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Prevalence and Predictors of Adjustment Disorder among Postgraduate Medical Residents in Puducherry

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KEYWORDS

Adjustment disorder, stress, mental health, behavioural symptoms

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Abstract

Background: Adjustment disorder is a stress-related mental health problem caused by emotional and behavioural reaction to identified stressors. Post-graduate medical residents facing work overload, academic pressure and perpetual stress states. Nonetheless, region specific for Puducherry is still limited.
Aim and Objective: To determine the prevalence and predictors of adjustment disorder among postgraduate medical residents in Puducherry and to assess their coping mechanisms.
Methods: A cross-sectional study was conducted among 410 postgraduate medical residents from the batches of 2022 and 2023 across medical colleges in Puducherry. Participants were selected using probability proportional to size sampling. Data were collected using a pre-validated semi-structured questionnaire MAD-MEDS scale© modified from ADNM 20 and DSM-5 criteria, assessing demographic details, Academic and Clinical stressors, emotional, cognitive, behavioural symptoms, and coping mechanisms using Frequency-based Likert scale. Data were analysed using IBM SPSS version 27. Descriptive statistics, Chi-square test, and multivariable logistic regression were applied to find the association.
Results: The prevalence of adjustment disorder was 44.6% containing high and severe distress, with 48.3% at moderate distress showing at risk of adjustment disorder. Academic and workload stress had the highest mean score, followed by emotional, cognitive, and behavioural domains. Significant predictors included increasing age (AOR=2.156; 95% CI: 1.03–4.52), female gender (AOR=4.034; 95% CI: 1.69–9.63), and year of study, with senior residents having lower odds (AOR=0.196; 95% CI: 0.046–0.84). Common symptoms among the residents include emotional exhaustion, irritability, poor concentration, and social withdrawal. Postgraduates follow coping strategies like mindfulness practices, peer discussion, and supportive work environments.
Conclusion: A high proportion of postgraduate residents experience adjustment disorder, mainly resulted by academic and workload stress. Early identification, structured mentorship, workload optimization, and institutional mental health support systems are essential to improve resident well-being.

INTRODUCTION

The term ‘adjustment disorder’, a stress-related mental health situation characterized by maladaptive emotional or behavioural responses to identifiable stressors. It is defined as an excessive emotional or behavioural reaction to a stressful event or life change occurring within three months of the stressor, resulting in impairment in functioning.[1] This aligns with psychiatric classifications that describe it as a maladaptive response during the process of adapting to significant life stress.

Globally, more than 1 billion people are living with mental health disorders, according to World Health Organization (WHO), with conditions such as anxiety and depression raises concerns mostly human and economic stability.[2] Mental disorders have been found to be a leading cause of diseases and years lived with disabilities. Even though adjustment disorder is not frequently noted as depression and anxiety, it is quite common in clinical practices, especially in cases where there is intense stress being experienced in the population. As per studies from around the world, it accounts approximately 5-20% among mental health outpatients.[3]

The National Mental Health Survey (NMHS) reports that nearly one in seven Indians suffer from mental illness, and the treatment gap is

between 70 and 80 percent. Disability-adjusted life years (DALYs), which highlight the significance of early identification, particularly in high-risk group populations, are the outcome of the effect.[4] In hospital settings, healthcare workers—particularly postgraduate medical residents, who are particularly vulnerable—work under tremendous strain as both providers and trainees. Persistent stress is caused by a number of factors, including long work hours, a high patient caseload, academic demands, and medico-legal concerns.[5,6] Adjustment disorder is typically underdiagnosed because burnout frequently coexists with disorders related to stress.[7] High academic pressure and workload, loneliness, a lack of support, financial stress, low resilience, a lack of social connections, and inadequate coping mechanisms are the seven associated factors.[8]

Despite there is raise in awareness, only limited region-specific data on adjustment disorder among residents in India, particularly in Puducherry. Hence, this study was done to determine the prevalence and key predictors of adjustment disorder among the postgraduate medical residents in Puducherry. This study also assessed the coping mechanisms employed by postgraduate residents to manage stress, including social support, time management, exercise, and mindfulness practices.

Materials and Methods:

A cross-sectional study was conducted among postgraduate medical residents in all medical colleges of Puducherry over a duration of six months from the time of obtaining approval from the Institutional Ethics Committee (IEC) (Reg No: EC/NEW/INST/2024/PY/0418, NECRBHR, DHR, GOI). The study population comprised postgraduate medical residents enrolled in the 2022 and 2023 academic batches. The sample size was calculated using the standard formula $n = Z^2pq/d^2$. The prevalence (p) was taken as 90% based on findings from a pilot study conducted among 30 participants, with $q = 1 - p$. In a 95% confidence level with an absolute precision of 3%, it was estimated to be 384. Adjusting for the 5% non-response rate, the sample size was 404, further rounded off to get 410 participants. The Probability Proportional to Size (PPS) method of sampling was used to make sure that each medical college had representative samples depending on the number of residents who qualified. The study included postgraduate residents from the chosen batches and those who provided informed consent. Because the questionnaire was intended to evaluate stressors and experiences during the previous six months, residents with less than six months of training experience were removed, as were those who refused to give their consent. A pre-defined, pre-validated, semi-structured questionnaire called the MADMEDS Scale (Modified Adjustment Disorder for Medical Students Scale) was used to collect data. It was based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and the Adjustment Disorder New Module (ADNM-20). The questionnaire consisted of six domains with six questions in each domains: A - Demographic details; B - Academic and Clinical stressors; C - Emotional symptoms; D - Behavioural symptoms; E - The impact on performance and well-being and F - Coping mechanisms and support systems. Each domain is scored on a 5-point Frequency based Likert scale. At the end of the questionnaire using the following scores: Never = 1, Rarely = 2, Sometimes = 3, Often = 4, and Always = 5. Questions with reverse scoring are marked (R) and scored only for the reversed questions during data collection. Each domain has a range of 6 to 30, and the total score is between 30 and 150. A score of 30 = No distress, 31–60 = Mild distress, 61–90 = Moderate distress, 91–120 = High distress, and 121–150 = Severe distress. An online survey platform was created for the study to collect data. The questionnaire was entered and designed for the participants as they receive a unique final score and percentage as soon as they submit their form. This way, participants would receive immediate feedback and accurate scores. The validity of the tool was checked by subject experts from the departments of Community Medicine and Psychiatry for relevance, clarity and comprehensiveness. Necessary modifications were done. The Scale-level Content Validity Index (S-

CVI) was found to be 0.89, indicating excellent content validity. Reliability of the questionnaire was assessed by conducting a pilot study among 30 non-subjects resulting a Cronbach's alpha value of 0.972, indicating excellent internal consistency. Copyright was reserved for the questionnaire.

STATISTICAL ANALYSIS

Data entered was analysed using IBM SPSS Statistics version 27.0. Descriptive statistics were summarized using frequencies, percentages, means, and standard deviations. Associations between categorical variables were assessed using the Chi-square test. Variables found to be significant in bivariate analysis were entered into a multivariable logistic regression model to identify independent predictors of adjustment disorder. Adjusted odds ratios (AORs) with 95% confidence intervals were reported. Model fitness was assessed using the Hosmer – Lemeshow goodness-of-fit test and statistical significance was considered at $p < 0.05$.

RESULTS

A total of 410 postgraduate medical residents were participated in the study. Majority belonged to the age group of 26–30 years (68.29%), followed by participants aged more than 30 years (18.29%) while only 13.41% were between 21–25 years of age. Female participants were slightly higher proportion (53.90%) compared to males (46.10%). With respect to marital status, most participants were unmarried (65.37%). A very small proportion of participants was divorced (0.49%) or separated (0.24%). From the year of residency, most respondents belong to year 2023 batch (73.90%), while 26.10% were from the 2022 batch. (Table 1)

Table 1: Sociodemographic Characteristics of the study partcipants (n = 410)

Variable	Category	n (%)
Age group (years)	≤25	55 (13.4)
	26–28	176 (42.9)
	≥29	179 (43.7)
Gender	Male	189 (46.1)
	Female	221 (53.9)
Year of joining	2nd (2023)	303 (73.9)
	3rd (2022)	107 (26.1)
Marital Status	Unmarried	268 (65.4)
	Married	139 (33.9)
	Divorced	2 (0.5)
	Separated	1 (0.2)
Residence during PG	Day scholar	256 (62.4)
	PG quarters	150 (36.6)
	Quarters	4 (1.0)

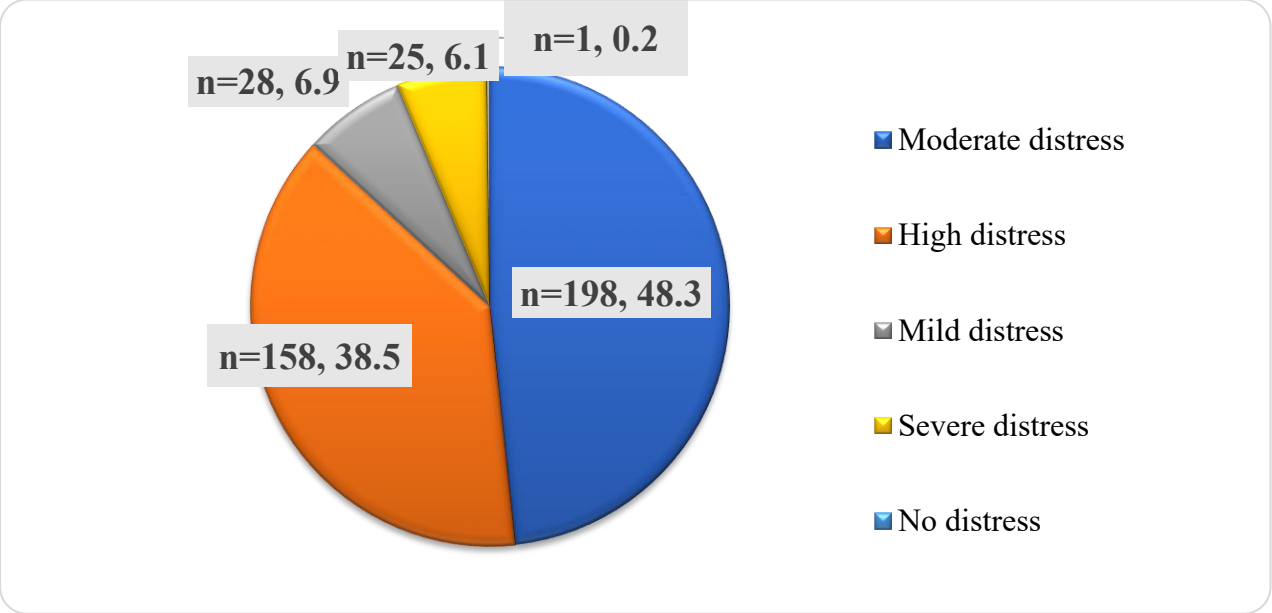

Figure 1: Prevalence of adjustment disorder among the participants

Among the participants, majority show moderate distress (48.3%) followed by high distress (38.5%). Mild distress was noted in 6.8% while severe distress for 6.1% of participants. Very few (0.2%) reported to have no distress. These findings indicate that majority of postgraduate residents experienced significant level of distress. The overall prevalence of adjustment disorder, calculated by combining participants with high and severe distress, was 44.6%, while 48.3% of residents were classified as being at risk of adjustment disorder. (Fig. 1)

Table 2: Predictors of Adjustment Disorders among the participants (n=410)

Domain	Indicator Assessed	Never n (%)	Rarely n (%)	Sometimes n(%)	Often n (%)	Always n (%)
Academic and Clinical Stressors	Clinical workload burden	63 15.37	74 18.05	106 25.85	82 20.00	85 20.73
	Difficulty adapting with curriculum demands	66 16.10	67 16.34	107 26.10	91 22.20	79 19.27
	Adjustment to new clinical environments	82 20.00	84 20.49	119 29.02	54 13.17	71 17.32
	Workplace victimization or harassment	89 21.71	88 21.46	72 17.56	71 17.32	90 21.95
	Stress related to patient care and decision-making	85 20.73	95 23.17	104 25.37	48 11.71	78 19.02
	Academic fatigue and disengagement	64 15.61	69 16.83	96 23.41	104 25.37	77 18.78
Emotional Symptoms	Emotional exhaustion and overwhelm	65 15.85	75 18.29	94 22.93	96 23.41	80 19.51
	Sadness, frustration, and performance-related worry	63 15.37	71 17.32	107 26.10	98 23.90	71 17.32
	Stress-related crying episodes	92 22.44	74 18.05	91 22.20	80 19.51	73 17.80
	Emotional numbness or detachment	75 18.29	93 22.68	94 22.93	84 20.49	64 15.61
	Stress-related irritability and anger	73	77	101	81	78

		17.80	18.78	24.63	19.76	19.02
	Self-perceived performance-related guilt	68 16.59	82 20.00	99 24.15	77 18.78	84 20.49
Cognitive Symptoms	Difficulty concentrating	80 19.51	94 22.93	84 20.49	84 20.49	68 16.59
	Forgetfulness and task tracking difficulties	70 17.07	100 24.39	89 21.71	85 20.73	66 16.10
	Excessive worry about future prospects	60 14.63	83 20.24	86 20.98	94 22.93	87 21.22
	Feelings of hopelessness	76 18.54	80 19.51	98 23.90	82 20.00	74 18.05
	Thoughts of worthlessness	95 23.17	83 20.24	86 20.98	79 19.27	67 16.34
	Perceived lack of control over events	82 20.00	97 23.66	91 22.20	67 16.34	73 17.80
Behavioural Changes and Impact on Performance	Impaired academic performance	77 18.78	94 22.93	106 25.85	67 16.34	66 16.10
	Impaired clinical performance	108 26.34	91 22.20	87 21.22	63 15.37	61 14.88
	Strained interpersonal relationships	93 22.68	80 19.51	117 28.54	69 16.83	51 12.44
	Perceived deterioration in physical health	75 18.29	77 18.78	96 23.41	92 22.44	70 17.07
	Use of unhealthy coping behaviours/substances	157 38.29	66 16.10	71 17.32	63 15.37	53 12.93
	Social withdrawal and isolation	84 20.49	103 25.12	96 23.41	71 17.32	56 13.66

Table 2 indicates the frequency distribution of responses to questionnaires that assess the academic and clinical, emotional, cognitive and behavioural manifestations of stress in postgraduate medical students. It is apparent that on most of the items response was centered in either the 'sometimes' (approximately 20-29%) and/or the 'often/always' (approx. 30-45%) options, suggesting that there was at least a moderate level of stress. The academic and clinical items on this questionnaire reflected a variety of stressors that were seen often: excessive demands of the curriculum and the workload; trouble keeping up with them respectively. It appears that the academic and clinical workload were a major concern, contributing to the feelings students were having. In terms of the psychological symptoms of stress, the students experienced feelings of fatigue, worried and fearful of future events, feeling irritable and also guilt. They experienced significant emotional distress due to academic and clinical pressure. Regarding the cognitive and behavioural symptoms, it appears that the students were also significantly stressed as most reported including poor concentration, forgetfulness, and excessive concern about the future, as well as how they performed academically and clinically, their interactions with family and friends, and their physical condition and withdrew from social interaction. They also seemed to use many of the dysfunctional behaviours such as substance use as well.

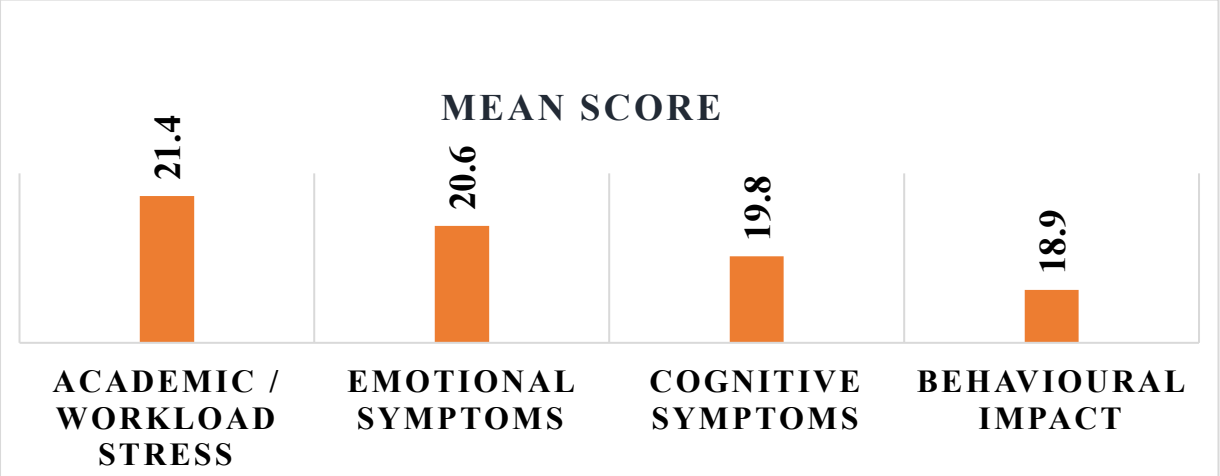

Figure 2: Domain-wise Distress Scores among Postgraduate Residents (n = 410)

In Figure 2 domain-wise mean scores of adjustment disorder related symptoms show Academic/workload stress has the highest mean score of 21.4 ± 4.5 followed by Emotional symptoms with a mean score of 20.6 ± 4.7, indicating a considerable emotional burden. Cognitive symptoms demonstrated a mean score of 19.8 ± 4.6 , reflecting substantial disturbances in concentration, thinking, and mental functioning, Behavioural symptoms had a mean score of 18.9 ± 4.8, indicating that the psychological distress experienced by the participants was also reflected through noticeable behavioural changes. Overall, the findings reveal that adjustment disorders are highly prevalent with the major cause being academic and workload stress along with other significant emotional, cognitive, and behavioural components in postgraduate medical residents.

Table 3 - Multivariate Logistic Regression Analysis Showing Predictors of Adjustment Disorder

Variable	B	SE	Wald	df	p value	Adjusted Odds Ratio (Exp B)	95% CI
Age	0.768	0.375	4.20	1	**0.040***	2.156	1.03–4.52
Gender	1.395	0.443	9.92	1	**0.002***	4.034	1.69–9.63
Year of study	-1.630	0.747	4.76	1	**0.029***	0.196	0.046–0.84

P value < 0.05 was considered statistically significant.

Table 3 shows multivariate logistic regression of the factors associated with adjustment disorders among the participants show that increasing age shows positive correlation with adjustment disorder (B = 0.768, p = 0.040) and the participants in the higher age group experienced 2.156 higher odds of having Adjustment disorders (95% CI: 1.03–4.52). Amongst gender, females had the four times higher odds of developing adjustment disorder compared to their male counterparts (B = 1.395, p = 0.002), (AOR = 4.034; 95% CI: 1.69–9.63). Year of study demonstrated a negative association with adjustment disorder which was statistically significant (B = −1.630, p = 0.029), the students in the final academic year had lower odds of adjustment disorder compared to the reference year (AOR = 0.196; 95% CI: 0.046–0.84). This attributes to the fact that the students in the final year are of lesser clinical and departmental duties.

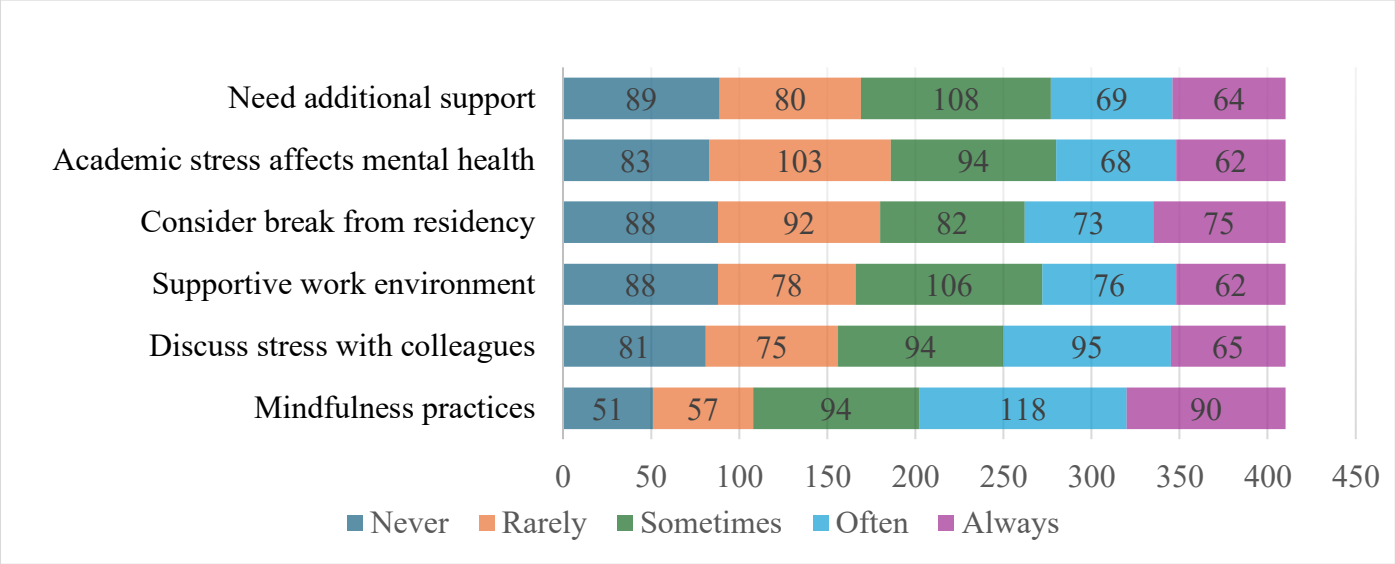

Figure 3: Coping mechanisms and support systems among residents

In figure 3 the participants had used multiple personal coping strategies and support systems at workplace in managing stress during residency. Mindful practice was the most used coping strategies, where most of the participants responded as "Often" and "Always", followed by "discussing stress with colleagues" and "supportive work environment". Meanwhile many residents reported, Academic stress has adversely affected their mental health and expressed the necessity for additional support. When it comes to "taking a break from residency" a notable number of students responded considering this method.

DISCUSSION

The present study assessed the prevalence of adjustment disorder and its associated factors among postgraduate medical residents. This study shows the majority of participants belonged to the age group of 26–28 years. Similar findings were seen in the study conducted by Grover et al, where most of the participants were young and reported considerable emotional exhaustion, burnout and psychological morbidity among medical professionals, highlighting the emotional burden associated with medical training and clinical work.[9] The female participants were slightly higher compared to males which is similar to the study done by Prakash S. which shows (64.8%) female participants.[10] Similarly, a cross-sectional study conducted by Agarwal et al. found that 67% of first year MBBS students had adjustment disorder using ADNM-20 scale.[11] This is quite a higher rate compared to the current study in which the prevalence of adjustment disorder (based on high and severe distress) was 44.6% and 48.3% more residents were at moderate risk.

According to a cross-sectional institute-based study by Fernandes et al., first-year undergraduate students had a high prevalence of adjustment issues, indicating a significant psychological burden during the initial stages of medical education.[12] This result is consistent with the current study, which found that 48% of participants had moderate adjustment issues, 33% had mild issues, and 19% had severe issues. According to research by R. K. Bansal et al., 73% of Western Indian postgraduate medical residents reported high levels of stress related to their clinical and academic obligations.[13] The majority of postgraduate residents in Karnataka reported moderate psychological distress due to academic burden, extended work hours, sleep loss, and emergency responsibilities.[14] If untreated, moderate stress is the most harmful since it will eventually escalate to a high degree of distress. Additionally, Pallavi Rao et al. found that 72% of resident physicians had significant levels of stress.[15]

According to a cross-sectional study conducted by Abinesh R. et al. among IT workers who work from home, stress is more common (60.66%), with 8.6% of participants experiencing severe stress.[16] While postgraduate residents experienced stress from their clinical responsibilities and extended work hours, IT professionals experienced stress from working from home. Both findings highlight the necessity for early intervention by showing a similar burden of psychological distress despite varied contexts.

Academic and workload stress received the highest mean score of any domain in the current study's domain-wise analysis. Excessive academic responsibilities, ongoing assessments, patient care responsibilities, and long working hours are major contributors to adjustment problems among residents, which explains the highest mean score in academic and workload stress. This is consistent with a study by West et al. that found sleep deprivation and workload burden to be major predictors of psychological stress among medical residents.[17] According to a study conducted by Ali Awadallah Saeed et al. among medical students in Sudan during the COVID-19 pandemic and civil war, there were noticeable cognitive disorders, problems focusing and making decisions, negative thought patterns, and behavioral disorders like social disengagement, sleep disturbance, and academic decline.[18]

The present study highlighted that the most commonly used coping strategies were those involving mindfulness, discussion with friends and conducive workplace. A similar study had been done by Harish Kulkarni et al. wherein the residents seemed to use active coping, emotional support, planning, positive reframing and acceptance as ways of coping with the stressors.[19] Amey Joshi et al. were of the view that interaction with friends, social support, behavioural coping strategies, etc were predominantly used to overcome stressors at the workplace by residents, however, there was evidence of unhealthy coping as well.[20] Sujata Sethi et al. identified a predominance of emotion-focused and coping strategies using the Brief COPE Questionnaire containing 14 scales.[21] In contrast to the present study, coping was assessed by asking questions directly about the coping strategies and support available regarding mindfulness practices, asking about help from colleagues or therapists, taking a break during the residency program, and supportive work environment. The results showed variability in coping behaviours, poor support seeking, and high perception of need for more help among the residents. Recently a study conducted in Maharashtra, Sainath Gore et al. reported that post-graduate residents employed both adaptive and maladaptive mechanisms of coping, and academic load and emergency work were dominant factors influencing the behaviour.[22] Similarly, Singh et al. reported the stress in residents in North India were said to be influenced by emotional regulation and interpersonal interactions.[23]

Conclusion:

The study revealed a substantial burden of adjustment disorder among postgraduate medical residents in Puducherry as assessed using the MAD-MEDS scale, with 44.6% classified as having adjustment disorder and 48.3% at moderate risk. Academic and workload stress emerged as the major contributors, followed by emotional, cognitive, and behavioural stress. Increasing age and female gender were significant predictors, while senior Postgraduates had lower odds of adjustment disorder. The findings highlight the need for regular mental health screening, structured mentorship, workload optimization and supportive institutional measures to promote resident well-being.

RECOMMENDATIONS

Workload optimization, Periodical mental health screening, stress-management training, structured mentorship programmes should be incorporated into postgraduate medical education to promote resident well-being. Resident welfare should be prioritized within postgraduate training policies. Institutions should strengthen support

systems and ensure adequate opportunities for coping and resilience building.

LIMITATIONS

Social desirability and recall bias may have affected the answers because the data were gathered through self-reported surveys. The study's limited generalizability stems from its location in Puducherry. Instead of utilizing a psychiatric diagnostic to diagnose adjustment disorder, a screening tool was used, and potential confounders such personality features, past mental illness, and institutional inequalities were not taken into consideration. Additionally, factor analysis was not used to evaluate the construct validity of the MAD-MEDS scale.

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