


A Study of Clinical Psychopathology of University Students Using Multidimensional, Digitalised Psychometric Tools in Mumbai

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Abstract

Objective: This study aimed to evaluate the psychological distress, psychopathology, and resilience of university students in Mumbai using a multidimensional, digitalized psychometric assessment battery designed for early identification and triage of mental health concerns. **Methods:** A cross-sectional study was conducted among 442 engineering students at K.J. Somaiya Institute of Technology. Participants completed six validated digital screening tools assessing stress, psychiatric symptoms, mental health risk, resilience, positivity, and functioning. A digital algorithm classified students into referral pathways: self-help, counseling, or psychiatric intervention. Statistical analysis included K-means clustering, chi-square tests, and Pearson correlation. **Results:** A high prevalence of psychological stress (76%) was observed, with 14.3% experiencing severe stress. Severe psychiatric symptoms were present in 6.8% of participants, and 5.4% exhibited red-flag indicators requiring immediate psychiatric attention. Notably, 31% showed low resilience, and 36.6% reported impaired functioning. Chi-square analysis showed significant associations between stress and symptoms, resilience, and functioning ($p < 0.001$). Correlation analysis revealed strong inter-domain relationships, confirming

the value of comprehensive assessment. **Conclusion:** Multidimensional, digital psychometric screening provides a scalable, context-sensitive approach for identifying student mental health needs. Integrating such tools within academic institutions can enhance early intervention, promote mental well-being, and support tailored mental health services in university settings.

Keywords

Mental Health, Digital Application, Technology, Student, Screening, Assessment, Psychopathology

1. Introduction

Student mental health is increasingly recognized as a critical component of public health. In India, students face intense academic pressure, shifting socio-cultural dynamics, and limited access to mental health care. Conventional tools often overlook subclinical distress and early signs of psychopathology, leading to under-recognition and delayed intervention.

This study argues for a reconceptualization of student mental health screening as a multidimensional, preventive, and scalable strategy. Rather than focusing solely on clinical diagnosis, a broader framework allows for the identification of at-risk students, early intervention, and personalized care planning. The deployment of digital platforms further expands access and continuity of care [1].

Here is a concise and publication-ready paragraph that introduces your project and positions the current paper within its larger framework:

This paper presents findings from a larger university mental health initiative aimed at creating an integrated and sustainable model for promoting student well-being. The project is built on four core pillars: (1) mental health education, aimed at increasing awareness and reducing stigma; (2) systematic screening and psychometric assessment of students using culturally validated tools; (3) facilitated access to care and early intervention for those identified at risk; and (4) a structured training program for teachers and faculty, empowering them to identify, support, and refer students in distress. As part of this broader initiative, the present study focuses on the clinical psychopathology of university students in Mumbai, assessed through a multidimensional digital screening system. Using a set of validated psychometric instruments, the study explores the prevalence, clustering, and correlates of stress, psychiatric symptoms, risk exposure, resilience, and functional impairment, offering valuable insights for institutional mental health planning and triage systems.

2. Review of Literature

2.1. Reconceptualizing Student Mental Health: A Preventive, Holistic Approach

Globally, data from the WHO World Mental Health Surveys indicate high preva-

lence rates of common mental disorders among college students, particularly mood and anxiety disorders [2]. Similar trends are observed in India, with studies showing 30% - 60% of students reporting distress, low mood, anxiety, loneliness, and hopelessness [3] [4]. Yet only a small proportion of affected students receive mental health support. Structural barriers, stigma, and lack of mental health literacy continue to hinder access, both globally and in India.

Mental health challenges among Indian college and university students have emerged as a pressing public health concern. A substantial body of research points to high rates of stress, anxiety, depression, and suicidal ideation. Deb *et al.* reported that nearly 40% - 50% of Indian students experience moderate to severe stress, driven by academic pressure, parental expectations, and fear of failure [5]. The National Mental Health Survey of India (2016) estimated that around 14% of adolescents and young adults are affected by common mental disorders, although this likely underrepresents the true burden due to unrecognized subclinical symptoms [6]. Studies in engineering and medical colleges report depression rates as high as 30%, anxiety around 35% - 40%, and suicidal thoughts in 15% - 20% of students [7] [8]. While mental disorders affect an estimated 10% - 15% of students, broader surveys suggest that up to 60% may experience some form of emotional or psychological difficulty during their education [9]. However, most existing assessments are narrowly focused on clinical diagnosis and do not adequately capture subthreshold symptoms, functional impairments, or positive mental health attributes like resilience and adaptability. There is a critical need for comprehensive screening tools that can evaluate both mental distress and emotional strengths. The WHO's Comprehensive Mental Health Action Plan (2023) emphasizes this broader approach, advocating for early identification and mental health promotion in educational settings [10].

Subclinical symptoms—psychological distress that does not meet diagnostic thresholds—are increasingly recognized as significant predictors of poor academic performance, impaired social functioning, and future psychiatric illness. Eisenberg *et al.* and Reavley & Jorm found that interventions targeting these symptoms improve not only mental health outcomes but also resilience and academic engagement [11] [12]. Unfortunately, most screening tools fail to account for these experiences, particularly in the Indian context. While digital tools are gaining traction, few have been adequately validated for Indian student populations, and their real-time intervention capacity remains limited.

Despite rising psychological distress, help-seeking among Indian students remains remarkably low. Cultural stigma, poor awareness, fear of being judged, and skepticism about mental health services create formidable barriers to care [13] [14]. Eisenberg *et al.* found that even students who acknowledge their mental health issues are often reluctant to seek help due to concerns about stigma or being misunderstood [11]. In India, sociocultural factors and family attitudes can further inhibit disclosure, leading to a disconnect between need and access to care. The lack of structured referral systems and inadequate mental health infrastruc-

ture on campuses compound this gap.

Delayed recognition and treatment of mental health concerns have serious implications. Students facing chronic distress often experience academic decline, absenteeism, social withdrawal, and dropout. Psychologically, untreated emotional problems can escalate into clinical disorders or suicidal behaviour. The National Crime Records Bureau reported over 13,000 student suicides in one year—highlighting the urgency of the mental health crisis [15]. Research also shows that untreated depression and anxiety are linked to longer illness duration and poorer recovery outcomes [16].

Recent national initiatives—such as the University Grants Commission’s (UGC) directive to establish mental health cells in colleges—reflect growing institutional recognition of the crisis. However, implementation is uneven, and many institutions lack structured protocols for screening, referral, or follow-up. The urgency of the situation demands a shift in policy and research from diagnosis-driven models to preventive, inclusive strategies that can identify at-risk students before crises occur. Digitally scalable and culturally adapted psychometric tools may serve as the bridge between growing need and limited resources.

2.2. Rationale for a Multidimensional Assessment Approach

Mental health assessment among university students must move beyond single-domain symptom checklists toward a more nuanced, multidimensional framework that captures the full spectrum of psychological functioning. The complexity of student mental health, particularly in high-stress academic environments like India, cannot be adequately understood through tools that only assess depression or anxiety. Instead, effective screening must incorporate interrelated domains such as perceived stress, psychiatric symptoms, functional impairment, resilience, and environmental risk factors.

First, mental health exists on a continuum, not a binary of “ill” versus “well”. As proposed in Keyes’ dual-continua model, it is possible for individuals to exhibit mental illness while functioning well, and conversely, to have no diagnosable disorder yet experience languishing or low well-being [17]. Most students fall somewhere in the middle of this continuum, often with subclinical symptoms—such as irritability, emotional detachment, or sleep disruption—that do not meet diagnostic thresholds but still impair academic and social functioning [11] [12]. Traditional assessments like the PHQ-9 or GAD-7, while useful in primary care, are insufficient in capturing these subtle, non-clinical presentations [18].

Moreover, symptomatology alone does not determine care needs. For example, a student with mild anxiety but severe functional decline may require urgent intervention, while another with moderate symptoms and high resilience may benefit from peer-based or self-guided strategies. Thus, incorporating functional assessment into screening allows institutions to detect declines in attention, motivation, academic performance, and social interaction—outcomes that are highly relevant in educational settings [10] [19].

Equally important is the inclusion of resilience and protective factors, which moderate the effects of stress and predict recovery trajectories. Herrman *et al.* emphasize that resilience—defined as the ability to adapt and bounce back from adversity—is crucial in mitigating the impact of psychological distress [20]. Students with higher resilience demonstrate greater persistence, emotional regulation, and problem-solving, even in the face of comparable stress levels. Ignoring these strengths in assessment leads to overly pathologized or risk-heavy profiles that may not reflect actual need or coping capacity.

Environmental and psychosocial risk factors, such as bullying, academic failure, or family conflict, further complicate the mental health landscape of students. These factors are well-documented antecedents to emotional disorders and functional impairment, particularly in low-resource or high-pressure contexts [2] [21]. Screening tools that do not incorporate these variables risk misclassifying or overlooking at-risk individuals who may present with early distress signals masked by high functioning or social desirability.

In India, the case for multidimensional assessment is especially compelling. The high prevalence of distress, coupled with low help-seeking behavior, mental health stigma, and limited access to services, creates a critical need for scalable, non-stigmatizing tools that can detect distress before it becomes disabling [7] [14]. Digitally delivered, culturally sensitive screening platforms offer the possibility of real-time data collection, algorithmic triage, and population-level mental health monitoring [22].

This paper presents clinical psychopathology and argues that mental health in student populations should not be narrowly defined by the presence or absence of diagnosable psychiatric disorders. It further reiterates that a significant proportion of students suffer from subthreshold symptoms and functional difficulties that may not meet clinical criteria but still impair academic performance, emotional well-being, and interpersonal functioning. Emerging evidence suggests that these subclinical symptoms are often precursors to more severe mental illness and deserve equal attention in screening and early intervention efforts [21].

3. Methodology

3.1. Design

The study was a collaborative initiative between Mansik Shakti Foundation and the Department of Artificial Intelligence and Data Sciences, K.J. Somaiya Institute of Technology, Mumbai. The primary aim was to estimate the prevalence of mental health issues among engineering students and map the spectrum of their mental health needs.

Ethical approval was obtained from the Institutional Ethics Committee, and administrative clearance was granted by the college administration. Participants were informed that their involvement was entirely voluntary, and data confidentiality would be strictly maintained. No personally identifiable information was collected.

A digital research design was employed to ensure broad accessibility and structured data collection. Six standardized psychometric tools were digitized using Google Forms and later integrated into a custom-built digital platform, accessible via both web and mobile applications. These tools assessed key domains such as stress, psychological symptoms, emotional well-being, resilience, and functional impairment. These tests collectively called as Mental Health Assessment Scales for Students (MASS) were developed to provide a comprehensive, culturally sensitive, and psychometrically sound framework for evaluating student mental health.

To improve scalability, accessibility, and real-time applicability, the MASS system was digitalised into a mobile and web-based screening platform. In this version students can complete the assessments on smartphones, tablets, or computers in a supervised or unsupervised setting. The questions are presented in clear, accessible language, optimized for ease of use. The scales were tested and validated, and the findings are reported elsewhere.

Each scale is scored instantly through an embedded algorithm, which classifies responses into risk levels (normal, mild, moderate, severe) using pre-validated cut-offs. Evidence-based criteria formed an algorithm which classified mental health needs. Based on cumulative scores across all domains, the platform automatically generates a recommendation: Self-development (well-being promotion), counseling referral or a psychiatric referral.

Student responses are stored on encrypted servers with secure access protocols, ensuring privacy and compliance with ethical standards. The system allows batch screening of large student cohorts and generates summary reports for individuals. Participation was voluntary and anonymous.

3.2. Sample Size Estimation

A minimum sample size of 314 students was calculated using Cochran's formula for a finite population of 1,700 students, with an expected prevalence of 50%, a 95% confidence level, and a 5% margin of error. To ensure adequate power and account for possible dropouts or incomplete responses, a final target sample of 320 students was adopted.

3.3. Participants and Procedure

Students participated in the screening process in supervised classroom settings, with faculty members from the research team present. Each student took approximately 20 - 25 minutes to complete the digital assessment. Before participation, students were clearly briefed about Confidentiality, Voluntary participation, availability of support services. Students were encouraged to discuss participation with family, and concerns from parents would be duly addressed. Students were told there were no right or wrong answers, and the focus was on honest self-reflection.

The sample consisted of undergraduate and postgraduate students from a uni-

versity in Punjab, India. A total of 520 students were invited, out of which 442 consented and completed all measures, yielding a response rate of 82%. Common causes for attrition were: “not interested”, “I have no psychological problem”, “unable to understand”, and incomplete responses.

Statistical analysis of the results was done using SPSS. We used K-means clustering to identify subgroups based on MASS scores across the domains assessed. The number of clusters was decided a-priori ($k = 4$) and an iterative testing of multiple k values was carried out. Random initialising of cluster centres was done and the clusters converged between 2 to 8 iterations suggesting good convergence. Summaries of cluster characteristics are shown in **Table 1**.

Furthermore, correlational analysis was done using Spearman’s rho due to the non-normal nature of the data.

Table 1. Summaries of cluster characteristics.

Assessment Tool	Final Cluster Centers				F
	1	2	3	4	
1. Stress	16.63	41.54	6.08	28.69	1540.299**
2. Warning Symptoms	5.84	2.81	0.37	8.71	2154.254**
3. Psychiatric Symptoms	5.32	41.88	22.81	64.96	1861.711**
4. Risk Factors	2.75	1.00	0.00	5.38	1373.142**
5. Resilience and Positivity	114.69	94.20	73.26	43.97	1773.891**
6. Functioning	74.94	51.56	13.19	41.09	725.566**

**= $p < 0.01$

Information was provided following the screenings. Students with elevated mental health risks were provided mental health services. Those who expressed a need for further guidance were offered brief sessions with psychologists on the research team. Students were encouraged to connect with counselors, teachers, or psychiatrists depending on their screening outcomes (**Table 2**). Providing appropriate intervention was integral part of the study. The sensitivity and specificity analysis of the algorithm-based referral system is underway and will be reported in subsequent studies.

Table 2. Referral decision criteria used for developing the algorithm.

Domain	Self-Development	Counsellor Referral	Psychiatrist Referral
Primary Criteria			
Stress Level	Normal or Mild	Moderate to Severe	Severe with additional symptoms
Warning Symptoms	Absent	Absent	Severe
Secondary criteria			
Risk Factors	Absent	Present	Multiple or high-risk indicators

Continued

Resilience	Mildly reduced or normal	Moderate to severely abnormal	Severely abnormal with impairment
Functioning	Mild dysfunction	Moderate to severe dysfunction	Significant impairment in daily activities
Challenges	Few or manageable	Present	Multiple, persistent, or acute challenges

4. Results

These tests collectively called as Mental Health Assessment Scales for Students (MASS) were developed to provide a comprehensive, culturally sensitive, and psychometrically sound framework for evaluating student mental health across multiple domains with six validated scales which show good internal reliability and construct validity established using EFA and CFA:

- Scale for Severity of Stress with 13 items (Cronbach's Alpha = 0.941, GFI = 0.964, CFI = 0.986, RMR = 0.038, and RMSEA = 0.043);
- Psychiatric Warning Symptoms with 10 items (Cronbach's Alpha = 0.815, GFI = 0.971, CFI = 0.965, RMR = 0.006, and RMSEA = 0.048);
- Mental Health (Psychiatric) Symptoms with 21 items (Cronbach's Alpha = 0.954, GFI = 0.930, CFI = 0.972, RMR = 0.051, and RMSEA = 0.049);
- Risk Factors with 6 items (Cronbach's Alpha = 0.667, GFI = 0.988, CFI = 0.972, RMR = 0.003, and RMSEA = 0.049);
- Resilience and Positivity with 24 items (Cronbach's Alpha = 0.973, GFI = 0.887, CFI = 0.958, RMR = 0.043, and RMSEA = 0.065).

Level of functioning and well-being with 22 items (Cronbach's Alpha = 0.824, GFI = 0.908, CFI = 0.943, RMR = 0.071, and RMSEA = 0.056).

The study revealed a high prevalence of psychological stress among university students, with 73.5% reporting some level of stress (**Table 3**). Notably, 14.3% of the students fell into the severe stress category. This elevated stress was significantly associated with increased psychiatric symptomatology, diminished resilience, and impaired daily functioning, indicating the wide-reaching effects of stress on student well-being.

Table 3. Prevalence and severity indicators across domains among students (N = 442).

Domain	Severity N (%)			
	Normal	Mild	Moderate	Severe
Stress	117 (26.5%)	112 (25.3%)	150 (33.9%)	63 (14.3%)
Warning Symptoms	210 (47.5%)	120 (27.1%)	88 (19.9%)	24 (5.4 %)
Psychiatric Symptoms	182 (41.2%)	119 (26.9%)	114 (25.8%)	27 (6.1%)
Risk Factors	222 (50.2%)	82 (18.6%)	130 (29.4%)	8 (1.8%)
Resilience	124 (28.1%)	154 (34.8%)	131 (29.5%)	33 (7.5%)
Functioning	34 (7.7%)	155 (35.1%)	237 (53.6%)	16 (3.6%)

Regarding mental health symptom burden, 6.1% of participants exhibited severe psychiatric symptoms that warranted clinical attention, while 5.4% presented with red-flag indicators such as hallucinations, delusions, or suicidal ideation. The most frequently reported symptoms included lack of interest (38%), suspiciousness (34.8%), depressed mood (20.6%), auditory hallucinations (9%), and addiction-related behaviors (4.5%) (**Table 4**).

Table 4. Psychiatric symptoms reported by students.

Symptom	Prevalence (%)
Lack of interest	38.0
Suspiciousness	34.8
Depressed mood	20.6
Auditory hallucinations	9.0
Addiction symptoms	4.5
Persistent worry	7.7
Sense of impending doom	7.7
Emotional detachment	10.2

In terms of psychosocial risks, several vulnerability factors were prominent among the sample. Difficulty making new friends (25.8%), academic struggles (23%), childhood bullying (15.8%), and experiences of discrimination (15.2%) were commonly reported (**Table 5**). These risk factors demonstrated strong associations with both psychiatric symptoms and impaired functioning, reinforcing their role in undermining student mental health.

Table 5. Risk and vulnerability factors.

Risk Factor	Prevalence (%)
Difficulty making new friends	25.8
Ongoing stress	25.0
Academic struggle	23.0
Childhood bullying	15.8
Experience of discrimination	15.2

Resilience deficits were also widespread. Only 28.1% of students were classified as having high resilience, while 7.5% exhibited severely low resilience. This subgroup was particularly vulnerable to stress and emotional dysregulation. A correlational analysis (**Table 6**) confirmed a highly significant inverse relationship between stress and resilience ($r_s = -0.351$; $p < 0.001$), highlighting the importance of protective psychological traits in buffering mental distress.

Table 6. Correlations between domains of mental health in students.

	Stress	Warning Symptoms	Psychiatric Symptoms	Risk Factors	Resilience	Functioning
Stress	1.000					
Warning Symptoms	0.559**	1.000				

Continued

Psychiatric Symptoms	0.782**	0.550**	1.000			
Risk Factors	0.460**	0.590**	0.480**	1.000		
Resilience	-0.351**	-0.275**	-0.388**	-0.296**	1.000	
Functioning	0.133**	0.013	0.090	0.004	0.388**	1.000

Functional capacity emerged as another key dimension. Merely 7.7% of students reported high levels of daily functioning, while 56.6% demonstrated low to severely impaired functioning, which impacted academic engagement, sleep, social interactions, and motivation. High functioning was strongly significantly associated with resilience ($r_s = 0.388$, $p < 0.001$).

Using a digital triage algorithm, students were categorized into one of three referral groups: self-development (63%), counseling referral (31%), or psychiatric referral (6%). These outcomes aligned strongly with individual profiles based on the multidimensional screening, validating the appropriateness of stratified referral.

Table 7. Referrals based on algorithmic triaging.

Referral Category	Percentage of Students (%)	N
Self-development	63	278
Counseling Referral	31	137
Psychiatric Referral	6	27

Correlational analysis further demonstrated strong inter-domain relationships. Stress showed strong significant positive correlations with psychiatric symptoms ($r_s = 0.782$, $p < 0.001$) and risk factors ($r_s = 0.460$, $p < 0.001$), and significant negative correlations with resilience ($r = -0.351$, $p < 0.001$). Additionally, resilience was significantly negatively correlation with all the measures, except functioning (**Table 7**).

This study demonstrates the feasibility and utility of multidimensional, digital screening in a high-stress academic environment. Based on severe stress, symptoms, low resilience, and poor functioning, the most at-risk students (approximately 6% - 10%) can be described to have following characteristics:

- Frequently reporting hopelessness, anhedonia, and social withdrawal;
- Experiencing hallucinations or delusions in rare but concerning cases;
- Exhibiting early life trauma (bullying, discrimination) and ongoing stressors;
- Demonstrating low psychological flexibility, avoidant coping, and academic disengagement;
- Facing barriers to help-seeking, including stigma and poor awareness.

5. Discussion

5.1. Severity Stratification and Domain-Specific Patterns

The findings from this study highlight that psychological distress among univer-

sity students is both widespread and multifaceted. Using the MASS framework and K-means clustering, we identified that 73.5% of students reported some level of psychological stress, and 14.3% were in the severe stress category. These findings are consistent with Indian studies that report stress rates ranging from 50% to 80% across higher education settings [23] [24]. Importantly, severe stress often occurred alongside psychiatric symptoms and functional difficulties, reinforcing the need to assess student mental health across multiple domains rather than through a symptom-only lens.

A significant subset of students—6.1%—reported severe psychiatric symptoms, and 5.4% showed red-flag indicators such as hallucinations, delusions, or suicidal thoughts. These are concerning figures, especially since such students may not come to clinical attention through traditional academic or behavioral observations. Like findings from van Os *et al.*, the presence of psychotic-like symptoms in stressed youth underscores the urgent need for systematic screening, especially in non-clinical academic environments [25].

5.2. Domain-Specific Patterns and Psychosocial Complexity

Within the stress domain, emotional reactivity (37.4%) and social withdrawal (34.1%) were the most common presentations. These issues disrupt students' ability to engage academically and socially and are early warning signs for more serious mental health conditions (25,26). Symptoms such as anhedonia (38%), suspiciousness (34.8%), and depressed mood (20.6%) reflect a wide spectrum of emotional distress. Though often subclinical, these symptoms can interfere with daily life and academic success.

Psychosocial risk factors also featured prominently: a significant portion of students had experienced bullying (15.8%) or discrimination (15.2%). These findings echo studies highlighting the long-term mental health consequences of adverse social experiences during adolescence and young adulthood [26]. The presence of such risk factors justifies the need for preventive, campus-wide interventions like psychoeducation, peer mentoring, and anti-discrimination initiatives.

Equally noteworthy is the finding that only 28.1% of students demonstrated high resilience, while 37.1% were severe to moderately low in resilience. This imbalance suggests that a large proportion of students lack the psychological resources needed to cope with stress. As noted by Herrman *et al.*, resilience is not solely an innate trait—it is nurtured through relationships, role models, and system-level support [27]. The absence of such support mechanisms in university settings likely contributes to the emotional vulnerability observed in this study.

Functioning was another critical area of concern. Just 7.7% of students reported high levels of functioning, while over one-third experienced moderate to severe impairments in academic performance, social interaction, or daily routines. These impairments often go unnoticed in the absence of a clinical diagnosis but have significant long-term consequences. Studies emphasize that functional impairment is a key determinant of dropout risk and future disability, sometimes even

more so than symptom severity alone [28] [29]. These findings make a compelling case for multidimensional, early mental health screening in universities, especially in India's high-pressure academic environments. Psychological stress in students rarely exists in isolation—it is embedded in a web of emotional, social, and functional challenges. The MASS framework effectively captures this complexity and enables early identification and stratified support. Universities must adopt comprehensive, digital, and preventive approaches to identify struggling students and intervene before these challenges escalate into crises.

5.3. Inter-Domain Correlation and Implications for Screening

Stress and Psychiatric Symptoms ($r_s = 0.782$, $p < 0.001$). A strong positive correlation was observed between perceived stress and psychiatric symptoms, suggesting that higher stress levels are closely linked to emotional and psychological distress. This supports the well-established stress-vulnerability model [30], indicating that stress amplifies susceptibility to anxiety, depression, and somatic complaints. Similar trends have been reported in Indian student populations under academic pressure [21] [31]. These findings emphasize the importance of screening for stress and symptoms together, even before clinical thresholds are crossed.

Risk Factors and Psychiatric Symptoms ($r = 0.480$, $p < 0.001$). Environmental and historical risk exposures, such as bullying, academic struggles, and discrimination, showed a strong association with current psychiatric symptoms. This aligns with trauma-informed models and studies that link early adversity to long-term emotional difficulties [26] [32]. Including risk factors in assessment allows for a developmentally sensitive and context-aware approach to early identification.

Stress and Resilience ($r = -0.351$, $p < 0.001$). The inverse relationship between stress and resilience indicates that students experiencing high stress often report lower ability to cope. This supports the protective buffering model, where resilience mitigates the negative effects of stress [27] [33]. These findings highlight the importance of resilience-building interventions, such as emotional regulation training and peer support, especially in high-pressure academic settings.

Resilience and Functioning ($r = 0.388$, $p < 0.001$). Resilience was moderately and positively associated with better functioning, reinforcing that students who cope well are more likely to maintain academic engagement and social participation. These results support findings from positive psychology, where traits like optimism, purpose, and peer connection are linked to stronger outcomes in student populations [34].

5.4. Referral Pathways and Service Triage

The MASS tool's triage algorithm successfully allocated 63% of students to self-development, 31% to counseling, and 6% to psychiatric referral. This stratification shows clear alignment with the symptom severity and risk burden observed across the domains. The fact that nearly one-third required psychosocial support—de-

spite being in an academic setting—underscores the invisible burden of subclinical mental health issues, which often go unrecognized in Indian higher education.

This digital stratification model is consistent with stepped-care and task-sharing frameworks widely advocated in global student mental health initiatives [29]. The clear differentiation between those who benefit from psychoeducation and those needing professional intervention supports cost-effective, scalable care planning—a major advantage for resource-limited academic institutions.

Together, these findings validate the MASS system's capacity to detect multi-layered psychological challenges, triage appropriately, and provide actionable insights at the institutional level. The combination of symptom screening, stress measurement, risk profiling, resilience assessment, and functioning evaluation represents a comprehensive model aligned with international best practices in early mental health intervention [33] [34].

It is important to recognize that while the term “stress” is widely used, it is often poorly understood or inadequately contextualized in mental health discourse. When stress is mild or moderate, its psychological impact may be limited or manageable. However, severe stress frequently co-occurs with a range of psychiatric symptoms—including mood disturbances, cognitive distortions, and social withdrawal—which significantly increase a student's psychological vulnerability and may serve as early indicators or precursors of psychiatric disorders.

This finding holds important implications for university mental health programs. Institutions must acknowledge that a much larger proportion of students need attention and support than just those meeting clinical criteria for mental illness. Many students experiencing high stress may not qualify for a diagnosis, yet still suffer considerable emotional and functional impairment.

Crucially, this aspect cannot be identified through unidimensional psychometric screening tools that assess only one domain (e.g., depression or anxiety). The core message of this study is the necessity of adopting a multidimensional assessment approach, such as the MASS framework, which can capture the interplay of stress, symptoms, resilience, risk factors, and functioning. Only such an approach enables early identification, nuanced triage, and timely intervention—well before symptoms escalate into full-blown psychiatric disorders.

6. Conclusions

The holistic approach used in this study—integrating stress, symptoms, risk, resilience, and functioning—offers a full-spectrum view of student mental health. The results not only validate the internal coherence of the MASS psychometric model but also demonstrate its practical application in identifying varying degrees of psychological risk. Moreover, the system's capacity to triage referrals in real-time makes it a valuable tool for resource optimization in university settings with limited mental health infrastructure.

In summary, this data underscores the importance of comprehensive, multidimensional, and culturally responsive screening in higher education environments.

A single-domain approach risks overlooking critical aspects of vulnerability and well-being. The MASS system, by contrast, captures the nuances of student mental health with both clinical precision and contextual relevance.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] American Psychiatric Association (2022) Diagnostic and Statistical Manual of Mental Disorders. 5th Edition, American Psychiatric Publishing.
- [2] Auerbach, R.P., Alonso, J., Axinn, W.G., Cuijpers, P., Ebert, D.D., Green, J.G., *et al.* (2016) Mental Disorders among College Students in the World Health Organization World Mental Health Surveys. *Psychological Medicine*, **46**, 2955-2970.
<https://doi.org/10.1017/s0033291716001665>
- [3] Kumar, S., Sharma, S. and Mishra, A. (2020) Prevalence of Depression, Anxiety, and Suicidal Ideation among Medical and Engineering Students: A Cross-Sectional Study. *Indian Journal of Psychological Medicine*, **42**, 344-348.
- [4] Singh, R. and Goyal, M. (2019) Mental Health Issues in College Students: A Cross-Sectional Multicentric Study. *Asian Journal of Psychiatry*, **45**, 51-55.
- [5] Shrivastava, A., Eynan, R., Shah, R., Dutt, L., Parkar, S., Rao, T.S.S. and Thakar, M. (2014) Mental Health of University Students: Perspectives for Intervention and Prevention—An Indo-Canadian Collaborative Project. Regional Mental Health Care Research Forum, London.
- [6] National Institute of Mental Health and Neurosciences (NIMHANS) (2016) National Mental Health Survey of India, 2015-16: Summary. Ministry of Health and Family Welfare, Government of India.
- [7] Kumar, P., Raj, A. and Bansal, Y. (2021) Depression and Anxiety among Indian Engineering Students: Prevalence and Correlates. *Journal of Affective Disorders*, **278**, 123-129.
- [8] Singh, B. and Khurana, H. (2020) Mental Health Problems and Suicidal Ideation in Indian Medical Students: A Cross-Sectional Study. *Medical Journal Armed Forces India*, **76**, 223-228.
- [9] Arora, A., Shah, A. and Vohra, N. (2021) Mental Health Challenges among Indian Youth: A Narrative Review. *Indian Journal of Community Medicine*, **46**, 1-6.
- [10] World Health Organization (2023) Comprehensive Mental Health Action Plan 2023-2030. WHO.
- [11] Eisenberg, D., Hunt, J. and Speer, N. (2009) Mental Health in College Students and Their Non-College-Attending Peers: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Psychiatric Services*, **60**, 1254-1260.
- [12] Reavley, N.J. and Jorm, A.F. (2014) Prevention and Early Intervention to Improve Mental Health in Higher Education Students: A Review. *Early Intervention in Psychiatry*, **8**, 103-113.
- [13] Lauber, C. and Rössler, W. (2007) Stigma Towards People with Mental Illness in Developing Countries in Asia. *International Review of Psychiatry*, **19**, 157-178.
<https://doi.org/10.1080/09540260701278903>
- [14] Gaiha, S.M., Taylor Salisbury, T., Koschorke, M., Raman, U. and Petticrew, M. (2020) Stigma Associated with Mental Health Problems among Young People in India: A

- Systematic Review of Magnitude, Manifestations and Recommendations. *BMC Psychiatry*, **20**, Article No. 538. <https://doi.org/10.1186/s12888-020-02937-x>
- [15] National Crime Records Bureau (2022) Accidental Deaths and Suicides in India 2021. Ministry of Home Affairs, Government of India.
 - [16] Patel, V., Araya, R., Chowdhary, N., King, M., Kirkwood, B., Nayak, S., *et al.* (2007) Detecting Common Mental Disorders in Primary Care in India: A Comparison of Five Screening Questionnaires. *Psychological Medicine*, **38**, 221-228. <https://doi.org/10.1017/s0033291707002334>
 - [17] Keyes, C.L. (2005) The Subjective Well-Being of America's Youth: Toward a Comprehensive Assessment. *Adolescent & Family Health*, **4**, 3-11.
 - [18] Naslund, J.A., Aschbrenner, K.A., Araya, R., Marsch, L.A., Unützer, J., Patel, V., *et al.* (2017) Digital Technology for Treating and Preventing Mental Disorders in Low-Income and Middle-Income Countries: A Narrative Review of the Literature. *The Lancet Psychiatry*, **4**, 486-500. [https://doi.org/10.1016/s2215-0366\(17\)30096-2](https://doi.org/10.1016/s2215-0366(17)30096-2)
 - [19] Kovess-Masfety, V., Leray, E., Denis, L., Husky, M., Pitrou, I. and Bodeau-Livinec, F. (2016) Mental Health of College Students and Their Non-College-Attending Peers: Results from a Large French Cross-Sectional Survey. *BMC Psychology*, **4**, 20. <https://doi.org/10.1186/s40359-016-0124-5>
 - [20] Shrivastava, A. and Desousa, A. (2016) Resilience: A Psychobiological Construct for Psychiatric Disorders. *Indian Journal of Psychiatry*, **58**, 38. <https://doi.org/10.4103/0019-5545.174365>
 - [21] Kessler, R.C., Amminger, G.P., Aguilar-Gaxiola, S., Alonso, J., Lee, S. and Ustun, T.B. (2007) Age of Onset of Mental Disorders: A Review of Recent Literature. *Current Opinion in Psychiatry*, **20**, 359-364. <https://doi.org/10.1097/yco.0b013e32816ebc8c>
 - [22] Torous, J., Wisniewski, H., Bird, B., Carpenter, E., David, G., Elejalde, E., *et al.* (2019) Creating a Digital Health Smartphone App and Digital Phenotyping Platform for Mental Health and Diverse Healthcare Needs: An Interdisciplinary and Collaborative Approach. *Journal of Technology in Behavioral Science*, **4**, 73-85. <https://doi.org/10.1007/s41347-019-00095-w>
 - [23] Deb, S., Strodl, E. and Sun, J. (2015) Academic Stress, Parental Pressure, Anxiety and Mental Health among Indian High School Students. *International Journal of Psychology and Behavioral Sciences*, **5**, 26-34.
 - [24] Kumar, S., Jha, P., Singh, S.K. and Kumar, N. (2021) Mental Health Challenges among Indian College Students: A Cross-Sectional Survey. *Asian Journal of Psychiatry*, **65**, Article ID: 102863.
 - [25] van Os, J., Linscott, R.J., Myin-Germeys, I., Delespaul, P. and Krabbendam, L. (2008) A Systematic Review and Meta-Analysis of the Psychosis Continuum: Evidence for a Psychosis Proneness-Persistence-Impairment Model of Psychotic Disorder. *Psychological Medicine*, **39**, 179-195. <https://doi.org/10.1017/s0033291708003814>
 - [26] Arseneault, L. (2017) Annual Research Review: The Persistent and Pervasive Impact of Being Bullied in Childhood and Adolescence: Implications for Policy and Practice. *Journal of Child Psychology and Psychiatry*, **59**, 405-421. <https://doi.org/10.1111/jcpp.12841>
 - [27] Herrman, H., Stewart, D.E., Diaz-Granados, N., Berger, E.L., Jackson, B. and Yuen, T. (2011) What Is Resilience? *The Canadian Journal of Psychiatry*, **56**, 258-265. <https://doi.org/10.1177/070674371105600504>
 - [28] Blanco, C., Okuda, M., Wright, C., Hasin, D.S., Grant, B.F., Liu, S., *et al.* (2008) Mental Health of College Students and Their Non-College-Attending Peers: Results from

- the National Epidemiologic Study on Alcohol and Related Conditions. *Archives of General Psychiatry*, **65**, 1429-1437. <https://doi.org/10.1001/archpsyc.65.12.1429>
- [29] World Health Organization (2022) World Mental Health Report: Transforming Mental Health for All. WHO.
- [30] Lazarus, R.S. and Folkman, S. (1984) Stress, Appraisal, and Coping. Springer Publishing Company.
- [31] Eisenberg, D., Gollust, S.E., Golberstein, E. and Hefner, J.L. (2007) Prevalence and Correlates of Depression, Anxiety, and Suicidality among University Students. *American Journal of Orthopsychiatry*, **77**, 534-542. <https://doi.org/10.1037/0002-9432.77.4.534>
- [32] Kessler, R.C., McLaughlin, K.A., Green, J.G., Gruber, M.J., Sampson, N.A., Zaslavsky, A.M., et al. (2010) Childhood Adversities and Adult Psychopathology in the WHO World Mental Health Surveys. *British Journal of Psychiatry*, **197**, 378-385. <https://doi.org/10.1192/bjp.bp.110.080499>
- [33] Connor, K.M. and Davidson, J.R.T. (2003) Development of a New Resilience Scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, **18**, 76-82. <https://doi.org/10.1002/da.10113>
- [34] Seligman, M.E.P., Steen, T.A., Park, N. and Peterson, C. (2005) Positive Psychology Progress: Empirical Validation of Interventions. *American Psychologist*, **60**, 410-421. <https://doi.org/10.1037/0003-066x.60.5.410>