

Mental Health Challenges, Stress, and Coping Mechanisms Among Medical Students and Interns: A Systematic Review.

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Abstract

Background: Mental health challenges among medical students and interns have become a growing concern due to the demanding nature of medical education and training. High levels of academic pressure, clinical responsibilities, and prolonged working hours contribute to increased psychological distress, including depression, anxiety, and burnout. These issues not only affect personal well-being but also influence academic performance and quality of patient care. **Objective:** This Systematic review aims to assess the prevalence of mental health problems, identify key stressors, evaluate coping mechanisms, and explore the role of resilience among medical students and interns.

Methodology: A Systematic review was conducted using literature from PubMed, Google Scholar, Scopus, and Web of Science, covering studies published between 2010 and 2025. Keywords such as "mental health," "stress," "burnout," "depression," "anxiety," "medical students," and "interns" were used. Relevant studies were screened based on predefined inclusion and exclusion criteria. Data were extracted and organized into thematic domains, including prevalence, stressors, assessment tools, coping mechanisms, and resilience. **Results:** The review found that depression affects approximately 25%–30% of medical students, with 11% reporting suicidal ideation, while anxiety prevalence ranges from 30%–35%. Burnout was observed in nearly 40%–50% of interns, primarily due to increased clinical workload. Academic stressors such as heavy workload (60%–70%) and long working hours (>80%) were major contributors. Standardized tools like PHQ-9 and GAD-7 identified moderate to severe psychological distress in 20%–35% of trainees. Approximately 50%–60% of students used adaptive coping strategies, while 20%–30% relied on maladaptive behaviours. Higher resilience was associated with a 30%–40% reduction in depression and anxiety. **Conclusion:** Mental health problems are highly prevalent among medical students and interns and are influenced by multiple academic and clinical stressors. While adaptive coping strategies and resilience offer protective benefits, a significant proportion of trainees remain vulnerable. There is a critical need for structured mental health support, routine screening, and integration of stress management programs within medical education to improve overall well-being and professional competence.

Keywords: Mental health; Medical students; Interns; Stress; Burnout; Depression; Anxiety; Coping mechanisms; Resilience.



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INTRODUCTION

Mental health challenges among medical students and interns have emerged as a significant public health concern, given the demanding nature of medical education and training. Medical students are exposed to intense academic pressure, long study hours, frequent examinations, and emotional stress associated with patient care, all of which contribute to psychological distress. Interns, in particular, face additional responsibilities such as clinical workload, night duties, and decision-making under pressure, which further exacerbate stress levels. These factors collectively increase the risk of mental health disorders, including anxiety, depression, burnout, and reduced resilience [1].

Globally, studies have consistently reported a higher prevalence of psychological morbidity among medical students compared to the general population. Estimates suggest that nearly 25%–30% of medical students experience depression, while anxiety symptoms may be present in up to one-third of students during their training period. Burnout, characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment, is also highly prevalent and has been linked to poor academic performance, decreased empathy, and increased risk of medical errors [2,3]. These findings highlight the need for early identification and intervention to prevent long-term consequences on both personal well-being and professional competence.

The assessment of mental health status in medical students and interns is often carried out using standardized screening tools such as the PHQ-9 for depression and the GAD-7 for anxiety. These tools provide reliable and validated measures for identifying individuals at risk and for monitoring the severity of symptoms over time. Their widespread use in research has facilitated comparison across different populations and settings, enabling a better understanding of the burden of mental health problems in medical education [4].

The COVID-19 further intensified mental health challenges among medical students and interns by disrupting academic schedules, limiting clinical exposure, and increasing uncertainty about future training and career prospects. Additionally, the shift to online learning, social isolation, and fear of infection contributed to increased levels of stress, anxiety, and depressive symptoms. Several studies conducted during this period reported a significant rise in psychological distress among healthcare trainees, emphasizing the vulnerability of this group during public health crises [5].

Coping mechanisms play a crucial role in mitigating the impact of stress and promoting mental well-being among medical students and interns. Adaptive coping strategies, such as problem-solving, time management, physical activity, and seeking social support, have been associated with better mental health outcomes. In contrast, maladaptive coping behaviours, including substance use, avoidance, and denial, may worsen psychological distress and lead to long-term consequences. Resilience, defined as the ability to adapt and recover from stress, is increasingly recognized as a protective factor that can buffer the negative effects of academic and clinical stressors [6].

From a public health and educational perspective, addressing mental health challenges among medical students and interns is essential to ensure the development of a competent and emotionally stable healthcare workforce. Early identification of psychological distress, implementation of mental health support systems, and integration of stress management and resilience training into medical curricula are critical strategies for promoting well-being. Therefore, this Systematic review aims to synthesize existing evidence on mental health challenges, stress factors, and coping mechanisms among medical students and interns, providing insights for targeted interventions and policy development [7].

This Systematic review aims to comprehensively assess mental health challenges, stress, and coping mechanisms among medical students and interns, with a focus on understanding the burden of anxiety, depression, burnout, and resilience in this population. The objectives are to evaluate the prevalence and patterns of mental health problems, to identify academic, clinical, and psychosocial stressors contributing to psychological distress, to analyze commonly used assessment tools such as PHQ-9 and GAD-7, to explore coping strategies and resilience factors, and to assess their impact on academic performance and professional development. The justification of this study lies in the increasing recognition of mental health issues among medical trainees, which not only affect their personal well-being but also influence patient care, empathy, and clinical decision-making. The COVID-19 has further intensified these challenges, highlighting the urgent need for structured interventions, early screening, and integration of mental health support within medical education systems from a Community Medicine perspective.

METHODOLOGY

This is a prospective study consist of 60 patients analyzed had squamous cell carcinoma. Normal and tumour tissue was This Systematic review was conducted using a comprehensive and structured literature search strategy. Relevant studies were identified from electronic databases including PubMed, Google Scholar, Scopus, and Web of Science, covering publications from 2010 to 2025. Additional sources such as reports from the World Health Organization and institutional publications were also reviewed to provide contextual relevance. Keywords used for the search included “mental health,” “stress,” “burnout,” “depression,” “anxiety,” “medical students,” “interns,” and “coping mechanisms,” combined using Boolean operators (AND, OR).

Studies were included if they focused on medical students or interns and assessed mental health outcomes, stress levels, or coping mechanisms using validated tools. Both quantitative and qualitative studies, including cross-sectional, cohort, and review articles, were considered. Studies not available in English or those lacking methodological clarity were excluded. Titles and abstracts were screened initially, followed by full-text evaluation for eligible articles.

Data were extracted and organized into thematic domains such as prevalence of mental health disorders, stressors, assessment tools, coping mechanisms, and resilience factors. A Systematic synthesis approach was used to integrate findings across studies without performing meta-analysis. The included studies were appraised based on relevance, methodological quality, and sample characteristics. Findings are presented in a thematic manner to highlight patterns, variations, and implications for medical education and public health interventions.

Theme 1: Prevalence of Mental Health Disorders Among Medical Students and Interns

Mental health disorders such as depression, anxiety, and burnout are highly prevalent among medical students and interns across the globe. A large meta-analysis reported that approximately 27.2% of medical students experience depression or depressive symptoms, while 11.1% report suicidal ideation, indicating a substantial psychological burden [8]. Similarly, anxiety prevalence has been reported to range between 30% and 35%, depending on the study setting and assessment tools used [9]. Burnout, particularly among interns, has been observed in nearly 40%–50% of trainees, primarily due to increased clinical responsibilities and workload [10]. These findings consistently indicate that the prevalence of mental health issues among medical trainees is significantly higher compared to the general population, emphasizing the need for targeted interventions.

Theme 2: Academic and Clinical Stressors in Medical Training

Medical education is associated with multiple academic and clinical stressors that contribute significantly to psychological distress. Studies have identified factors such as heavy academic workload (reported by ~60%–70% students), frequent examinations (~65%), and long working hours during internship (>80%) as major contributors to stress [11]. Sleep deprivation, reported in nearly 50%–60% of interns, further exacerbates mental health problems. Additionally, exposure to critically ill patients, fear of making clinical errors, and lack of work-life balance contribute to emotional exhaustion. Comparative studies have shown that interns report significantly higher stress levels than undergraduate students due to increased responsibility and patient care demands.

Theme 3: Assessment Tools for Mental Health Evaluation

Standardized tools play a crucial role in identifying and quantifying mental health problems among medical students. The PHQ-9 is widely used, with studies reporting that moderate to severe depression (PHQ-9 score ≥ 10) is present in approximately 20%–30% of students [12]. Similarly, the GAD-7 has demonstrated that moderate to severe anxiety affects around 25%–35% of medical trainees. These tools are validated, reliable, and allow for consistent comparison across different populations and settings. Their use has facilitated early identification of at-risk individuals and implementation of appropriate interventions.

Theme 4: Coping Mechanisms and Behavioral Responses

Medical students employ a wide range of coping strategies to manage stress, which can be broadly categorized into adaptive and maladaptive mechanisms. Studies have reported that approximately 50%–60% of students engage in adaptive coping strategies, such as physical activity, social support, and problem-solving [13]. However, a considerable proportion (around 20%–30%) resort to maladaptive coping mechanisms, including substance use, avoidance behaviour, and emotional withdrawal. Evidence suggests that students using adaptive coping strategies have significantly lower levels of depression and anxiety ($p < 0.05$), whereas maladaptive coping is associated with increased psychological distress and poorer academic performance.

Theme 5: Role of Resilience and Protective Factors

Resilience is a key protective factor that helps medical students cope with stress and maintain psychological well-being. Studies have demonstrated that students with higher resilience scores show significantly lower levels of depression and anxiety (reduction by 30%–40%) compared to those with low resilience [14]. Factors such as strong social support systems, mentorship, positive learning environments, and effective coping strategies contribute to resilience development. Interventional studies have also shown that resilience training programs can significantly improve stress management and emotional stability among medical students, highlighting the importance of integrating such interventions into medical education.

RESULTS

This Systematic review demonstrates that mental health challenges among medical students and interns are highly prevalent and multifactorial. The prevalence of depression among medical students ranges from 25% to 30%, with approximately 11% reporting suicidal ideation, indicating a significant psychological burden. Anxiety disorders are observed in nearly 30%–35% of students, while burnout affects approximately 40%–50% of interns, particularly due to increased clinical workload and responsibilities. Academic and clinical stressors such as heavy workload (reported by 60%–70% of students), long working hours (>80% of interns), and sleep deprivation (50%–60%) were identified as major contributors to psychological distress.

The use of standardized screening tools such as the PHQ-9 and the GAD-7 has consistently shown moderate to severe levels of depression and anxiety in 20%–35% of medical trainees. Regarding coping mechanisms, around 50%–60% of students adopt adaptive strategies, while 20%–30% rely on maladaptive behaviours, including avoidance and substance use. Furthermore, resilience has been shown to play a protective role, with higher resilience associated with a 30%–40%

reduction in depression and anxiety levels. Overall, the findings highlight a significant gap between stress exposure and effective coping capacity among medical trainees.

Table 1: Prevalence of Mental Health Problems Among Medical Students and Interns

Mental Health Outcome	Prevalence Range (%)	Key Observation
Depression	25–30%	Significant proportion with moderate to severe symptoms
Suicidal Ideation	~11%	Indicates serious psychological burden
Anxiety	30–35%	Common across all years of training
Burnout (Interns)	40–50%	Higher due to clinical workload and responsibilities

The above table shows that mental health disorders are highly prevalent among medical students and interns. Depression affects approximately 25–30% of students, while anxiety is slightly higher, ranging from 30–35%. Notably, burnout is more common among interns, affecting up to 50%, likely due to increased clinical responsibilities and prolonged working hours. The presence of suicidal ideation in around 11% of students highlights the गंभीर psychological impact and need for early intervention.

Table 2: Determinants, Coping Mechanisms, and Protective Factors

Variable	Findings (%)	Interpretation
Academic workload as stressor	60–70%	Major contributor to stress
Long working hours (Interns)	>80%	Strong association with burnout
Sleep deprivation	50–60%	Aggravates anxiety and depression
Adaptive coping strategies	50–60%	Associated with better mental health outcomes
Maladaptive coping strategies	20–30%	Linked to higher psychological distress
High resilience effect	30–40% reduction	Protective against depression and anxiety

This table highlights key determinants influencing mental health among medical students and interns. Academic workload and long working hours are the most significant stressors, reported by a majority of participants. Sleep deprivation further worsens psychological distress. Around 50–60% of students adopt adaptive coping mechanisms, which are associated with improved mental health outcomes. However, 20–30% rely on maladaptive strategies, increasing their vulnerability. Importantly, resilience plays a protective role, reducing depression and anxiety by 30–40%, emphasizing its importance in mental health interventions.

DISCUSSION

The present Systematic review highlights a substantial burden of mental health problems among medical students and interns, with consistent evidence across studies indicating high prevalence rates of depression, anxiety, and burnout. A large meta-analysis reported that 27.2% of medical students suffer from depression, while 11.1% experience suicidal ideation, underscoring the seriousness of psychological morbidity in this population [15]. These findings are comparable to other international studies reporting depression prevalence ranging from 25% to 30%, suggesting that mental health issues among medical trainees are a global concern rather than region-specific. Similarly, anxiety has been reported in approximately 30%–35% of students, which is significantly higher than in age-matched general populations [16].

Burnout, particularly among interns, emerges as a critical issue due to the transition from academic learning to clinical responsibilities. Studies have demonstrated that nearly 40%–50% of interns experience burnout, characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment [17]. The higher prevalence among interns compared to undergraduate students can be attributed to increased workload, long duty hours, and responsibility for patient care. These findings align with evidence showing that prolonged exposure to stress without adequate coping mechanisms leads to cumulative psychological strain and reduced professional satisfaction.

Academic and clinical stressors play a central role in the development of mental health problems. Data indicate that 60%–70% of students identify academic workload as a primary stressor, while over 80% of interns report long working hours and sleep deprivation as major contributors to stress [18]. Additionally, factors such as frequent examinations, fear of failure, and exposure to critically ill patients further aggravate psychological distress. Comparative analyses suggest that stress levels are significantly higher during clinical years and internship compared to preclinical phases, highlighting the need for targeted support during these critical periods of training.

The role of coping mechanisms in influencing mental health outcomes is well established. Studies have shown that students employing adaptive coping strategies—such as physical activity, social support, and time management—demonstrate significantly lower levels of depression and anxiety (reduction by approximately 20%–30%) compared to those using maladaptive strategies [19]. Conversely, maladaptive coping behaviours such as substance use, avoidance, and emotional

withdrawal are associated with increased psychological distress and poorer academic performance. These findings emphasize the importance of promoting healthy coping mechanisms within medical training environments.

Resilience has been identified as a key protective factor mitigating the impact of stress among medical students and interns. Evidence suggests that individuals with higher resilience scores exhibit 30%–40% lower prevalence of depression and anxiety, along with better academic performance and emotional stability [20]. Interventional studies have demonstrated that resilience-building programs, including mindfulness training and stress management workshops, significantly improve psychological well-being. These findings highlight the potential of structured interventions in enhancing resilience and reducing mental health burden among medical trainees.

Overall, the discussion indicates that mental health challenges among medical students and interns are multifactorial, influenced by academic pressures, clinical responsibilities, and individual coping capacities. While the prevalence of psychological distress is high, the presence of modifiable factors such as coping strategies and resilience provides an opportunity for targeted interventions. Strengthening mental health support systems, integrating stress management training, and promoting resilience within medical curricula are essential steps to address this growing public health concern.

CONCLUSION

- Mental health disorders such as depression, anxiety, and burnout are highly prevalent among medical students and interns.
- Academic pressure, clinical workload, and sleep deprivation are the primary contributors to psychological distress.
- Standardized tools like PHQ-9 and GAD-7 are effective for early identification of mental health problems.
- Adaptive coping mechanisms and resilience significantly improve mental health outcomes.
- A substantial proportion of students still rely on maladaptive coping strategies, increasing the risk of long-term psychological morbidity.
- Strengthening mental health support systems within medical education is essential for developing a healthy and competent healthcare workforce.

Limitations of the Study

- Being a Systematic review, the study lacks systematic methodology and may be subject to selection bias.
- No quantitative meta-analysis was conducted to provide pooled estimates.
- Variability in study designs, populations, and assessment tools limits direct comparability.
- Majority of included studies were cross-sectional, restricting causal inference.
- Limited region-specific (especially Gujarat-based) data may affect local applicability.
- Possible publication bias due to inclusion of predominantly English-language studies.

Recommendations

- Routine mental health screening using tools like PHQ-9 and GAD-7 should be implemented in medical colleges.
- Stress management and resilience training programs should be integrated into undergraduate and internship curricula.
- Establishment of dedicated counselling and psychological support services within medical institutions is essential.
- Promotion of adaptive coping strategies such as physical activity, peer support, and mindfulness practices should be encouraged.
- Institutional policies should aim to reduce academic burden and improve work-life balance among students and interns.
- Further longitudinal and interventional studies are needed to assess long-term mental health outcomes and effectiveness of interventions.

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