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Educating Under Pressure: A Sociological Analysis of Academic Stress and Mental Well-being among Graduate Students in Sindh.

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ABSTRACT

The global crisis in graduate student mental health is well-documented, yet research from low- and middle-income countries (LMICs) remains scarce. This study addresses this gap by conducting a sociological analysis of the nexus between academic stress and mental well-being among graduate students in Sindh, Pakistan, a context marked by significant socioeconomic constraints. A quantitative, cross-sectional design was employed, using a structured questionnaire administered to a stratified random sample of 250 M.Phil. and Ph.D. students from Sindh Agriculture University, Tandojam. Data were analyzed using descriptive statistics, Pearson's correlation, multiple linear regression, and Chi-square tests. The analysis reveals that academic stress, financial precarity, and gender are significant predictors of poor mental well-being. Fear of unemployment/job insecurity was the highest-ranked stressor (Mean=8.92). Self-funded students were significantly more likely to report severe anxiety (41.2%) than those with grants (8.3%). Female gender was a significant predictor of poorer well-being (β=.121, p=.016). Conversely, social support demonstrated a strong protective effect (β=-.385, p<.001). The findings indicate that psychological distress among graduate students is not an individual failing but a socially structured outcome, produced by a confluence of systemic pressures, economic insecurity, and institutional practices. The study argues for a paradigm shift from pathologizing individual resilience to reforming the socioeconomic and institutional architectures of graduate education in developing contexts.

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1. INTRODUCTION

The pursuit of graduate education is globally recognized as a period of intense intellectual and personal development, yet significant psychological challenges also characterize it (Kee, 2021). A growing body of international literature has documented a high prevalence of stress, anxiety, and

depression among graduate students, framing it as a "crisis" in higher education (Ying, Khoso, & & Bhutto, 2024). While often perceived as an individual struggle, the antecedents and experiences of this distress are profoundly social. From a sociological perspective, graduate school is a pivotal institution of socialization, where students navigate a complex landscape of expectations, competition, and precarious career pathways. (Tomlinson, 2024). The pressure to publish, secure funding, and meet demanding academic deadlines is not merely a series of personal hurdles but is embedded within the very structure of the contemporary educational system. (Fleming, 2021).

Globally, studies have linked this academic environment to deteriorating mental well-being. However, most of this research emanates from Western, developed contexts, focusing on universities in North America and Europe (Hammoudi Halat, Soltani, Dalli, & Alsarraj, 2023). This literature, while invaluable, often overlooks the critical role of broader socioeconomic and cultural structures. The experience of academic stress is not universal; it is mediated by national educational policies, economic stability, and cultural capital (Chen & Khoso, 2025). In many low- and middle-income countries (LMICs), the pressures inherent to graduate study are compounded by systemic constraints such as limited research funding, inadequate institutional support services, and a highly competitive job market that places a premium on academic credentials as a primary vehicle for social mobility (Kapur & Crowley, 2008).

Within this global landscape, Pakistan and the region of Sindh present a critical and under-explored context. Pakistani higher education has undergone rapid expansion, increased access, and intensifying pressure on students and institutional resources. (Rasool, Iqbal, & Mujtaba, 2025; Kawsar, 2022). Graduate students in Sindh, a region marked by significant socioeconomic diversity and developmental challenges, likely face a unique constellation of stressors. These may include, but are not limited to, familial expectations to secure stable employment, the financial burden of education, a lack of structured mental health support within universities, and the additional pressures of navigating academic systems where resources are often scarce (Mulaudzi, 2023). Furthermore, the sociological dimension of how social networks, institutional norms, and the hidden curriculum within Sindhi universities shape the subjective experience of stress remains almost entirely unexamined. (Memon, 1989; Apple, 2023).

Despite the acknowledged global crisis in graduate student mental health, a significant research gap exists concerning the socially structured and culturally mediated nature of this phenomenon in non-Western, developing contexts. (Pandey, 2024; Chaaban, Sellami, & Michaleczek, 2024). Existing studies in Pakistan have often focused on clinical prevalence rates or general stress among undergraduate medical and engineering students. (Fatimah, et al., 2016). There is a scarcity of qualitative, sociologically-informed research that investigates:

a. The specific structural and psychosocial mechanisms (e.g., supervisor-student relationships, peer competition, job market anxieties) that generate academic stress for graduate students in Sindh.
b. How students' social locations (e.g., gender, socioeconomic background, rural/urban origin) differentially shape their access to coping resources and their experiences of mental well-being.
c. The interpretive frameworks students use to understand their stress, and how institutional cultures within Sindhi universities normalize or problematize these pressures.

This study seeks to fill this gap by conducting a sociological analysis of the nexus between academic stress and mental well-being among graduate students in Sindh, Pakistan. Using Sindh Agriculture University, Tandojam, as a critical case study, this research will explore how the social institution of graduate education produces and distributes psychological distress. It moves beyond a purely psychological model to ask: How do the social structures, cultural expectations, and institutional practices of higher education in Sindh configure the mental well-being of its graduate scholars? By answering this question, the study aims to contribute a nuanced, context-specific understanding that can inform both sociological theory on education and health and the development of targeted institutional support policies in similar developing contexts.

2. METHOD

Research Design

This study employed a quantitative, cross-sectional research design to investigate the relationship between academic stress and the mental well-being of graduate students. A cross-sectional design was selected as it allows for efficient data collection from a sample at a single point in time, facilitating the measurement of variables and examining relationships between them (Creswell & Creswell, 2017). The design is descriptive and correlational, aiming to both describe the prevalence and sources of stress and to identify key factors associated with variations in mental well-being outcomes.

Study Area

The research was conducted at Sindh Agriculture University (SAU), Tandojam. SAU was selected as a critical case study site for several reasons. As a premier agricultural University in Sindh, Pakistan, it hosts a significant population of graduate students (M.Phil. and Ph.D.) across diverse faculties, including Agricultural Sciences, Social Sciences, and Natural Sciences. The institution operates within a specific socioeconomic context characterized by rapid educational expansion alongside resource constraints, making it a pertinent setting for studying academic pressure and its psychological impacts. The findings from this single, in-depth case are intended to provide analytical insights that may be transferable to similar public universities in Pakistan and other developing contexts.

Sample Size and Population

Study Population: This study's target population consisted of all students officially enrolled in M.Phil. and Ph.D. programs at Sindh Agriculture University, Tandojam, during the 2023-2024 academic year.

Sample Size: A total of 250 graduate students participated in the study. The sample size was determined using a priori sample size calculation software (G*Power). For a multiple regression analysis with an anticipated medium effect size ($f^2 = 0.15$), a power of 0.95, and an alpha of 0.05 with up to 8 predictors, a minimum sample of 160 was required. The sample of 250 was secured to account for potential incomplete responses and enhance the findings' robustness and generalizability within the University context.

Sampling Method

A stratified random sampling technique was used to ensure a representative sample across different academic strata. The sampling procedure was as follows: Stratification: The graduate student population was first stratified by two key criteria: Program of Study: M.Phil. and Ph.D. The number of participants to be drawn from each stratum was calculated proportionally based on the total enrollment figures obtained from the University's registrar's office. Random Selection: Within each stratum, potential participants were selected using a simple random sampling method from the complete enrollment lists. Selected students were then contacted via email and in-person visits to participate in the study.

Data Collection and Analysis

Data was collected through a structured, self-administered questionnaire. The questionnaire was distributed in both English and Urdu (translated and back-translated for accuracy) to accommodate participant preference. It comprised sections on demographics, academic stress, mental well-being, social support, and financial strain.

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. The following analytical techniques were employed. Descriptive Statistics: Frequencies, percentages, means, and standard deviations were calculated to summarize the demographic profile of the sample (e.g., Table 1) and perceptions of stressors (e.g., Table 5). Inferential Statistics: Pearson's Correlation Coefficient: Used to assess the strength and direction of the linear relationships between

key continuous variables (e.g., academic stress, mental well-being, social support) as presented in a correlation matrix (e.g., Table 3). Multiple Linear Regression: Conducted to determine the significant predictors of mental well-being, controlling for various demographic and psychosocial factors. The assumptions of linearity, homoscedasticity, independence of errors, and normality were checked and met (e.g., Table 2). Chi-Square Test of Independence: Used to examine the association between categorical variables, such as funding status and anxiety levels (e.g., Table 4).

Reliability and Validity

The internal consistency of all multi-item scales (e.g., Academic Stress Scale, Mental Well-being scale) was assessed using Cronbach's Alpha. Before the main survey, a pilot study (n=30) was conducted to refine the instruments. As determined in the pilot and confirmed in the main survey, scales with a Cronbach's Alpha value of 0.70 or higher were considered to have acceptable reliability (e.g., Table 6).

Validity

The questionnaire was developed based on an extensive literature review and reviewed by a panel of three experts in sociology and educational psychology to ensure its relevance and comprehensiveness.

The pilot study data were analyzed using Exploratory Factor Analysis (EFA) using Principal Component Analysis with Varimax rotation. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity confirmed the data's suitability for factor analysis. Scales demonstrating a clear factor structure with loadings above 0.5 were deemed to have good construct validity (e.g., Table 1).

Where possible, established scales (e.g., the GHQ-12 for mental well-being) with known validity in similar populations were used or adapted.

Table 1: Reliability and Validity of Measurement Scales

Scale (Number of Items)	Cronbach's Alpha (α)	KMO Measure of Sampling Adequacy	Example Item
Academic Stress Scale (12 items)	.891	.872	"I feel overwhelmed by my academic workload."
Mental Well-being (GHQ-12)	.842	.811	"Have you recently felt constantly under strain?"
Social Support Appraisals (8 items)	.905	.890	"I have friends I can share my joys and sorrows with."
Perceived Financial Strain (5 items)	.821	.780	"I worry frequently about having enough money for my basic needs."
Supervisor Rapport Scale (6 items)	.879	.845	"My supervisor provides constructive feedback on my work."
Overall (All Scales)	.931	-	-

Note: KMO > 0.7 is considered adequate for factor analysis. All scales underwent Varimax rotation, confirming the proposed factor structure and demonstrating good construct validity.

This table confirms the high psychometric quality and robustness of the measurement instruments used in the study, demonstrating that all scales were both reliable and valid for assessing the key constructs. The high Cronbach's Alpha scores, all well above the 0.70 threshold (ranging from .821 to .905), indicate excellent internal consistency, meaning the items within each scale consistently

measured the same underlying concept, such as academic stress or social support. Furthermore, the high Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy (all above 0.78) confirm that the data for each scale were suitable for factor analysis, which subsequently verified the strong construct validity of the instruments by confirming that the items loaded onto their intended theoretical factors as designed. This table provides critical evidence that the study's findings are based on trustworthy and scientifically sound measurements, lending significant credibility to the results and conclusions drawn from the data.

3. FINDINGS AND DISCUSSION

Findings

Table 2: Demographic Profile of Participants (N=250)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	155	62.0
	Female	95	38.0
Age Group	25-30 years	98	39.2
	31-35 years	127	50.8
	35 years and above	25	10.0
Program of Study	M.Phil.	168	67.2
	Ph.D.	82	32.8
Faculty/Department	Agricultural Sciences	102	40.8
	Social Sciences	78	31.2
	Natural Sciences	70	28.0
Geographical Origin	Urban	142	56.8
	Rural	108	43.2

Table-2 provides a comprehensive demographic profile of the 250 graduate students who participated in the study, illustrating the composition of the sample across key characteristics. The cohort is predominantly male (62%), with the majority of students (50.8%) falling within the 26-30 age bracket. In terms of their programs, M.Phil. students constitute a larger proportion (67.2%) compared to Ph.D. candidates (32.8). The sample is distributed across three main faculties, with Agricultural Sciences being the most represented (40.8%), followed by Social Sciences (31.2%) and Natural Sciences (28%). Financially, the largest group of students relies on University scholarships (42%), while a significant portion is self-funded (34%), and a smaller segment benefits from government or external grants (24%). Finally, the sample shows a slight majority of students hailing from urban areas (56.8%) over rural ones (43.2%), providing a diverse geographical representation for the analysis.

Table 3: Multiple Linear Regression Predicting Mental Well-being (GHQ-12 Score)

Predictor Variable	B	Std. Error	β	t	p-value
(Constant)	15.21	1.845		8.245	<.001
Academic Stress Score	0.48	0.072	.412	6.667	<.001
Gender (Female)	2.15	0.891	.121	2.413	.016
Funding (Self-funded)	3.02	1.023	.178	2.952	.003
Social Support Score	-0.65	0.095	-.385	-6.842	<.001
Program (Ph.D.)	1.58	0.934	.089	1.692	.092
Model Summary: $R^2 = .487$, Adjusted $R^2 = .469$, $F(5, 244) = 26.45$, $p < .001$					

Dependent Variable: Mental Well-being (Higher score = poorer well-being)

This table-3 presents the results of a multiple linear regression analysis that identifies the key factors predicting the mental well-being of graduate students. The model is statistically significant, explaining approximately 48.7% of the variance in mental well-being scores. The analysis reveals that higher academic stress scores are a strong and significant predictor of poorer mental well-being. Conversely, higher social support scores are associated with significantly better mental well-being, acting as a protective factor. Furthermore, a student's personal circumstances are crucial; being female and being self-funded are both significant predictors of poorer mental well-being. While being enrolled in a Ph.D. program shows a trend toward poorer well-being compared to an M.Phil. program, this relationship is not statistically significant. In summary, a student's mental well-being is not determined by a single cause but is significantly influenced by a combination of their academic pressure, the availability of social support, their gender, and their financial status.

Table 4: Pearson Correlation Matrix of Key Continuous Variables (N=250)

Variable	1	2	3	4	5
1. Mental Well-being (GHQ)	1				
2. Academic Stress	.621**	1			
3. Social Support	-.572**	-.445**	1		
4. Supervisor Rapport	-.498**	-.512**	.334**	1	
5. Financial Strain	.451**	.388**	-.287**	-.211**	1
Mean	24.56	18.92	22.45	15.78	7.89
Standard Deviation	6.78	5.45	4.12	3.95	2.56

**p < .01 (2-tailed)

Table-4 displays the interrelationships between five key continuous variables through a Pearson correlation matrix, revealing a clear and statistically significant pattern of how these factors are associated with graduate student mental well-being. The analysis shows that mental well-being, as measured by the GHQ-12, has a strong positive correlation with academic stress, indicating that as academic stress increases, mental well-being significantly decreases. Conversely, mental well-being is strongly and negatively correlated with both social support and supervisor rapport, meaning that higher levels of these supportive resources are associated with better mental well-being. Financial strain also shows a moderate positive correlation with poorer mental well-being. Furthermore, the relationships between the predictor variables themselves are insightful; for instance, academic stress is negatively correlated with social support and supervisor rapport, suggesting that students with stronger support networks experience less academic stress, while a positive correlation exists between academic stress and financial strain, indicating these pressures often coexist.

Table 5: Cross-Tabulation of Funding Status by Reported Anxiety Level

	Anxiety Level (Self-Reported)			
Funding Status	**Minimal**	**Moderate**	**Severe**	**Total**
Self-funded	15 (17.6%)	35 (41.2%)	35 (41.2%)	85 (100%)
University Scholarship	30 (28.6%)	55 (52.4%)	20 (19.0%)	105 (100%)
Government/External Grant	25 (41.7%)	30 (50.0%)	5 (8.3%)	60 (100%)
Total	70 (28.0%)	120 (48.0%)	60 (24.0%)	250 (100%)

Chi-Square Test: $\chi^2(4, N=250) = 32.18$, $p < .001$, Cramer's V = .254				

This cross-tabulation in Table-5 reveals a stark and statistically significant relationship between a student's source of funding and their self-reported anxiety level, as confirmed by a strong Chi-Square test result ($\chi^2=32.18$, $p<.001$). The data demonstrates a clear gradient of financial security inversely related to severe anxiety: while a concerning 41.2% of self-funded students report severe anxiety, this figure drops substantially to 19.0% for those on university scholarships, and plummets to just 8.3% for the most financially secure group, those with government or external grants. Conversely, the proportion of students experiencing minimal anxiety is lowest among the self-funded (17.6%) and highest among those with external grants (41.7%). This pattern unequivocally identifies self-funded status as a major risk factor for severe psychological distress, highlighting how financial precarity is not merely an economic burden but a direct contributor to the mental health crisis among graduate students.

Table 6: Student Perceptions of Key Stressors (10-point Likert Scale)

Stressor	Mean	Standard Deviation	Rank
Fear of Unemployment/Job Insecurity	8.92	1.45	1
Pressure to Publish Research	8.45	1.67	2
Financial Constraints	8.30	1.89	3
Thesis/Dissertation Completion	7.95	1.72	4
Relationship with Supervisor	7.60	2.10	5
Peer Competition	6.88	2.05	6
Coursework and Examinations	6.45	1.98	7
Work-Life Balance	6.20	2.22	8

This table-6 ranks the perceived sources of academic stress as reported by graduate students, revealing that the most potent stressors are not the immediate academic tasks but rather future-oriented and systemic pressures. The foremost concern, by a significant margin, is the "Fear of Unemployment/Job Insecurity" (Mean=8.92), highlighting how anxiety about post-graduation prospects profoundly overshadows the educational process. This is closely followed by the "Pressure to Publish Research" (8.45) and "Financial Constraints" (8.30), indicating that the core demands of building an academic profile and the material cost of education are primary drivers of distress. Notably, traditional academic hurdles like "Coursework and Examinations" (6.45) and "Work-Life Balance" (6.20) are perceived as considerably less stressful, underscoring a critical finding: the graduate student experience is dominated by existential anxieties about future career viability and the structural pressures of the academic system itself, rather than the day-to-day demands of being a student.

Discussion

The pursuit of graduate education at Sindh Agriculture University (SAU), Tandojam, as revealed by this sociological analysis, is a period characterized not merely by intellectual rigor but by a profound and systematically produced psychological distress, where the very structure of the academic institution functions as a primary determinant of mental well-being (Smith & Ulus, 2020). This study quantitatively demonstrates that the high levels of anxiety and diminished mental health among graduate students are not random or purely individual afflictions but are directly configured by a powerful nexus of socioeconomic pressures and institutional practices, creating a landscape where stress is a socially structured and unequally distributed outcome (Maqsood, Gul, Noureen, & & Yaswi, 2024). The most potent source of this distress, ranked highest by students themselves, is the pervasive fear of unemployment and job insecurity, a finding that underscores a critical divergence from narratives centered solely on academic workload. In a developing context like Sindh, where a

postgraduate degree is often pursued as the paramount vehicle for socioeconomic mobility, the uncertainty of the labor market transforms academic performance into an existential gamble, tethering daily struggles to a future of precarious possibilities (James, Mallman, & & Midford, 2021; McDiarmid & Zhao, 2022). This overarching anxiety is compounded by the material reality of financial strain, where the regression analysis clearly identifies self-funded status as a significant predictor of poorer mental well-being, a burden starkly illustrated by the cross-tabulation showing that 41.2% of self-funded students report severe anxiety compared to a mere 8.3% of their peers on government grants. This chasm highlights a fundamental truth: the psychological toll of graduate school is inextricably linked to its economic cost, forcing students to navigate intellectual demands while grappling with the constant precarity of funding their education and livelihood, a phenomenon echoing studies from Brazil (Mhlanga, Juan, & Cooper, 2025) and South Africa (Hlatshwayo, 2024) where financial precarity is a primary driver of anxiety and attrition in doctoral programs.

However, the architecture of this distress is further refined by gender and social support, revealing the stratified nature of its impact. The significant association between female gender and poorer well-being points to the insidious "double burden" shouldered by women, who must reconcile the intense demands of academia with deeply ingrained patriarchal expectations and familial responsibilities, a pattern consistently observed in similar cultural contexts such as Egypt (Afiouni, 2014; Aziz, 2023). Conversely, the robust protective effect of strong social support and positive supervisor rapport, as evidenced by their negative correlation with poor mental health in the regression model, offers a crucial pathway for resilience, suggesting that supportive social networks, both peer-based and hierarchical, can act as a vital buffer against the institutional pressures of the system. The critical importance of the supervisor-student relationship, in particular, cannot be overstated; as research from China (Liang, Liu, & Zhao, 2021) and the United Kingdom confirms, a supportive mentor can provide not only academic guidance but also psychological reassurance, while a toxic or absent relationship can be one of the most significant predictors of depression and anxiety, highlighting the immense power dynamics at play (Hurd, Albright, Wittrup, Negrete, & & Billingsley, 2018). Viewing these findings through a broader sociological lens, the experience at SAU emerges as a potent local manifestation of a global phenomenon, where graduate education operates as a powerful socializing institution that normalizes chronic stress as a rite of passage. The "hidden curriculum" at play here internalizes norms of intense competition for scarce resources, be it funding, publications, or supervisor attention, and frames the resulting anxiety as an inevitable and even necessary component of scholarly development. This process aligns with the global trend of "academic capitalism," where students are socialized to see themselves as entrepreneurs of their own human capital, a trend vividly documented in the United States, which often leads to burnout and cynicism (Pavey, 2006). In Sindh, however, this global pressure is intensified by local socioeconomic constraints; the culture of hyper-competitiveness is overlaid with stronger familial obligations, a more dire job market, and a less robust social safety net, creating a unique "pressure cooker" environment where global academic demands are amplified rather than merely replicated (Beteille, et al., 2010). The contrast with contexts like Finland, where a strong welfare state, universal healthcare, and cultural value placed on work-life balance provide structural buffers against academic pressure (Anttila, Oinas, Tammelin, & & Nätti, 2015), only highlights how the deficits in support systems within Pakistan exacerbate the inherent stresses of graduate training.

Therefore, the implications of this research extend beyond mere documentation, demanding a fundamental re-evaluation of the social contract of graduate education in developing contexts. Theoretically, it argues for the adoption of a political economy framework in understanding student well-being, insisting that psychological distress cannot be comprehended in isolation from the economic structures of funding, the social dynamics of gender and geography, and the institutional practices of supervision and career preparation. Practically and politically, this translates into an urgent call for targeted, systemic interventions: financial support must be recognized and expanded as a direct mental health intervention, aimed at stabilizing the material foundation of students' lives; mandatory, rigorous training for academic supervisors is essential to transform mentorship from a tacit skill into a practiced and accountable responsibility, fostering supportive rather than corrosive dynamics; and

universities must invest in dedicated, culturally competent well-being centers and robust career development services that directly address the paramount fear of job insecurity by broadening students' professional horizons and linkages. Ultimately, this study concludes that the mental well-being of graduate students is not a peripheral concern or a sign of individual weakness but a core indicator of the health and sustainability of the higher education system. Addressing this crisis requires a decisive shift away from a paradigm that pathologizes individual resilience and toward one that courageously reforms the systemic structures of the social, economic, and institutional architectures that currently produce and distribute psychological distress as a matter of course. The future of academic excellence in Sindh and similar regions depends not on producing hardened survivors of a broken system, but on building a system that nurtures rather than negates the well-being of its scholars.

4. CONCLUSION

This study concludes that the pursuit of graduate education at Sindh Agriculture University is a period of systematically produced psychological distress, where mental well-being is fundamentally configured by the social institution of academia. The findings robustly demonstrate that the high prevalence of anxiety and diminished mental health is not a random distribution of individual afflictions but a direct consequence of a powerful nexus of socioeconomic pressures and institutional practices. The paramount fear of unemployment, the significant mental health burden of self-funding, and the stratified impact on female students collectively paint a picture of a system where stress is a socially structured and unequally distributed outcome.

Through a sociological lens, the graduate experience at SAU emerges as a local manifestation of global academic pressures, intensified by local constraints. The "hidden curriculum" normalizes chronic stress and intense competition for scarce resources, framing it as an inevitable rite of passage. However, in the Sindhi context, this global pressure is amplified by a precarious job market, strong familial obligations, and a weak social safety net, creating a unique "pressure cooker" environment. The protective role of social support and supervisor rapport offers a crucial pathway for resilience, yet it also underscores the system's reliance on variable interpersonal dynamics rather than structured institutional support. Ultimately, the mental well-being of graduate students is a core indicator of the health and sustainability of the higher education system itself, demanding a re-evaluation of the social contract of graduate education in developing regions.

In light of the findings, it is recommended that universities and government bodies implement a multi-pronged, systemic intervention strategy. This should begin with recognizing expanded financial support—through increased scholarships, fellowships, and grants—as a direct mental health intervention to alleviate the distress of self-funding. Concurrently, academic institutions must institute mandatory, rigorous training for supervisors to cultivate supportive mentorship and address toxic dynamics. Furthermore, universities should invest in dedicated, culturally competent well-being centers and robust career development services to provide psychological counseling and directly counter job market anxieties. To address the stratified impact of stress, gender-sensitive policies, such as on-campus childcare and flexible schedules, are essential to support female students, while the formal promotion of peer-mentoring programs and support networks should be actively funded to strengthen the protective social buffers that mitigate academic pressure.

While this study provides critical insights, several limitations should be acknowledged. First, the cross-sectional design captures data at a single point in time, which establishes associations but not causal relationships between the variables. Longitudinal studies are needed to trace the evolution of stress and well-being over the entire graduate student lifecycle.

Second, the study was conducted within a single university, Sindh Agriculture University, Tandojam. Although it serves as a critical case study, the findings may not be fully generalizable to all universities in Pakistan or other LMICs with different institutional cultures and socioeconomic landscapes. Future research should include multiple institutions across different regions for comparative analysis.

Third, the reliance on self-reported data through questionnaires is subject to potential biases, such as social desirability bias or recall inaccuracies. Future studies could benefit from a mixed-methods approach, incorporating in-depth qualitative interviews to provide richer, nuanced explanations for the statistical patterns observed here.

Finally, the study focused on a specific set of psychosocial and demographic variables. Other potentially relevant factors, such as prior mental health history, specific coping mechanisms, or the role of social media, were not explored and present avenues for future investigation.

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