

Association of Depression, Anxiety and Stress on Suicidal Ideation among Medical Aspirants in Hyderabad, Sindh

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ABSTRACT

Medical aspirants preparing for competitive entrance examinations frequently experience intense academic pressure and psychological distress, increasing their vulnerability to suicidal ideation. Depression, anxiety, and stress have each been identified as significant contributors to suicidal risk through distinct psychological pathways. Depression elevates suicidal vulnerability through persistent hopelessness and negative self-perception that diminish the will to live. Anxiety contributes through chronic physiological arousal and psychological entrapment, the felt impossibility of escaping an aversive situation which research recognizes as a direct precursor to suicidal motivation. Stress, when perceived demands consistently exceed coping resources, produces emotional exhaustion that intensifies both depressive and anxious symptoms, further compounding suicidal risk. Despite growing literature on enrolled medical students, their combined effect among pre-admission candidates in Pakistan remains insufficiently examined. The present study therefore aimed to examine the association between depression, anxiety, stress, and suicidal ideation among medical aspirants; determine the prevalence of psychological distress; explore gender-based differences; and identify the strongest predictor of suicidal ideation. A quantitative cross-sectional design was adopted with data collected from 200 medical aspirants in Hyderabad, Sindh, using the DASS-21 and SIDAS. Non-parametric procedures were employed due to non-normal data distributions. Anxiety emerged as the most prevalent concern affecting 69% of participants, followed by depression at 44%. Spearman's correlation confirmed a significant positive association between combined psychological distress and suicidal ideation. Multiple regression identified anxiety as the strongest predictor, followed by depression, while stress showed a suppressed effect. The model explained 23.8% of variance in suicidal ideation, emphasizing the urgent need for early psychological screen-

ing and mental health interventions within preparatory institutions in Pakistan.

Keywords: *depression, anxiety, stress, suicidal ideation, medical aspirants, Pakistan*

Introduction

Mental health is a fundamental component of overall well-being that significantly influences academic performance, emotional stability, and social functioning. Students enrolled in highly competitive educational programs are particularly vulnerable to psychological distress due to academic pressure, performance expectations, and uncertainty regarding future careers. Among these groups, medical aspirants preparing for medical college entrance examinations experience exceptionally high levels of stress, as admission into medical institutions is intensely competitive and socially valued in Pakistan.

Depression has consistently been identified as a significant risk factor for suicidal ideation. Research demonstrates that individuals experiencing depressive symptoms including hopelessness, anhedonia, and feelings of worthlessness are at substantially elevated risk of suicidal thoughts (Naseem & Munaf, 2017; Bilal & Riaz, 2020). A 2024 Pakistani study of medical students across seven colleges in Peshawar similarly identified depression as a prevalent and clinically significant concern, with multiple risk factors compounding its severity in academically demanding environments (Gul et al., 2024). Among students, academic failure, prolonged uncertainty, and perceived incompetence are known to trigger depressive episodes that may escalate into suicidal ideation, particularly when social support is limited. Bilal and Riaz (2020) specifically established that depression mediates the relationship between academic stress and suicidal ideation among MDCAT repeaters, positioning it as a central psychological pathway through which environmental stressors translate into suicidal risk.

Anxiety, though frequently studied alongside depression, also independently predicts suicidal ideation. Persistent worry, physiological

arousal, and anticipatory fear core features of anxiety contribute to psychological entrapment and a sense of inescapability, which are among the most well-documented cognitive precursors to suicidal ideation (O'Connor & Kirtley, 2018). Students preparing for highly competitive examinations such as the MDCAT frequently experience performance anxiety that extends beyond ordinary academic nervousness, becoming chronic, functionally impairing, and difficult to manage without professional support. Several Pakistani studies report anxiety as more prevalent than depression in medical student populations (Alvi et al., 2010; Nadia & Tanvir, 2019), suggesting it may be the more immediate psychological threat in this context. A 2023 validation study of the DASS-21 among Pakistani frontline doctors similarly found markedly elevated anxiety levels relative to depression and stress, reinforcing the consistency of this pattern across different Pakistani healthcare-adjacent populations (Nadeem et al., 2023). Stress, as conceptualized within the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), arises when perceived environmental demands exceed an individual's perceived coping resources. For medical aspirants, stressors include prolonged study hours, fear of failure, parental expectations, and social comparison with peers. Chronic stress has been linked to emotional exhaustion and reduced problem-solving capacity, and when sustained over time, it may generate or worsen both depression and anxiety, thereby indirectly contributing to suicidal ideation.

A 2025 Pakistani study examining undergraduate medical students found that perceived stress was significantly associated with broader psychological distress, and that lifestyle and behavioral factors meaningfully influenced stress levels in this population, underscoring that stress in medical education contexts is shaped by a wide array of interacting factors (Ahmed et al., 2025). Understanding whether stress operates as a direct predictor or primarily through its effects on depression and anxiety is one of the central questions motivating the present study.

The co-occurrence of depression, anxiety, and stress creates a compounded psychological burden that may amplify suicidal risk beyond what any single variable can explain alone. The Integrated Motivational–

Volitional Model (O'Connor & Kirtley, 2018) theorizes that feelings of defeat, entrapment, and hopelessness outcomes of prolonged psychological distress serve as direct precursors to suicidal ideation. This theoretical framework provides a meaningful basis for examining how the confluence of these three variables contributes to suicidal thinking among academically stressed students, and for determining which variable exerts the most proximal influence. Recent Pakistani research has also begun to examine early-life contributors to this vulnerability; a 2025 study at a public sector medical university in Lahore found that adverse childhood experiences significantly predicted poorer mental health outcomes among medical students, while protective childhood factors buffered against this risk, suggesting that psychological vulnerability in medical education populations may have roots extending well before the academic pressures of entrance examinations even begin (Ali et al., 2025). Despite growing literature on mental health among medical students in Pakistan, limited research has specifically examined the interrelationship of depression, anxiety, and stress on suicidal ideation among medical aspirants preparing for entrance examinations. Most studies have focused on enrolled medical students rather than pre-admission candidates. This distinction is important because aspirants occupy a particularly vulnerable position, they bear the pressures of medical education without yet having access to the institutional support systems available to enrolled students. The present study therefore addresses a meaningful research gap by investigating the association of depression, anxiety, and stress on suicidal ideation among medical aspirants in Hyderabad, Sindh, while also identifying which of these three variables poses the greatest predictive risk.

Research Objectives

The objectives of the present study were:

1. To examine the association between combined levels of depression, anxiety, and stress and suicidal ideation among medical aspirants in Hyderabad, Sindh.

2. To determine the prevalence of moderate to severe levels of depression, anxiety, stress, and suicidal ideation in this population.
3. To explore gender-based differences in psychological distress and suicidal ideation among medical aspirants.
4. To identify the strongest psychological predictor of suicidal ideation among depression, anxiety, and stress.

Research Hypotheses

H₁: There will be a significant positive relationship between the combined levels of depression, anxiety, stress and suicidal ideation among medical aspirants.

H₂: There will be a high prevalence of moderate to severe levels of depression, anxiety, stress, and suicidal ideation among medical aspirants.

H₃: Female medical aspirants will report significantly higher levels of depression, anxiety, stress, and suicidal ideation compared to their male counterparts.

H₄: Anxiety will emerge as the strongest unique predictor of suicidal ideation in comparison to depression and stress.

Literature Review

Depression, anxiety, and stress are frequently documented psychological concerns among students pursuing medical careers, and each has been individually and collectively linked to suicidal ideation. However, the nature and relative strength of these relationships vary considerably across studies, and the literature reflects ongoing debate regarding which variable exerts the most direct influence on suicidal thoughts. This section reviews the evidence for each variable separately, drawing particularly on recent Pakistani research, before examining their combined effects and the theoretical frameworks that explain these relationships.

Depression and Suicidal Ideation

Depression has received the most consistent empirical support as a predictor of suicidal ideation. Arif et al. (2021) reported alarmingly high rates of depression among medical students in Pakistan, with 26.9% experiencing extremely severe symptoms, a finding that underscores the clinical significance of depressive disorders in academically demanding environments. This pattern has continued to be documented in more recent Pakistani research; Gul et al. (2024), in a conducted cross-sectional investigation across seven medical colleges in Peshawar, identified depression as a significant and prevalent concern among medical students and highlighted multiple compounding risk factors, including academic workload and limited institutional support, that intensify depressive symptomatology in this population. Bilal and Riaz (2020) specifically examined MD- CAT repeaters and found that depression significantly mediated the relationship between academic stress and suicidal ideation, suggesting that repeated academic failure does not directly produce suicidal thoughts but rather does so through the accumulation of depressive symptoms. This positions depression as the primary psychological pathway through which examination stress converts into suicidal risk. Furthermore, Mir et al. (2024) reported that depression was moderately prevalent among medical undergraduates and significantly associated with suicidal ideation, reinforcing the central role of depressive symptoms. Beck's (1979) cognitive model further explains this mechanism: students who interpret academic setbacks through the lens of permanence and personal inadequacy develop hopelessness, which is among the most proximal cognitive precursors to suicidal ideation.

Adding a developmental dimension to this picture, Ali et al. (2025), conducted study at a public sector medical university in Lahore, found that adverse childhood experiences significantly predicted poorer mental health outcomes among medical students, including elevated depressive symptoms, while the presence of protective childhood factors was associated with better outcomes. This finding suggests that depressive vulnerability among medical students and aspirants may not originate solely from the immediate academic environment but may instead be shaped

by earlier developmental experiences that interact with present-day academic stressors to produce the depression observed in cross-sectional studies such as the present one.

Anxiety and Suicidal Ideation

Anxiety presents a more complex and arguably more urgent picture. While some studies treat anxiety as secondary to depression in the prediction of suicidal ideation, others indicate it may be the more proximal risk factor in academic contexts. Alvi et al. (2010) found that 72.4% of medical students experienced anxiety compared to only 35.1% who reported depression a substantially higher prevalence and noted that anxiety was more strongly associated with immediate academic impairment and distress. This pattern of disproportionately elevated anxiety has been corroborated in more recent Pakistani work; Nadeem et al. (2023), in a 2023 study validating the DASS-21 among frontline doctors in Pakistan during the COVID-19 pandemic, found that 70.2% of respondents reported significant anxiety symptoms, with anxiety reaching severe levels even as depression and stress remained at comparatively moderate levels. Although conducted among practicing doctors rather than aspirants, this finding is notable because it confirms that anxiety tends to manifest more acutely than depression or stress within Pakistani medical and healthcare-adjacent populations under conditions of sustained professional or academic pressure, a pattern directly relevant to the present study's MDCAT aspirant sample. Unlike depression, anxiety is marked by hyperarousal and anticipatory fear rather than low mood and withdrawal. These symptoms can rapidly intensify suicidal crises by increasing feelings of uncontrollability. Nadia and Tanvir (2019) similarly found anxiety to be the most prevalent psychological concern among medical students, and at higher rates among female students. Naseem and Munaf (2017) further demonstrated that anxiety, when combined with depression and stress, was associated with the lowest life satisfaction and highest suicidal ideation scores across student groups. Taken together, the evidence suggests that anxiety may warrant greater clinical attention than depres-

sion as an immediate trigger of suicidal thoughts in examination-stressed populations.

Stress and Suicidal Ideation

Stress occupies a different and somewhat contested position in this literature. Most studies treat stress as an environmental antecedent or contextual amplifier rather than a direct psychological predictor of suicidal ideation. Mohi Ud Din et al. (2022) documented that academic and psychosocial stressors significantly elevated perceived stress among medical students, particularly among younger and female students; however, their study did not establish a direct pathway from stress to suicidal ideation independent of depression or anxiety. This interpretation is consistent with the Transactional Model (Lazarus & Folkman, 1984), which frames stress not as an intrinsic pathological condition but as a perceptual and transactional response that leads to other psychological states. A 2025 cross-sectional study of undergraduate medical students across several Pakistani medical colleges examined the relationship between physical activity, perceived stress, and broader mental health outcomes, finding that elevated stress levels were closely intertwined with depression and anxiety symptoms rather than operating as an isolated concern, and that behavioral interventions such as physical activity showed potential for reducing this combined psychological burden (Ahmed et al., 2025). This recent finding lends further support to the view that stress functions as an interconnected component of a broader psychological distress system rather than as an independent pathway to suicidal ideation. Hussain et al. (2021) further found that parental relationship quality moderated stress levels among medical students, suggesting that the home environment is a meaningful but underexamined contributor to psychological distress. Sarwar et al. (2024), in a study of 353 MBBS students, found that psychological distress and depression were the more proximal predictors of suicidal ideation, while general stress functioned more as a background condition. These findings collectively raise the question of whether stress retains unique predictive value for suicidal ideation once depression and anxiety are statistically accounted for.

Gender Differences in Psychological Distress

Gender differences in psychological distress have produced inconsistent findings across the literature. Nadia and Tanvir (2019) and Sarwar et al. (2024) both reported that female medical students experienced higher levels of depression, anxiety, and overall psychological distress compared to males. Mohi Ud Din et al. (2022) similarly found that female and younger students reported higher stress levels. However, Bilal and Riaz (2020) found that gender did not significantly moderate the relationship between academic stress and suicidal ideation, and Imran et al. (2022) noted that mental health intervention outcomes did not differ meaningfully by gender in Pakistani sample. This inconsistency in the literature makes gender comparison a necessary but carefully interpreted dimension of the present study.

Theoretical Integration and Research Gap

The theoretical frameworks reviewed above converge on a shared prediction: that the co-occurrence of depression, anxiety, and stress will produce suicidal ideation at a rate greater than any single variable alone. The IMV Model (O'Connor & Kirtley, 2018) maps defeat and hopelessness properties of depression onto the motivational origins of suicidal thought, while entrapment, a quality amplified by anxiety intensifies the desire to escape. Joiner's Interpersonal Theory of Suicide (Van Orden et al., 2010) further adds that perceived burdensomeness and thwarted belongingness both of which are psychologically probable in a student who fears disappointing their family, reinforce suicidal desire when combined with hopelessness. Ibrahim et al. (2013), in a systematic review of depression in university students worldwide, confirmed that academic populations globally carry elevated depressive symptom rates, making Pakistani aspirants part of a broader international pattern of academically driven psychological risk.

Despite this theoretical convergence and the growing body of recent Pakistani research from 2023 to 2025, no published study has examined all three variables simultaneously as predictors of suicidal ideation among pre-admission medical aspirants in Sindh, Pakistan specifically.

The existing literature, including the most recent studies reviewed above, has focused predominantly on enrolled medical students, practicing doctors, or general university populations, and has rarely used regression to isolate the independent contribution of each variable within the unique pre-admission examination context. The present study is designed to address this gap directly.

Research Methodology Research Design

A quantitative, cross-sectional research design was employed in the present study. This approach was selected because it allows standardized measurement of psychological variables across a large sample at a single point in time, making it both practical and appropriate for examining prevalence and associations in a defined population.

Sample and Sampling Technique

A total of 200 medical aspirants aged between 16 and 20 years were included in the study, comprising 100 males and 100 females. Participants were selected using a random sampling technique to ensure equal gender representation and to minimize selection bias. The target sample of 200 was guided by the requirements of multiple regression analysis with three predictors, where a minimum of 50 participants per predictor is considered adequate for stable regression estimates (Field, 2018), and an equal gender split was deliberately maintained to allow valid gender comparisons.

Participants were recruited from college-level preparatory academies and FSc pre-medical institutions in Hyderabad, Sindh; specifically, from institutions offering intermediate-level science education (Grades 11–12) and dedicated MD- CAT preparation programs. Both in-person and online data collection methods were employed. In-person recruitment allowed direct access to students attending physical academies, ensuring representativeness of those in structured preparatory environments. Online data collection via

Google Forms extended the reach to students who were self-studying or enrolled in digital preparatory platforms, capturing a broader segment

of the aspirant population that would otherwise have been excluded. This dual approach ensured the sample was not limited to a single mode of preparation and improved the diversity and representative-ness of the findings.

Inclusion and Exclusion Criteria

Participants were eligible for inclusion if they were between 16 and 20 years of age, were appearing for the MD- CAT for the first time, and were able to read and comprehend English. The restriction to first-time aspirants was deliberate: students who had already attempted and failed the MDCAT carry a substantially different psychological burden that of documented academic failure which would have introduced a confounding variable into the analysis and prevented clean generalization to the broader aspirant population.

Regarding the exclusion of individuals with pre-existing physical illness, diagnosed psychiatric disorders, or neurological conditions: this information was obtained through a direct self-report item on the Demographic Information Form, which asked participants whether they had any previously diagnosed medical or psychological condition. Participants who answered affirmatively were excluded from the final analysis. While this approach relies on self-disclosure rather than clinical verification a limitation acknowledged in the limitations section, it is consistent with standard practice in community-based psychological research where formal clinical screening is not feasible.

Research Instruments

Demographic Information Form.

A researcher constructed demographic questionnaire collected background information including age, gender, socioeconomic status, area of residence, family type, academic status, mode of MDCAT preparation, daily study hours, living arrangement, parental education level, history of diagnosed conditions, and prior experience of suicidal ideation. The final item was used for descriptive purposes only and was not included in inferential testing.

Depression, Anxiety, Stress Scale–21 (DASS-21). The

DASS-21 (Lovibond & Lovibond, 1995) is a 21-item self-report instrument assessing the severity of depression, anxiety, and stress symptoms over the preceding week. Each subscale contains seven items rated on a four-point Likert scale ranging from 0 (did not apply to me at all) to 3 (*applied to me very much or most of the time*). *The scale*

has demonstrated strong internal consistency and construct validity across clinical and non-clinical populations, and has been used extensively in Pakistani mental health research, facilitating meaningful comparison across studies (Bilal & Riaz, 2020; Naseem & Munaf, 2017; Arif et al., 2021). Although originally published in 1995, the DASS-21 has not been formally revised by its authors; however, its psychometric properties have been independently affirmed across more than two decades of international validation, justifying its continued use. The scale was administered in English, consistent with the study's language-based inclusion criterion, and no translation or structural modification was made.

Suicidal Ideation Attributes Scale (SIDAS). The SIDAS

(van Spijker et al., 2014) is a five-item self-report measure assessing suicidal ideation across five dimensions: frequency, controllability, closeness to an attempt, distress, and functional interference. Each item is rated on an 11-point scale (0–10), with higher scores indicating greater ideation severity. The SIDAS has demonstrated strong reliability and validity in community-based samples.

Procedure and Statistical Analysis

Following approval from the research supervisor and relevant institutional authorities, data were collected both in person at preparatory institutions in Hyderabad and on-line through Google Forms. Participants were informed of the study's purpose, and written informed consent was obtained prior to participation. Confidentiality and anonymity were strictly maintained throughout the data collection process.

Statistical analyses were performed using IBM SPSS Statistics Version 25. Normality was assessed using the Shapiro–Wilk and Kolmogorov–Smirnov tests, which returned significant results for all variables, indicat-

ing non-normal distributions. Non-parametric procedures were therefore employed: Spearman's rank-order correlation to examine associations, Mann-Whitney U tests for gender comparisons, and multiple regression analysis to identify unique predictors of suicidal ideation. Descriptive statistics and prevalence frequencies were also computed.

Ethical Considerations

This study was conducted in full accordance with the ethical standards of the American Psychological Association (APA, 2020). All participants received a written explanation of the study's aims, procedures, and voluntary nature before providing informed consent. Given the sensitive subject matter specifically the inclusion of questions about suicidal ideation particular care was taken to use clinically validated, non-alarmist instrument language throughout. Participants were free to withdraw at any point without consequence, and no personally identifying information was collected or retained. The study adhered throughout to the principles of beneficence, nonmaleficence, respect for autonomy, and justice.

Results

Demographic Analysis

Table 1 presents the demographic characteristics of the 200 participants. The majority (81%) were aged 16 to 18 years, with the remaining 19% between 19 and 20. The sample was equally divided by gender by design. Most participants came from middle-class backgrounds (83%) and resided in urban areas (70%). Notably, 25% of participants reported having experienced suicidal thoughts at some point in the past, underscoring the clinical relevance of this population.

Table 1*Descriptive Characteristics of Participants (N = 200)*

Variable	Category	<i>n</i>	%
Age	16–18 years	162	81.0
	19–20 years	38	19.0
Gender	Male	100	50.0
	Female	100	50.0
Socioeconomic status	Lower class	14	7.0
	Middle class	166	83.0
	Upper class	20	10.0
City of residence	Urban	140	70.0
	Rural	34	17.0
	Mixed	26	13.0
Prior suicidal ideation	Yes	50	25.0
	No	150	75.0
Total		200	100.0

Descriptive Statistics

Table 2 presents the means and standard deviations for all psychological variables. Anxiety recorded at the highest mean ($M = 4.59$, $SD = 0.67$), followed by depression ($M = 4.10$, $SD = 0.88$) and stress ($M = 3.37$, $SD = 1.33$). Suicidal ideation ($M = 1.18$, $SD = 0.41$) was comparatively lower but clinically meaningful given the population context.

Regarding age, the 16–18 year group showed slightly higher mean anxiety and stress scores than the 19–20 year group, consistent with findings by Mohi Ud Din et al. (2022), who reported that younger medical students tend to experience greater stress, possibly reflecting the relatively limited coping experience of younger aspirants. Given the unequal group sizes, this observation is offered descriptively rather than as an inferential finding.

Table 2

Descriptive Statistics of Psychological Variables (N = 200)

Variable	<i>M</i>	<i>SD</i>
Depression severity	4.10	0.88
Anxiety severity	4.59	0.67
Stress severity	3.37	1.33
Suicidal ideation severity	1.18	0.41

Hypothesis Testing

Hypothesis 1. A Spearman's rank-order correlation was computed between the total DASS-21 score and the total SIDAS score. Results revealed a statistically significant moderate positive association, $r(198) = .437$, $p < .001$ (Table 3), supporting H_1 . Higher combined levels of depression, anxiety, and stress were significantly associated with greater suicidal ideation severity among medical aspirants.

Table 3

Spearman's Rank-Order Correlation Between Psychological Distress and Suicidal Ideation (N = 200)

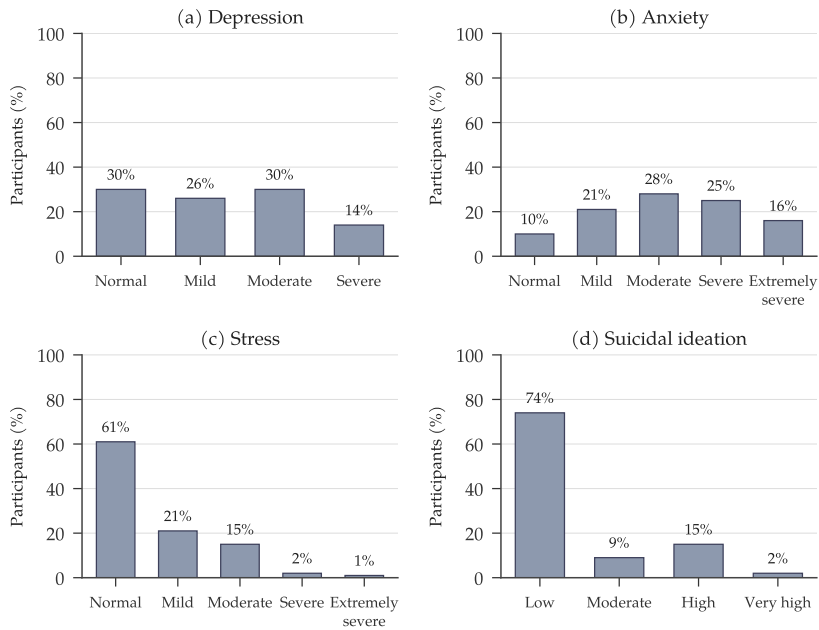
Variables	ρ	p (2-tailed)
Total DASS-21 $\times$ Total SIDAS	.437**	.000

Note. ρ = Spearman's rank correlation coefficient. ** $p < .01$.

Hypothesis 2. Prevalence analysis using DASS-21 severity cut-off scores revealed that 44% of participants experienced moderate to severe depression, 69% reported moderate to extremely severe anxiety, 18% experienced moderate to severe stress, and 26% reported moderate to very high suicidal ideation. Anxiety was the most widespread concern, affecting nearly seven in ten participants at a clinically significant level, thereby supporting H_2 . Prevalences are shown in Figure 1.

Figure 1

Prevalence of Depression, Anxiety, Stress and Suicidal Ideation Severity Levels (N = 200)



Hypothesis 3. Mann–Whitney U tests examined gender differences across all four variables. Female participants recorded higher mean ranks than males on all measures; however, differences in depression ($p = .193$), stress ($p = .147$), and suicidal ideation ($p = .305$) were not statistically significant. Anxiety approached significance ($p = .050$). H_3 is not supported. Results are presented in Table 4.

Table 4

*Mann–Whitney U Test Results for Gender Differences in Psychological Variables
(N = 200)*

Variable	Male mean rank	Female mean rank	<i>U</i>	<i>z</i>	<i>p</i>
Depression	95.20	105.80	4470.0	−1.30	.193
Anxiety	92.52	108.48	4202.0	−1.96	.050
Stress	94.58	106.42	4408.0	−1.45	.147
Suicidal ideation	97.18	103.82	4668.0	−1.03	.305

Note. Female participants recorded higher mean ranks on all variables; differences were non-significant except for anxiety, which approached significance.

Hypothesis 4. Multiple regression was conducted with anxiety, depression, and stress as predictors and SIDAS total score as the outcome. The overall model was significant, $F(3, 196) = 20.421, p < .001, R^2 = .238$, indicating that the three predictors together accounted for 23.8% of the variance in suicidal ideation. Anxiety was the strongest unique predictor ($\beta = .372, p < .001$), followed by depression ($\beta = .343, p = .002$). Stress contributed a significant but negative coefficient ($\beta = -.247, p = .022$) when anxiety and depression were statistically controlled, supporting H_4 . Results are presented in Table 5.

Table 5*Multiple Regression Coefficients for Predictors of Suicidal Ideation (N = 200)*

Predictor	β	p
Anxiety	0.372	< .001
Depression	0.343	.002
Stress	-0.247	.022

Note. $R = .488$, $R^2 = .238$; $F(3, 196) = 20.421$, $p < .001$. β = standardised regression coefficient.

Discussion

The present study examined the association of depression, anxiety, and stress with suicidal ideation among MDCAT aspirants in Hyderabad, Sindh. Overall, the findings provide a coherent understanding of psychological distress within this under-researched population and offer important implications for suicide prevention. The results also align with recent mental health research, positioning the study within current scholarly evidence.

The significant positive correlation between overall psychological distress and suicidal ideation ($r = .437$, $p < .001$) indicates that the combined presence of depression, anxiety, and stress substantially increases suicide risk. This finding is consistent with Bilal and Riaz (2020), Naseem and Munaf (2017), and Ahmed et al. (2025), all of whom reported that these psychological factors interact rather than operate independently. The findings also support the Integrated Motivational-Volitional Model (O'Connor & Kirtley, 2018), which proposes that prolonged experiences of defeat and entrapment contribute to the development of suicidal ideation.

Depression was a significant predictor of suicidal ideation ($\beta = .343$, $p = .002$), with 44% of participants reporting moderate-to-severe depressive symptoms. This finding is consistent with previous Pakistani studies reporting high rates of depression among medical students (Arif et al., 2021; Sarwar et al., 2024; Gul et al., 2024). Ali et al. (2025) further sug-

gest that adverse childhood experiences may contribute to depression, indicating that depressive symptoms among MDCAT aspirants may reflect both current academic stress and earlier developmental experiences. Beck's Cognitive Theory (1979) provides a useful explanation, proposing that negative interpretations of academic setbacks foster hopelessness, a well-established precursor of suicidal ideation.

Anxiety emerged as the strongest predictor of suicidal ideation ($\beta = .372, p < .001$), with 69% of participants reporting moderate-to-extremely severe anxiety. This prevalence exceeded depression and was consistent with previous Pakistani studies (Alvi et al., 2010; Nadia & Tanvir, 2019; Nadeem et al., 2023). These findings suggest that anxiety is particularly pronounced in high-stakes academic environments. Unlike depression, anxiety is characterized by persistent threat perception and hyperarousal, which may intensify feelings of entrapment and increase suicidal risk. This finding further supports the Integrated Motivational-Volitional Model, as the continuous demands of MDCAT preparation may leave students feeling unable to escape academic pressure.

Stress demonstrated a negative standardized coefficient after controlling for anxiety and depression ($\beta = -.247, p = .022$), reflecting a statistical suppression effect rather than a protective influence. Once anxiety and depression were accounted for, stress no longer independently predicted suicidal ideation. This finding is consistent with the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), which conceptualizes stress as a process that contributes to downstream emotional responses. Similarly, Ahmed et al. (2025) found that stress operates within a broader network of psychological distress rather than as an independent risk factor. These findings suggest that interventions targeting stress alone are unlikely to reduce suicidal risk unless they simultaneously address anxiety and depression.

Female participants reported higher mean scores across all psychological variables, although these differences were not statistically significant. This finding is consistent with Bilal and Riaz (2020), while remaining directionally similar to studies reporting greater psychological distress among female medical students (Nadia & Tanvir, 2019; Sarwar et al.,

2024). The lack of significant gender differences may reflect the shared academic demands and similar examination pressures experienced by all participants during MDCAT preparation.

Conclusion

This study examined the relationship between depression, anxiety, stress, and suicidal ideation among MDCAT aspirants in Hyderabad, Sindh. The findings demonstrated that combined psychological distress was significantly associated with suicidal ideation ($r = .437, p < .001$), confirming that depression, anxiety, and stress collectively increase suicide risk. Anxiety emerged as the strongest predictor of suicidal ideation, followed by depression, while stress showed a suppression effect after controlling the other variables. Psychological distress was highly prevalent, with 69% of participants reporting moderate-to-extremely severe anxiety, 44% reporting moderate-to-severe depression, and 26% experiencing clinically significant suicidal ideation. Gender differences were not statistically significant, suggesting that both male and female aspirants experience comparable levels of psychological distress during MDCAT preparation.

Despite employing validated instruments and appropriate statistical analyses, the study has several limitations. The cross-sectional design limits causal inference, the exclusion of participants with psychiatric conditions relied on self-report, and the findings are limited to aspirants from Hyderabad, reducing generalizability. In addition, important factors such as parental pressure, coping strategies, social support, and previous academic performance were not examined. Future research should employ longitudinal, multi-site, and mixed-methods designs while incorporating broader psychosocial and developmental factors.

Overall, the findings highlight that MDCAT aspirants represent a psychologically vulnerable population, with anxiety constituting the most prominent risk factor for suicidal ideation. These results underscore the need for routine mental health screening, accessible counseling services, and evidence-based psychoeducational interventions within preparatory

institutions to support students' psychological well-being and reduce suicide risk during high-stakes academic preparation.

Recommendations

Preparatory institutions and MDCAT academies should introduce routine psychological screening at the beginning of each preparation cycle to identify students at elevated risk before distress reaches crisis levels. Counseling services should be established within these institutions, not only at universities and should be explicitly framed as confidential and non-stigmatizing to encourage uptake among young people who may fear judgment. Given the central role of anxiety identified in this study, workshops specifically addressing examination anxiety, cognitive restructuring, and stress tolerance should be integrated into preparatory curricula rather than offered as optional supplements. Parents and guardians should be included in mental health awareness programs, as the evidence consistently indicates that parental expectations and family dynamics shape aspirants' psychological experiences in powerful and often underestimated ways. At the policy level, the structural conditions created by the MDCAT examination system specifically the concentration of an entire medical career trajectory onto a single examination for very young students with very limited support merit scrutiny from health and education policymakers. Future research should examine additional variables including academic self-efficacy, social support, coping strategies, and family communication patterns, using longitudinal and mixed-methods designs to build a more complete picture of risk and resilience in this population.

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