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Depression, Anxiety and Stress among Medical Students: Prevalence, Contributing Factors and Implications for Mental Health

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Abstract

Medical education is widely recognised as a demanding academic and professional training process that places considerable psychological, emotional and social demands on students. The transition from theoretical learning to clinical responsibilities, academic competition, extensive curricula, examinations and expectations of professional competence may contribute to psychological distress. Depression, anxiety and stress are among the most commonly reported mental health concerns among medical students and may adversely affect their academic performance, interpersonal relationships, quality of life and future professional functioning. Evidence from international and Indian studies indicates a substantial burden of psychological distress within this population. This paper examines the prevalence and nature of depression, anxiety and stress among medical students, with particular emphasis on academic, personal, interpersonal and institutional contributing factors. It also explores gender differences, coping mechanisms, the consequences of psychological distress and the importance of institutional mental health interventions. The review highlights the need for a comprehensive approach involving early identification, accessible psychological services, faculty sensitisation, peer support and the development of psychologically supportive medical education environments. Promoting the mental health of medical students is essential not only for their individual well-being but also for the development of competent, empathetic and resilient healthcare professionals.

Keywords: Depression, Anxiety, Stress, Medical Students, Psychological Distress, Mental Health, Medical Education.

1. Introduction

Medical education requires a full-time commitment from students, encompassing academic responsibilities, clinical activities, social interactions and the provision of support and care to

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patients. The demanding nature of medical training, combined with expectations of academic excellence and professional competence, exposes students to several psychological and emotional challenges. A significant level of psychological morbidity has been reported among medical students, including stress, interpersonal difficulties, depressive symptoms, anxiety and suicidal ideation. Research suggests that medical students experience considerable psychological distress, sometimes at levels higher than those observed in the general population (Dyrbye et al., 2006; Iqbal et al., 2015).

Mental health concerns among medical students frequently remain unrecognised or untreated because of stigma, limited awareness, reluctance to seek professional assistance and concerns regarding confidentiality and possible academic or professional consequences. Furthermore, psychological distress may initially manifest through nonspecific symptoms such as fatigue, sleep disturbances, irritability, reduced concentration and changes in academic performance, making early identification difficult.

Depression, anxiety and stress represent interconnected but distinct psychological dimensions. Depression is characterised by persistent sadness, loss of interest or pleasure, reduced energy, feelings of worthlessness and difficulties in cognitive functioning. Anxiety involves excessive apprehension, worry and anticipation of potential threats, frequently accompanied by physiological symptoms such as sweating, tremors, dizziness and increased heart rate. Stress refers to the psychological and physiological responses that occur when perceived demands exceed an individual's available coping resources. Although stress may sometimes facilitate adaptation and performance, prolonged or excessive stress can adversely affect psychological and physical health.

The World Health Organization (WHO, 2026) identifies depression as a significant global public health concern, affecting approximately 322 million people worldwide according to estimates for 2023. Depression can interfere with academic functioning, occupational productivity, interpersonal relationships and overall quality of life.

Medical students may be particularly vulnerable because of the cumulative demands associated with medical education. These include extensive academic curricula, frequent assessments, competitive learning environments, clinical responsibilities, financial concerns, family expectations and uncertainty regarding future professional opportunities. Individual

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characteristics, including gender, year of study, socioeconomic background, living arrangements and personal coping resources, may further influence psychological well-being.

Understanding the prevalence, contributing factors and consequences of depression, anxiety and stress among medical students is therefore important for developing appropriate institutional policies and preventive mental health interventions.

2. Prevalence of Depression, Anxiety and Stress among Medical Students

The psychological well-being of medical students has received considerable research attention internationally. Available evidence indicates that depression, anxiety and stress are frequently reported during medical training, although prevalence estimates differ according to geographical location, assessment instruments, sample characteristics and methodological approaches.

A systematic review and meta-analysis by Rotenstein et al. (2016), involving 122,356 medical students across 43 countries, reported a pooled prevalence of depression or depressive symptoms of 27.2%. The study also reported that approximately 11.1% of medical students experienced suicidal ideation. An important observation was that only 15.7% of students who screened positive for depression reported seeking psychiatric treatment. These findings highlight the substantial treatment gap associated with mental health difficulties among medical students.

Similarly, Dyrbye et al. (2006), in their systematic review of depression, anxiety and burnout among medical students in the United States and Canada, identified considerable psychological distress within this population. The authors highlighted the relationship between the demanding nature of medical education and the development of psychological difficulties.

Evidence from India also indicates a substantial burden of psychological distress. Kaur et al. (2024), in a systematic review and meta-analysis of 43 studies involving 15,557 undergraduate medical students, reported pooled prevalence estimates of 48% for depression, 54% for anxiety, 50% for stress and 21% for suicidal ideation. These findings underline the importance of addressing psychological well-being within Indian medical institutions.

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However, the considerable heterogeneity across the included studies suggests that these estimates should be interpreted with caution.

The National Medical Commission (NMC, 2024), through its National Task Force on Mental Health and Well-being of Medical Students, also acknowledged the significant psychological challenges experienced by undergraduate and postgraduate medical students in India. The report highlighted academic pressure, professional expectations, institutional environments and inadequate access to appropriate mental health support as important areas of concern.

Overall, the available literature establishes that depression, anxiety and stress are important mental health concerns within medical education. However, differences in screening instruments and diagnostic criteria must be considered while interpreting prevalence estimates.

3. Factors Contributing to Depression, Anxiety and Stress

The development of psychological distress among medical students is influenced by multiple interacting factors. These can broadly be classified into academic, personal, interpersonal, socioeconomic and institutional factors.

3.1 Academic and Educational Factors

Academic pressure is one of the most frequently reported contributors to psychological distress among medical students. The extensive medical curriculum requires students to acquire a substantial volume of theoretical knowledge while simultaneously developing practical and clinical competencies. Frequent examinations, demanding schedules, competition among peers and expectations of consistently high academic performance may contribute to anxiety and stress.

The transition from preclinical to clinical education may create additional challenges. Students are required to apply theoretical knowledge in real-life healthcare settings, interact with patients and develop clinical decision-making skills. Exposure to illness, suffering and death may further increase emotional demands.

Fear of academic failure, backlogs, poor examination performance and uncertainty regarding future specialisation may also contribute to persistent psychological distress.

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3.2 Personal and Psychological Factors

Individual psychological characteristics and previous experiences can influence how students respond to academic and professional demands. Perfectionism, low self-esteem, inadequate emotional regulation, negative self-evaluation and limited problem-solving abilities may increase vulnerability to depression and anxiety.

Students with a previous history of psychological difficulties or inadequate coping resources may experience greater challenges in adjusting to the medical education environment. Additionally, unrealistic expectations regarding personal achievement and professional success may contribute to feelings of inadequacy and frustration.

3.3 Social and Interpersonal Factors

Medical students frequently experience changes in their social environment, particularly when relocating to another city for education. Separation from family, adjustment to hostel life, difficulties in establishing relationships and reduced opportunities for social interaction may contribute to loneliness and emotional distress.

Interpersonal conflicts, peer competition, limited emotional support and strained relationships with faculty members may further intensify psychological difficulties.

Family expectations and societal perceptions regarding the medical profession can also contribute to emotional pressure. Students may experience difficulties in expressing their concerns because of the perceived obligation to maintain an image of academic excellence and professional competence.

3.4 Socioeconomic and Institutional Factors

Financial difficulties, educational expenses, family responsibilities and uncertainty regarding career opportunities may contribute to stress among medical students. Students from economically disadvantaged backgrounds may experience additional challenges in managing academic and personal responsibilities.

Institutional factors, including inadequate infrastructure, excessive workloads, insufficient recreational opportunities, poor faculty-student relationships, ragging, discrimination and an unsupportive academic environment, may also negatively influence psychological well-being.

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Dyrbye et al. (2006) emphasised the importance of understanding the interaction between individual vulnerabilities and the medical education environment when examining psychological distress among medical students.

4. Gender and Other Sociodemographic Differences

Research examining depression, anxiety and stress among medical students has frequently identified variations across sociodemographic characteristics. Gender is one of the commonly investigated variables, with several studies reporting higher levels of psychological distress among female students.

Possible explanations include differences in stress appraisal, social expectations, interpersonal experiences, help-seeking behaviour and exposure to gender-related pressures. However, these findings are not uniform across all populations, and gender should not be considered an independent explanation for psychological distress.

The year of study may also influence the nature and intensity of psychological difficulties. First-year students may experience adjustment-related stress associated with entering a new educational environment, developing independent living skills and adapting to unfamiliar academic expectations. Students in subsequent years may encounter difficulties associated with examinations, clinical exposure, patient management and professional responsibilities.

Hostel residency, parental education, family income, family relationships and substance use are additional variables that have been examined in relation to student mental health. Living away from home may reduce access to familiar emotional support, while financial difficulties may create additional psychological pressure.

Nevertheless, the relationship between sociodemographic characteristics and psychological distress is complex. Individual differences, institutional culture and available support systems may influence these associations.

5. Impact of Depression, Anxiety and Stress on Medical Students

Depression, anxiety and stress can affect multiple dimensions of a medical student's functioning. Their consequences may extend beyond immediate emotional discomfort and influence academic, social, physical and professional development.

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5.1 Academic Performance

Psychological distress may interfere with attention, concentration, memory, decision-making and problem-solving abilities. Students experiencing depression may demonstrate reduced motivation, diminished interest in academic activities and difficulties completing assignments. Anxiety may contribute to excessive examination-related worry, fear of failure and reduced performance in evaluative situations.

Persistent stress may also affect study habits, time management and academic engagement, potentially resulting in declining academic performance.

5.2 Physical Health and Lifestyle

Psychological distress is frequently associated with physical complaints and changes in health-related behaviours. Sleep disturbances, fatigue, headaches, appetite changes, gastrointestinal discomfort and reduced physical activity may occur among students experiencing prolonged stress or anxiety.

Irregular eating patterns, inadequate sleep, limited exercise and excessive caffeine consumption may further aggravate psychological difficulties.

5.3 Interpersonal and Social Functioning

Depression and anxiety may negatively influence interpersonal relationships, social participation and communication. Students experiencing emotional difficulties may withdraw from social interactions, demonstrate irritability or experience difficulties in maintaining supportive relationships.

Social isolation can further reduce access to emotional support and contribute to the persistence of psychological distress.

5.4 Professional Development and Patient Care

The psychological well-being of medical students has implications for their future professional functioning. Persistent emotional exhaustion, anxiety and depressive symptoms may interfere with empathy, communication, professional confidence and clinical decision-making.

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Medical students are expected to develop the ability to respond compassionately to patients while managing emotionally demanding situations. Therefore, adequate psychological support during training is important for promoting professional resilience and the quality of future healthcare delivery.

6. Coping Mechanisms and Protective Factors

Coping mechanisms play an important role in determining how individuals respond to stressful situations. The effectiveness of coping strategies may influence the relationship between exposure to stressors and subsequent psychological outcomes.

Adaptive coping strategies include problem-solving, appropriate time management, seeking emotional support, relaxation techniques, physical exercise, mindfulness and maintaining healthy interpersonal relationships.

Social support from family members, friends, peers and faculty can serve as an important protective factor. Opportunities to discuss academic and personal concerns in a supportive environment may reduce feelings of isolation and facilitate appropriate help-seeking.

A scoping review by Sam et al. (2022) examining coping strategies among undergraduate medical students identified support-seeking, active coping and acceptance among the commonly reported approaches. The review also highlighted the presence of avoidance, denial and substance use as coping responses in some students, indicating the need to encourage healthier psychological adjustment strategies.

Resilience, emotional regulation, self-awareness and positive problem-solving abilities may further help students manage the demands of medical education. However, individual coping strategies should not be viewed as substitutes for addressing excessive academic workloads, institutional deficiencies or unhealthy educational environments.

7. Preventive Strategies and Institutional Interventions

Addressing depression, anxiety and stress among medical students requires a comprehensive approach involving students, faculty members, institutional administrators and mental health professionals.

8. Conclusion

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Depression, anxiety and stress represent significant psychological concerns among medical students and have important implications for their academic performance, physical health, interpersonal relationships and professional development. The demanding nature of medical education, coupled with academic competition, clinical responsibilities, personal expectations and institutional challenges, may increase vulnerability to psychological distress.

Medical institutions must recognise that psychological well-being is not separate from academic excellence or professional competence. Rather, it is an essential foundation for developing competent, empathetic and resilient healthcare professionals. Ensuring the mental health of medical students is therefore both an educational responsibility and an important investment in the future of healthcare.

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