [58%] 95% CI (51% - 64%) with severity grading as Mild– 17.3%, Moderate – 27.6%, Severe -9.7%, and Extremely severe depression – 4%, Prevalence of Stress [44%] 95% CI (38% - 50%) with severity grading of Mild -9.68%, Moderate – 20.6%, Severe – 7.3% and Extremely severe stress – 2.8%, prevalence of Anxiety [70%] 95% CI (64% - 75%) with severity grading Mild- 9.68%, Moderate – 22.18%, Severe – 8.46% and Extremely severe anxiety -30%. Around 70% 95% CI (64% - 75%) of the participants reported their social life being affected.

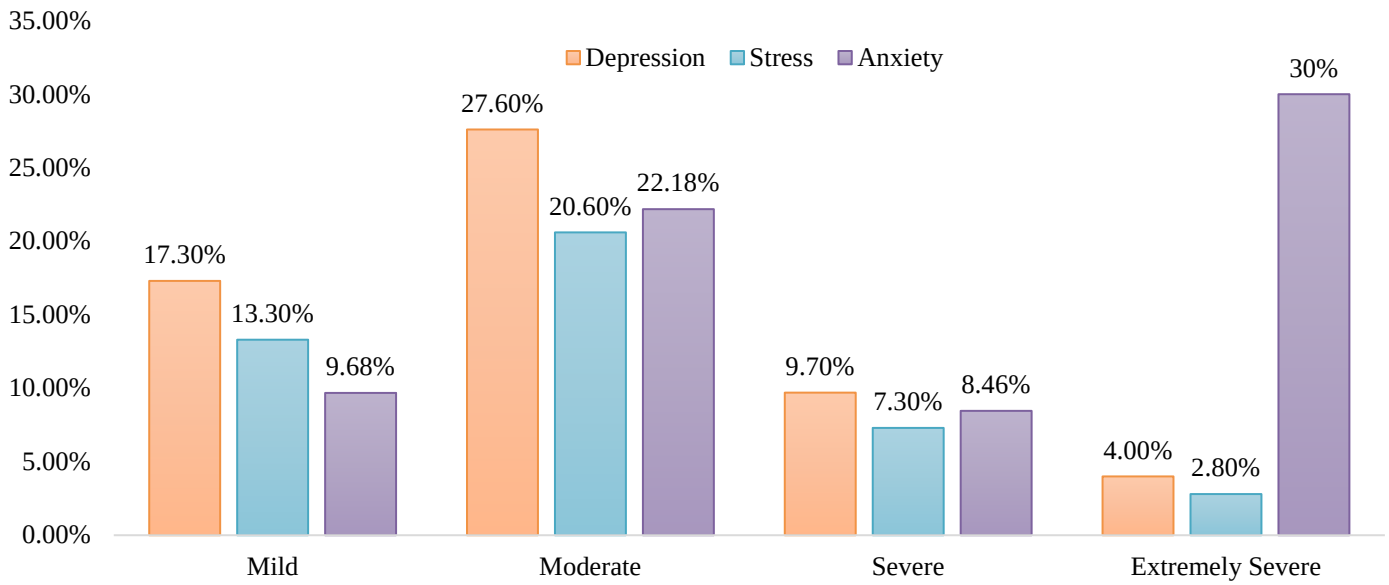

Figure 1: Prevalence of depression, anxiety, and stress

Table 2: Multiple logistic Regression between social status and related variables

Variables	UOR	P-Value	AOR	95% (CI)
Are you comfortable wearing Personal Protective Equipment (PPE) throughout your duty hours?	5.06	0.001*	4.02	2.75 - 9.85
Did you suffer from any health condition due to prolonged usage of PPE and face masks?	1.65	0.033*	1.458	1.18 – 2.79
Have you seen any COVID-19 related deaths while on duty?	2.86	0.023*	2.46	1.61 – 6.80
I experienced breathing difficulty (e.g., Excessively rapid breathing, breathlessness in the absence of physical exertion)	1.08	0.10	0.89	0.29 – 2.80
Have you been engaged in Covid-19 related duties?	2.56	0.08	2.8	0.61 – 6.72
Are you working Voluntarily or forcibly in Covid-19 related duties?	0.98	0.059	1.9	0.42 – 2.55
How long do you work in a day?	0.65	0.12	0.85	0.18 – 3.29
Do you feel your workload has increased during Covid-19?	1.24	0.34	1.6	0.32 – 5.44
Do you feel protected from Covid-19 by using N95 mask?	1.47	0.06	2.9	0.88 – 4.70
Are you able to speak with your peers during work hours?	1.20	0.45	2.8	0.68 – 6.40
Were you feeling safe after going home after each COVID-19 duty session?	0.91	0.55	2.4	0.85 – 4.93
Are you able to spend time with your family during lockdown?	1.83	0.90	1.6	0.82 – 3.90
Do you miss going out on a vacation/trip due to the Covid-19 lockdown?	0.95	0.68	0.88	0.72 - 1.08
Did you miss any of your friend/family functions you were supposed to attend?	1.08	0.98	1.12	0.95 - 1.31
Have you / any of your family members suffered from Covid-19?	1.03	0.78	1.05	0.90 - 1.22
Are you able to eat correctly?	0.98	0.89	0.97	0.81 - 1.16
Is your sleeping pattern affected due to COVID-19 related duties?	1.15	0.98	1.20	0.99 - 1.45
How many hours do you sleep per day?	1.08	0.77	0.92	0.76 - 1.11
Have you ever disclosed the news of a COVID-19 related death to the family members of the deceased?	0.94	0.23	1.10	0.93 - 1.29

Variables	UOR	P-Value	AOR	95% (CI)
Do you feel your workplace is safe even while handling COVID-19 cases?	1.03	0.43	1.02	0.87 - 1.18
Is the Covid-19 situation creating a change in your lifestyle?	0.99	0.134	0.96	0.80 - 1.14

***P= <0.05 (statistically significant at 95 % Confidence Interval), AOR: Adjusted odd ratio, UOR: Unadjusted odd ratio**

Table 3: Multiple logistic Regression between depression and related variables

Variables	UOR	P-Value	AOR	95% (CI)
I felt that life was meaningless	4.54	0.02*	1.2	0.98 – 1.20
I could not seem to experience any positive feelings at all	2.86	0.03*	1.6	1.06 – 4.98
I found it challenging to work up the initiative to do things	1.15	0.89	1.2	0.92 – 3.15
I felt that I had nothing to look forward to	0.91	0.98	0.5	0.23 – 1.04
I felt down-hearted and blue	1.12	0.77	0.9	0.55 – 1.77
I was unable to become enthusiastic about anything	1.01	0.23	0.8	0.54 – 4.72
I felt I was not worth much as a person	0.97	0.43	0.9	0.67 – 2.09

***P= <0.05 (statistically significant at 95 % Confidence Interval) AOR: Adjusted odd ratio, UOR: Unadjusted odd ratio**

Table 4: Multiple logistic Regression between anxiety and related variables

Variables	UOR	P-Value	AOR	95% (CI)
Age > 24 years	2.48	0.003*	3.1	1.1 – 5.4
I was aware of the dryness of my mouth	1.86	0.04*	4.4	0.90 – 1.04
I felt I was close to panic	1.02	0.009*	2.1	1.89 – 4.10
I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0.56	0.059	0.9	0.67 – 3.87
I experienced trembling (e.g., in my hands)	1.05	0.12	0.7	0.46 – 4.99
I was worried about situations in which I might panic and make a fool of myself	0.98	0.34	1.5	0.88 – 2.10
I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)	1.10	0.06	1.6	0.69 – 3.88
I felt scared without any good reason	1.02	0.45	1.5	0.88 – 4.08

***P= <0.05 (statistically significant at 95 % Confidence Interval) AOR: Adjusted odd ratio, UOR: Unadjusted odd ratio**

Table 5: Multiple logistic Regression between stress and related variables

Variables	UOR	P-Value	AOR	95% (CI)
I found it hard to wind down	6.84	0.04*	4.4	0.85 – 1.07
I tended to over-react to situations	4.54	0.01*	3.4	0.74 – 0.94
I felt that I was using nervous energy	0.96	0.15	0.96	1.01 – 1.23
I found myself getting agitated	1.18	0.4	0.9	0.67 – 3.87
I found it difficult to relax	1.08	0.78	0.7	0.46 – 2.99
I was intolerant of anything that kept me from getting on with what I was doing	0.94	0.9	1.5	0.88 – 4.10
I felt that I was rather touchy	1.03	0.67	1.6	0.69 – 4.88

***P= <0.05 (statistically significant at 95 % Confidence Interval) AOR: Adjusted odd ratio, UOR: Unadjusted odd ratio**

Risk factors

Among the study participants, females had a higher prevalence of depression (30.6%), anxiety (35.9%), and stress (23%) in comparison to their male counterparts having depression (27.4%), anxiety (34.3%) and stress (21%) in the study population. Multiple logistic regression analysis was done to identify the predictors of social life, depression, anxiety, and stress after eliminating the confounding factors. It was observed that wearing PPE kit for prolonged periods (AOR; 4.02), suffering from health issues due to prolonged PPE and face mask usage (AOR; 1.45) and attending to Covid related deaths (AOR; 2.46) had affected the social life among medical interns working during the pandemic, "feeling of life being meaningless" (AOR; 1.2) and "not able to experience any positive feeling" (AOR; 1.6) were found to have statistically significant association with depression status. "Age> 24 years" (AOR; 3.1) "Awareness of dryness of mouth due to prolonged masking" (AOR; 4.4), and "tendency to panic" (AOR; 2.1) were found to be significantly associated with anxiety status and "finding it hard to wind down after a hectic workday" (AOR;4.4) and "tendency to over-react to situations" (AOR; 3.4) was found to be associated with stress status of the study participants.

DISCUSSION

Among the study population, male participants were proportionately higher (51.2%) than females (48.8%). Most participants (31.5%) were about 24, and around 29.4% were aged 25 and above. This study reports high levels of Depression **(58%),** Anxiety **(70%),** Stress **(44) %** and social life being affected **(70)%** among medical interns. Among the psychosocial problems of the study group, anxiety, and social life being affected had the highest prevalence (70%). This demonstrates how much fear and social problems Corona created in such a short period. Similar findings were observed in the study by Carrascosa et al. in 2021 in Brazil [4] among medical interns, where around 80.8% of medical interns feared getting contaminated with the virus. A study done in India by Suryavanshi et al 2020 in the year 2020 reported a prevalence of depression – 47% and anxiety– 50% among healthcare professionals in India [9]. Being directly involved in the diagnosis, treatment, and care of COVID-19 patients, healthcare professionals are more likely to experience symptoms of depression, anxiety, insomnia, and distress, as well as an increased psychological burden [10]. These study findings prove that higher psychological distress is prevalent among medical professionals, especially during such unfavorable pandemic situations. Gender is an essential determinant of human health, and there is a clear pattern for sex-specific prevalence rates of various physical and mental disorders [11]. According to the American Psychological Association, women are more likely than men to report high levels of stress [12]. In this study, it was found that females have a higher rate of experiencing depression, anxiety, and stress than males. A diverse set of factors influences this difference in stress between genders. Biologically, hormones and brain activity may play a role. Social expectations for men and women and coping strategies learned from society influence how women express and manage stress. Cultural differences in how people express feelings and seek treatment can influence how stress is reported. Other considerations include work-life balance, availability to resources, social support, and perceived stress levels. Individual differences in stress reactivity have been identified as a potentially relevant risk factor for men and women experiencing gender-specific health problems [13] [14].

In this study, around 21% of participants aged 24 and less suffered from moderate anxiety levels. 29.7% of them had highly severe anxiety levels, around 24.7% of participants aged 25 and more suffered from moderate anxiety, and 30.1% had extremely severe anxiety. There is a significant association between anxiety status and age, with a p-value of 0.01. In a study done by Simegnew Kibret et al. among healthcare professionals in Ethiopia in 2020 [15], the age group of 30–39 and greater or equal to 40 years exhibited a higher risk of anxiety about COVID-19 [16]. There is evidence that an increase in age is significantly associated with an increase in levels of anxiety [17]. Understanding that the pandemic constantly evolves highlights the importance of external factors affecting study results. These factors include changes in government policies, such as those related to public health measures and restrictions. For instance, changes in lockdown rules, testing plans, or vaccination programs can influence the number of COVID-19 cases and medical interns' workload and stress levels. Furthermore, variations in healthcare resources, such as the number of hospital beds or the availability of protective gear, can significantly impact medical interns' working conditions and stressors. Recognizing and considering these external factors is crucial for comprehensively understanding the study's findings. By recognizing and considering these external factors, this study gives a more complete picture of the relevant findings,

acknowledging the dynamic context within which medical interns navigate their responsibilities during the pandemic.

CONCLUSION AND RECOMMENDATIONS

Psycho-social disorders such as sadness, anxiety, and stress were shown to be shared among medical interns in this study. The COVID-19 pandemic itself is a dynamic and evolving situation, and external factors such as changes in government policies, healthcare infrastructure, and the severity of the pandemic may influence psychosocial outcomes among medical interns. These external factors should be considered when interpreting the study results. The outcomes of this study emphasize the significance of proper pandemic education and stress management strategies, which would be a top concern among aspiring doctors in such unfavorable pandemic scenarios. By incorporating mindfulness and relaxation techniques, interns can maintain composure amidst demanding schedules. Structured time management aids in workload balance. Simulations train for critical situations, boosting skills and self-assurance. Peer support groups offer a platform for experience sharing. Counseling services and mental health resources are crucial, promoting seeking support without judgment. Flexibility in rotations and frequent debriefings ease the emotional burden of complex cases. Resilience and coping education empower interns with practical strategies. These measures contribute to intern well-being and enhance patient care. The public health response to the COVID-19 outbreak must include safeguarding healthcare personnel for better preparedness for potential future waves of COVID-19 pandemics or other disasters.

FINANCIAL ASSISTANCE

Nil

CONFLICT OF INTEREST

The authors declare no conflict of interest

AUTHOR CONTRIBUTION

B. N. Surya designed the entire work. S. Vijayalakshmi, A. Hari Narayanan, Akshaya Radhakrishnan, Rehana Syed, S. Madhush Kumar, and B. N. Venkatesh contributed to making necessary corrections and revisions of the manuscript. All the authors checked the final draft.

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