Original Article

Prevalence of Perceived Stress and Its Psychological Outcomes and Associated Coping Styles Among Medical Interns in A Tertiary Care Centre in India – A Cross-Sectional Study

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Abstract

Background: Medical internship is a critical stage of professional training characterised by high clinical responsibility and demanding workloads, often resulting in significant psychological stress. However, evidence regarding perceived stress, its psychological consequences, and coping mechanisms among medical interns in India remains scarce. **Material and Methods:** A cross-sectional study was conducted among 114 medical interns at a tertiary care teaching hospital in India. Perceived stress, anxiety, depression, and coping strategies were assessed using the Perceived Stress Scale-10 (PSS-10), Generalized Anxiety Disorder-7 (GAD-7), Patient Health Questionnaire-9 (PHQ-9), and BRIEF-COPE, respectively. Perceived stress was categorised into low, moderate, and high levels. Associations were evaluated using Spearman's correlation and the Kruskal–Wallis test with effect size estimation (η^2). Multivariable linear regression analysis was performed to control for sociodemographic confounders. **Results:** 72.8% of interns reported moderate-to-high perceived stress. Perceived stress demonstrated strong positive correlations with anxiety ($\rho = 0.62$, $p < 0.001$) and depression ($\rho = 0.66$, $p < 0.001$). Anxiety scores differed significantly across stress categories ($H = 31.41$, $p < 0.001$), with a large effect size ($\eta^2 = 0.27$). Depressive symptoms did not differ significantly across categorical stress levels ($H = 0.78$, $p = 0.678$). Adaptive coping strategies showed inverse associations with psychological distress, whereas avoidant coping strategies, particularly self-blame and behavioural disengagement, were strongly associated with higher anxiety and depression. After adjustment, perceived stress remained independently associated with anxiety ($\beta = 0.48$, $p < 0.001$) and depression ($\beta = 0.52$, $p < 0.001$). **Conclusion:** Perceived stress is highly prevalent among medical interns and is closely linked to adverse psychological outcomes. Strengthening adaptive coping strategies may help reduce mental health burden during internship training.

Keywords: Perceived stress; Medical interns; Anxiety; Depression; Coping strategies.

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Introduction

Stress is a multidimensional response that arises when individuals perceive that environmental demands exceed their adaptive capacity. The United States National Institute for Occupational Safety and Health has defined workplace stress as "the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, responses, or needs of the worker".[1,2]

Stress at the workplace is a substantial and growing concern for healthcare workers, especially medical interns, as internships constitute a transitional period marked by increased responsibility and reduced supervision compared to undergraduate training. Individual characteristics, including age, gender, personality traits, emotional resilience, social support, and prior exposure to stressors, influence variability in stress perception among interns. Persistent or excessive stress may contribute to psychological, behavioural, and cognitive disturbances, potentially compromising professional efficiency and quality of patient care.[3,4]

Physiological stress responses involve activation of the hypothalamic–pituitary–adrenal (HPA) axis, leading to glucocorticoid secretion. Dysregulation of these mechanisms has been implicated in stress-related psychiatric conditions, including anxiety and depressive disorders. In addition to biological pathways, psychosocial stressors and maladaptive behavioural responses further increase vulnerability to psychological morbidity.[5-9]

Coping strategies play a pivotal role in moderating the impact of stress on mental health. Problem-focused and emotion-focused coping strategies are generally associated with better psychological outcomes, whereas avoidant coping behaviours

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are linked to increased emotional distress.[10] However, there is a gap in the existing literature regarding the stress perceived by medical interns and the coping styles they use.

Aim: The present study was undertaken to assess the prevalence of perceived stress among medical interns, examine its association with anxiety and depression, and evaluate the coping strategies employed in response to occupational stress.

Objectives

1. To assess the prevalence of perceived stress among medical interns and associated psychiatric disorders
2. To determine the association between perceived stress and coping styles among medical interns

Materials and Methods

A cross-sectional questionnaire-based study was conducted at the Department of Psychiatry, Koppal Institute of Medical Sciences, Koppal. The study was conducted from April 2022 to June 2022, following approval from the Institutional Ethics Committee. The study population consisted of all interns on compulsory rotatory internship during the study period, posted in all clinical and para-clinical departments of the tertiary care hospital attached to our institution. Participants were briefed on the purpose of the study and provided informed consent. Participation was voluntary, and confidentiality and anonymity were ensured throughout the study.

Inclusion criteria: All the interns who have given consent for the study.

Exclusion criteria: Incompletely filled questionnaires and interns who have not consented to the study.

Tools:

1. Perceived stress scale-10(PSS-10): It is a 10-item, self-reported questionnaire designed to measure the degree to which situations in one's life are appraised as stressful. It is rated on a Likert scale of 0-4 with <13 – low perceived stress, 14-26 – moderate, and >27 – severe.
2. Generalised Anxiety Disorder-7(GAD-7) scale: GAD-7 is a self-reported questionnaire rated on a Likert scale of 0-3. Severity is rated with a score of <4 -minimal, 5-9 – mild, 10-14 – moderate, and >15 – severe.
3. Physical health questionnaire-9(PHQ-9): PHQ-9 is a self-rated questionnaire consisting of 9 items rated on a Likert scale of 0-3. Grading ranges from 0-4 (minimal), 5-9 (mild), 10-14 (moderate), 15-19 (moderately severe), and >20 (severe).
4. BRIEF-COPE questionnaire: The BRIEF-COPE questionnaire is an instrument consisting of 28 items that measure 14 factors, each with 2 items, corresponding to a Likert scale ranging from 0 (I have not been doing this at all) to 3 (I have been doing this a lot).

Demographic data, including age, gender, department, and exposure to workplace violence, were collected. Validated self-administered questionnaires, including the PSS-10, GAD-7, PHQ-9, and BRIEF-COPE, were used to assess perceived stress, anxiety, depression, and coping strategies among participants.

Data were collected through Google Forms, and the link was shared through WhatsApp and Gmail. Instructions were given to all participants to complete the questionnaire independently, and each was permitted to submit only one response.

The collected data were exported to Google Sheets, checked for completeness, and non-consented forms and forms with incomplete responses were excluded from the final analysis.

The sample included 114 interns out of 142, who were included in the study analysis following exclusion. Data analysis was done using SPSS software version 27. Descriptive statistics were used to summarise the data, which were expressed as frequencies and percentages. Inferential statistics were performed using the Kruskal-Wallis test, and the p-value of <0.05 was considered significant. Spearman correlation test(ρ) was used to analyse the association between perceived stress and coping styles.

Results

Data collected from 114 interns were included in the analysis. Sociodemographic data are represented in [Table 1]. The majority of interns were aged 23–25 years (85.08%), with a near-equal gender distribution (49.12% females, 50.88% males).

Table 1: Sociodemographic data

Variable	Frequency	Percentage
Age		
18-22	12	10.53
23-25	97	85.08
26-32	05	4.39
Gender		
Female	56	49.12
Male	58	50.88
Department		
Radiology	2	1.75
Surgery	14	12.3
Psychiatry	10	8.8
Psm	14	12.3
Paediatrics	4	3.5
Medicine	31	27.2
Obg	15	13.15
Casualty	8	7.00
Anaesthesia	3	2.6
Orthopaedics	1	0.8
Fmt	5	4.4

Ophthalmology	6	5.3
Ent	1	0.8
Total	114	100

Prevalence of perceived stress among the 114 subjects is shown in [Table 2]. The mean PSS score among participants was 17.4 ± 8.1. 72.8% of the participants had moderate to high stress.

Table 2: Prevalence of perceived stress among medical interns

Stress category	Frequency(n)	Percent (%)	Mean score (95% CI)
Low stress	31	27.2	17.4 +/- 8.1
Moderate stress	59	51.8	
High stress	24	21.0	

A statistically significant association was observed between perceived stress and both anxiety and depression ($p<0.001$) using the Kruskal-Wallis test [Table 3]. The Kruskal-Wallis H statistic for anxiety was 31.41 with an effect size of 0.27, indicating a strong association. However, for depression, the H statistic was 0.78 with an effect size of 0.00, indicating a weak association. [Table 3, Figure 1].

Table 3: Association between perceived stress, anxiety, and depression

Perceived stress level	n (%)	GAD-7 Mean ± SD	GAD-7 H-statistic	PHQ-9 Mean ± SD	PHQ-9 H-statistic
Low stress	31 (27.2)	2.3 ± 3.1	31.41	2.1 ± 2.8	0.78
Moderate stress	59 (51.8)	6.6 ± 5.3		6.4 ± 5.4	
High stress	24 (21.0)	13.5 ± 4.9		14.9 ± 6.1	

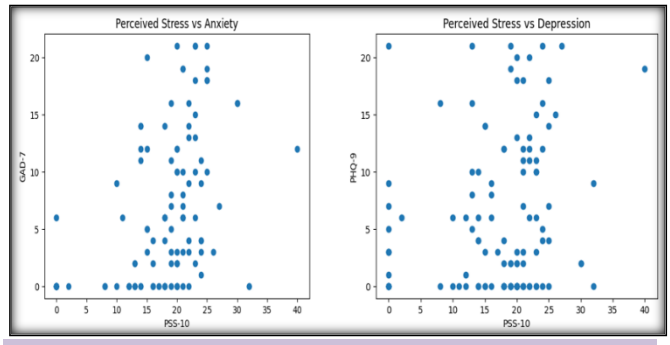

Figure 1: Correlation between perceived stress, anxiety, and depression

Table 4 demonstrates the correlation between perceived stress (PSS-10), anxiety (GAD-7), depression (PHQ-9), and coping styles. Participants employing problem-focused and emotion-focused coping strategies exhibited better stress management compared to those adopting an avoidant coping style. Consistent with these findings, Figure 2 shows that 48.22% of participants predominantly used problem-focused coping, 39.50% used emotion-focused coping, and only 12.28% relied on avoidant coping strategies.

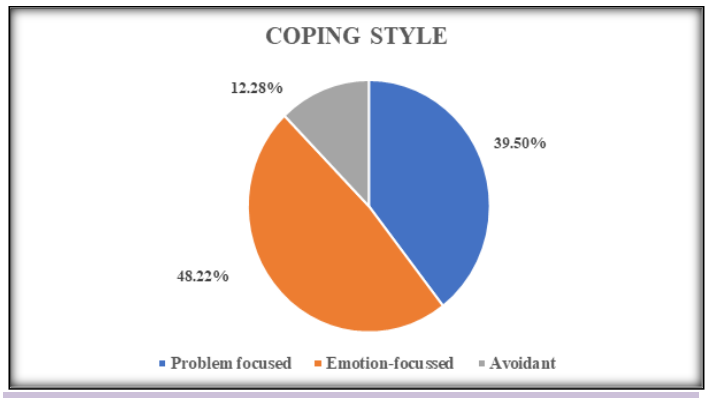

Figure 2: Distribution of coping strategies used by medical interns

Table 4: Correlation between perceived stress, anxiety, depression, and coping styles

Coping subscale	PSS-10 (ρ)	p	GAD-7 (ρ)	p	PHQ-9 (ρ)	p
Problem-focused coping style						
Active coping	−0.29	0.004	−0.26	0.008	−0.30	0.003
Planning	−0.27	0.006	−0.24	0.013	−0.27	0.006
Emotion-focused coping style						
Positive reframing	−0.34	<0.001	−0.31	0.002	−0.33	<0.001
Acceptance	−0.26	0.009	−0.23	0.017	−0.26	0.009
Emotional support	−0.21	0.031	−0.19	0.049	−0.22	0.024
Avoidant-focused coping style						
Self-distraction	0.18	0.064	0.22	0.021	0.21	0.028
Venting	0.28	0.004	0.31	0.002	0.33	0.001
Denial	0.33	<0.001	0.36	<0.001	0.38	<0.001
Behavioral disengagement	0.41	<0.001	0.44	<0.001	0.46	<0.001
Substance use	0.36	<0.001	0.39	<0.001	0.42	<0.001
Self-blame	0.45	<0.001	0.48	<0.001	0.5	<0.001

Multivariate linear regression was performed to adjust for potential confounding variables, including age, gender,

department, and internship duration. As shown in [Table 5], perceived stress demonstrated a significant positive association with anxiety (β = 0.48; 95% CI: 0.36 - 0.60; p < 0.001) and depression (β = 0.52; 95% CI: 0.40 - 0.64; p < 0.001).

Table 5: Multivariate linear regression

Predictor	Anxiety (GAD-7) β (95% CI)	p-value	Depression (PHQ-9) β (95% CI)	p-value2
Perceived stress (PSS-10)	0.48 (0.36–0.60)	<0.001	0.52 (0.40–0.64)	<0.001
Age	−0.06 (−0.14–0.02)	0.132	−0.04 (−0.12–0.04)	0.312
Gender	0.09 (−0.04–0.22)	0.178	0.12 (−0.01–0.25)	0.071
Department	0.11 (−0.03–0.25)	0.121	0.10 (−0.05–0.24)	0.181
Internship duration	0.07 (−0.05–0.19)	0.249	0.08 (−0.04–0.20)	0.193

Discussion

The present study examined the prevalence of perceived stress among medical interns and its association with anxiety, depression, and coping styles. The findings highlight a high burden of psychological distress during internship and underscore the role of coping strategies in moderating stress-related outcomes.

Our study found a prevalence of moderate to high perceived stress among medical interns of 72.8%, with a mean score of 17.4 ± 8.1, which is similar to a study by Lee et al.[11]

Subjects with moderate to high perceived stress have been found to develop anxiety disorders, which is similar to a cohort study in Denmark, suggesting that repeated exposure to stress can lead to stress-related disorders such as Post-Traumatic Stress Disorder (PTSD) and adjustment disorders. Etc.[12] Recently, a cohort study has found that subjects who are exposed to repeated stress are at an increased risk of developing depressive disorders, which is similar to our study findings, however, with a smaller effect size.[13]

Recent literature shows that subjects who are exposed to repeated trauma can have increased odds of developing depression, as reported by the National Epidemiologic Survey on Alcohol and Related Conditions.[14] Our study findings strengthen the existing literature and underscore the need for intervention among healthcare professionals, especially medical interns.

In contrast, depressive symptoms did not differ significantly across categorical perceived stress levels in the Kruskal-Wallis analysis. However, perceived stress showed a significant independent association with depressive symptom severity in the multivariable linear regression model. This apparent discrepancy is likely attributable to methodological differences between the analyses. While categorical comparisons may lack sensitivity to detect subtle gradations in depressive symptom severity, regression analyses using continuous measures are better suited to capture linear associations across the full spectrum of symptoms. These findings suggest that depressive symptoms may increase proportionally with increasing stress levels rather than manifesting as distinct differences across stress categories. Similar observations have been reported in longitudinal cohort studies, where chronic stress exposure has been shown to predict depressive symptoms over time, although with smaller effect sizes compared to anxiety.[15]

In the present study, we also observed that active coping and acceptance are positively related to well-being and negatively related to stress. Therefore, they can be considered as adaptive coping styles.[16] Thus, these two coping styles have found to be beneficial during negative circumstances. However, self-blaming, behavioural disengagement, and substance use have a negative relation with well-being and a positive relation with stress, so that they can be considered as maladaptive coping styles.[17] Domains such as self-blaming, behavioural disengagement, and substance use have a direct relation with the indicators of psychiatric disorders such as PTSD and depression, etc.[18] We have also found that people under stress benefit from social support, similar to Cohen and Wills' study.[19]

We also conducted a multivariate analysis to control for confounders, which showed that subjects with moderate to high perceived stress have a significant effect on psychological well-being.

Limitations: The study has certain limitations. Its cross-sectional design restricts causal interpretation. The single-centre setting and modest sample size may limit external validity. Additionally, reliance on self-reported measures and online data collection may have introduced response bias.

Conclusion

Medical interns experience a high burden of perceived stress, which is significantly associated with anxiety and depressive symptoms. Adaptive coping strategies appear to offer protective benefits, whereas avoidant coping behaviours are linked to adverse psychological outcomes. Integrating structured stress-management programs and mental health support into internship training may improve psychological well-being and professional functioning.

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Conflicts of interest

There are no conflicts of interest.

References

1. Leka S, Griffiths A, Cox T. Systematic Problem Approaches for Employers, Managers and Trade Union Representatives (Protecting Workers' Health Series No. 3) Geneva: Word Health Organization; 2003. Work Organization and Stress.
2. Stress at Work. Cincinnati, OH: US Department Health and Human Services; 1999. National Institutes for Occupational Safety and Health. (NIOSH)
3. Ugoji EI. Managing administrative stress in educational institutions: A study of selected Nigerian universities. J Niger Delta Res. 2003;5:90–9.
4. Al-Yousuf M, Akerele TM, Al-Mazrou YY. Organization of the Saudi health system. East Mediterr Health J. 2002;8:645–53

5. Yaribeygi H, Panahi Y, Sahraei H, Johnston TP, Sahebkar A. The impact of stress on body function: A review. EXCLI J 2017; 16: 1057-72.
6. McEwen B. S., Akil H., Revisiting the stress concept: Implications for affective disorders. J. Neurosci. 40, 12–21 (2020), 10.1523/JNEUROSCI.0733-19.2019.
7. e Kloet E. R., Meijer O. C., de Nicola A. F., de Rijk R. H., Joëls M., Importance of the brain corticosteroid receptor balance in metaplasticity, cognitive performance and neuro-inflammation. Front. Neuroendocrinol. 49, 124–145 (2018), 10.1016/j.yfrne.2018.02.003
8. Penner-Goeke, Signe, et al. "High-Throughput Screening of Glucocorticoid-Induced Enhancer Activity Reveals Mechanisms of Stress-Related Psychiatric Disorders." Proceedings of the National Academy of Sciences of the United States of America, vol. 120, no. 49, 27 Nov. 2023.
9. Hedayati Emam G, Alimohammadi H, Zolfaghari Sadrabad A, Hatamabadi H. Workplace Violence against Residents in Emergency Department and Reasons for not Reporting Them; a Cross Sectional Study. Emerg (Tehran). 2018;6(1):e7. Epub 2018 Jan 16. PMID: 29503832; PMCID: PMC5827053.
10. O. Ogoma, Shadrack. "Problem-Focused Coping Controls Burnout in Medical Students: The Case of a Selected Medical School in Kenya." JOURNAL of PSYCHOLOGY & BEHAVIORAL SCIENCE, vol. 8, no. 1, 2020.
11. Lee ES, Tan SY, Lee PSS, Koh HL, Soon SWW, Sim K, Tang WE, Chong PN. Perceived stress and associated factors among healthcare workers in a primary healthcare setting: the Psychological Readiness and Occupational Training Enhancement during COVID-19 Time (PROTECT) study. Singapore Med J. 2022 Jan;63(1):20-27. doi: 10.11622/smedj.2020163. Epub 2020 Dec 2. PMID: 33264830; PMCID: PMC9251218.
12. Gradus JL, Bozi I, Antonsen S, et al. Severe stress and adjustment disorder diagnoses in the population of Denmark. J Trauma Stress. 2014;27(3):370–374. doi: 10.1002/jts.21926.
13. Breslau N, Davis GC, Peterson EL, Schultz LR. A second look at comorbidity in victims of trauma: the posttraumatic stress disorder–major depression connection. Biol Psychiatry. 2000;48(9):902–909. doi: 10.1016/s0006-3223(00)00933-1.
14. Pietrzak RH, Goldstein RB, Southwick SM, Grant BF. Prevalence and axis I comorbidity of full and partial posttraumatic stress disorder in the United States: results from wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. J Anxiety Disord. 2011;25(3):456–465. doi: 10.1016/j.janxdis.2010.11.010.
15. Spencer-Segal J. L., Akil H., Glucocorticoids and resilience. Horm. Behav. 111, 131–134 (2019), 10.1016/j.yhbeh.2018.11.005
16. Meyer B. Coping with severe mental illness: Relations of the Brief COPE with symptoms, functioning, and well-being. Journal of Psychopathology and Behavioral Assessment. 2001;23(4):265–277. doi: 10.1023/A:1012731520781.
17. Doron J, Trouillet R, Gana K, Boiché J, Neveu D, Ninot G. Examination of the hierarchical structure of the Brief COPE in a French sample: Empirical and theoretical convergences. Journal of Personality Assessment. 2014;96(5):567–575. doi: 10.1080/00223891.2014.886255.
18. Drury J, Williams R. Children and young people who are refugees, internally displaced persons or survivors or perpetrators of war, mass violence and terrorism. Current Opinion in Psychiatry. 2012;25(4):277–284. doi: 10.1097/YCO.0b013e328353eea6
19. Cohen S, Wills TA. Stress, social support, and the buffering hypothesis. Psychological Bulletin. 1985;98(2):310–357. doi: 10.1037/0033-2909.98.2.310.