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Assessment of Mental Health Risk among University Students in India: A Multidimensional Staging Model

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Abstract

Background: University students face a growing burden of psychological distress, often manifesting as subclinical symptoms that remain undiagnosed and untreated. Traditional clinical approaches fail to address this early stage of mental health deterioration, limiting opportunities for timely intervention. To address this gap, we introduce a staging-based framework for mental health risk stratification using a digital, psychometrically validated tool—Mental Health Assessment Scales for Students (MASS). **Objective:** This study aims to operationalize a staging model of mental health in university populations by assessing risk indicators, early symptoms, stress levels, functional decline, and resilience. We identify individuals across a continuum from well-being to illness and evaluate MASS as a digital screening mechanism for scalable early intervention. **Method:** A cross-sectional digital screening was conducted among 442 university students using six MASS scales: Severity of Stress, Psychiatric Symptoms, Mental Health Risk Checklist, Risk and Protective Factors Inventory, Positive Mental Health, and Functioning & Well-Being. Scores were analyzed to classify students into four mental health stages (Stage 1: Healthy/Resilient, Stage 2: At Risk, Stage 3: Symptomatic, Stage 4: Functionally Impaired). Correlation and group-level comparisons were performed to assess the psychometric robustness and clinical relevance of the staging model. **Results:** 6% of students met criteria for Level 4, exhibiting severe symptoms, significant functional impairment, and acute warning signs

including 2.7% reporting suicidal ideation. These students required urgent psychiatric intervention. 22.2% fell under Level 3, marked by moderate to severe psychological distress, subclinical depression and anxiety, poor coping skills, and notable functional decline. 31% were classified as Level 2, with early symptoms and reduced functioning but no diagnosable disorder, indicating a critical need for preventive counseling and psychoeducation. 29.1% were categorized as Level 1, showing healthy functioning, high resilience, and strong protective factors. These students represent a potential peer-support resource. Additionally, 10% of all students exhibited significant psychiatric warning symptoms, such as mood swings, hallucinations, or insomnia. 22% had clinically significant mental health symptoms, validating the presence of hidden psychological morbidity in university environments. **Discussion:** These findings reveal a stratified pattern of mental health need, emphasizing the importance of staging in early detection and tailored intervention. The presence of severe symptoms and suicidal ideation in a significant minority underscores the need for embedded psychiatric services. Meanwhile, a large at-risk population supports the expansion of counseling, peer programs, and digital tools. Importantly, MASS successfully identifies students functioning below diagnostic thresholds yet vulnerable to psychological decline, demonstrating its value in public mental health planning. **Conclusion:** The MASS staging model provides an effective framework for identifying varying levels of mental health risk in student populations. By capturing both clinical and preclinical states through a digital, multidimensional approach, it enables targeted, scalable interventions and advances the integration of mental health services within educational institutions.

Keywords

Mental Health Risk, University Students, MASS, Staging Model, Digital Screening, Psychiatric Referral, Resilience, Suicide Prevention, Early Intervention

1. Introduction

1.1. Problem Statement

University students are increasingly experiencing psychological distress, yet many remain undiagnosed and untreated. The current mental health infrastructure heavily relies on clinical diagnosis by psychiatrists, which is neither scalable nor accessible for early detection—particularly in educational settings [1]. A significant proportion of students suffer from subthreshold or early indicator symptoms that do not meet formal diagnostic criteria but are predictive of future mental illness and are already associated with functional impairment, academic decline, and emotional suffering [2] [3].

Despite the burden, these students often go unrecognized due to the lack of structured screening mechanisms. Furthermore, pervasive stigma around mental

health prevents timely help-seeking even when symptoms are acknowledged [4] [5]. In this context, there is a critical need to develop a scalable, multidimensional risk detection framework that can identify early warning signs, capture subclinical distress, and facilitate appropriate, stigma-free referrals—before these symptoms escalate into diagnosable psychiatric disorders [6] [7].

In this paper, we present the conceptualization of mental health risk among university students and describe the development of psychometric tools specifically designed to detect subthreshold symptoms, mental health risk, level of functioning, and early indicators of psychological distress. Recognizing that many students experience emotional and functional impairments long before a clinical diagnosis is possible, we focus on early identification through a multidimensional assessment framework [8] [9].

We also describe our experience in digitizing these tools to enhance accessibility, ease of implementation, and user engagement. Digital formats ensure privacy, safety, and confidentiality—key factors in overcoming stigma and promoting help-seeking behavior [10] [11].

Furthermore, we introduce a staging model of mental health risk, adapted and validated in the Indian academic context, which stratifies students by risk severity and guides appropriate levels of intervention. This model supports early detection, tailored referral, and scalable prevention efforts in resource-constrained university settings [12] [13].

1.2. Mental Health Challenges among Indian University Students: A Growing Public Health Concern

Mental health challenges among university students have emerged as a pressing global and national concern. Globally, the World Health Organization reports that nearly one in five adolescents experience mental disorders, yet most remain undiagnosed and untreated [1]. In India, the situation is further exacerbated by limited infrastructure, academic stress, and pervasive stigma [2]. The National Mental Health Survey of India revealed that 14% of adolescents aged 13 - 17 have a mental disorder, with a significant gap in care access [8].

Prevalence estimates in Indian student populations suggest that 30% to 60% report psychological distress, with notable impacts on academic performance and social functioning [6] [7]. Despite these alarming statistics, most universities in India lack structured mental health systems capable of detecting subclinical distress or early functional decline [3]. Traditional systems tend to rely on categorical diagnoses and reactive interventions, often missing the early warning signs in students who do not meet full diagnostic criteria but are already struggling [3] [4].

The mental health burden in students is shaped by a complex interplay of individual, academic, social, and cultural factors. Key risk factors include chronic stress, family dysfunction, peer conflict, trauma, and substance use [10]-[12]. These are compounded by structural barriers, such as inadequate mental health infrastructure and widespread cultural resistance to help-seeking [13].

One of the most overlooked aspects of this crisis is the prevalence of subthreshold symptoms—such as irritability, mood swings, poor concentration, emotional dysregulation, and sleep disruption—which frequently precede clinical diagnosis by several months or years [9] [10]. These early signs, although not formally diagnosable, are strongly associated with functional decline and often serve as precursors to serious psychiatric disorders [5]-[7].

Student mental health presentations typically fall into two categories:

- Clinical diagnoses, which meet formal criteria (e.g., DSM-5, ICD-11),
- Subclinical or at-risk states, which include emotional disturbances and behavioral or functional decline that signal increased vulnerability [5] [6].

Unfortunately, these early symptoms are often dismissed or normalized, which delays intervention and increases the likelihood of progression to psychiatric illness [7] [8].

Given this context, there is an urgent need for a scalable, culturally sensitive, and multidimensional framework for early mental health risk assessment tailored to the Indian academic environment [4]. Such a framework should aim to detect emerging psychological distress, even in its subclinical stages, and enable preventive interventions that bridge the gap between wellness promotion and clinical care [14]-[16].

2. Defining Mental Health Risk

The concept of mental health risk plays a crucial role in modern psychiatry and public health, particularly in the early identification and prevention of mental illness in vulnerable groups such as students. Risk in mental health is best understood not as a fixed prediction of illness, but as a probabilistic measure—an increased likelihood that an individual may develop psychological distress, functional impairment, or a diagnosable disorder based on identifiable factors [17]. Importantly, risk does not equate to diagnosis; rather, it reflects vulnerability, and thereby creates an opportunity for timely intervention [18].

Risk factors such as academic stress, peer conflict, family dysfunction, trauma, and substance use are consistently linked to adverse outcomes [11] [12]. On the other hand, protective factors such as resilience and positive coping strategies can buffer students against escalating psychological distress and reduce the likelihood of developing serious mental illness [13].

Mental health is best understood along a continuum, spanning from flourishing well-being to severe illness [19]. At one end are students who exhibit high levels of emotional stability, resilience, social functioning, and purpose. At the other end are those with diagnosable psychiatric conditions characterized by impaired functioning and clinical distress. The majority of students, however, fall somewhere in between—experiencing fluctuating levels of stress, emotional challenges, and subclinical symptoms that often go unrecognized.

The transition from well-being to illness is rarely sudden. It is typically marked by a build-up of mild yet meaningful changes, such as mood lability, sleep dis-

turbances, social withdrawal, or academic disengagement [20]. These "prodromal" or preclinical indicators signal an increased risk of mental health deterioration. Research from early intervention psychiatry confirms that many severe conditions—like depression, psychosis, or bipolar disorder—are preceded by such symptoms, sometimes months or even years in advance [21] [22]. This stage offers a critical window for low-intensity interventions [19] [20].

Defining mental health risk remains an enduring challenge in psychiatry due to the multifactorial and dynamic nature of mental disorders. These conditions often emerge from a complex interplay of genetic, psychological, social, and environmental determinants, and predicting their onset—especially in student populations—is fraught with uncertainty.

The concept of mental health risk, therefore, is not diagnostic but probabilistic—it identifies vulnerability, not certainty [23]. Risk can be stratified into:

- Immediate risk [e.g., suicidality, hallucinations] requiring urgent referral,
- Relative risk marked by high symptoms with functional impairment,
- Long-term risk associated with chronic stress or poor coping, and
- Compensated risk, where symptoms are moderated by resilience [22] [23].

Evidence shows that standardized screeners, combined with functional and risk assessments, can predict deterioration and guide targeted support [24] [25]. Digital tools now offer scalable, private platforms for such assessments, but require contextual validation for Indian populations [26].

Within student populations—where emotional, social, and academic pressures converge—the concept of mental health risk becomes particularly salient. University students occupy a unique developmental stage, marked by transitions, identity formation, academic demands, and shifting social roles. Many experience psychological distress, subclinical symptoms, or functional impairments, which, while not meeting criteria for a psychiatric disorder, may significantly impair well-being.

Several researchers have emphasized that mental illness often begins with subthreshold symptoms—mild emotional or behavioral changes that may not yet meet diagnostic criteria but still significantly affect well-being [12] [27]. Left unrecognized, these early signs may progress into more severe clinical disorders. According to Patel *et al.* and Rickwood *et al.*, early psychological distress and functional decline are significant precursors of mental illness [6] [28].

Rather than aiming to diagnose disorders through population-level screening, the goal is to identify patterns of emerging risk—a stage where early intervention can prevent deterioration. As such, screening tools must detect the possibility of illness, not just the presence of illness.

To address the growing burden of student mental health needs, institutions must adopt integrated, evidence-based strategies that detect early distress, enable tiered interventions, and bridge the gap between wellness promotion and clinical care [29] [30].

To identify risk in students effectively, indicators such as persistent stress, sub-

clinical anxiety, mood swings, self-harm ideation, academic failure, absenteeism, or substance use must be assessed [10] [12] [31]. These are not diagnostic in isolation, but they strongly correlate with progression toward clinical disorder [27] [32].

3. Multidimensional Model

Conventional tools such as PHQ-9 and GAD-7, though valuable, often miss contextual nuances and functioning-related impairment [33]. Broader instruments like DASS-21 or the SDQ are more inclusive but lack cultural adaptation for Indian university populations [34]. Multidimensional assessments are increasingly advocated by WHO and mental health researchers, as they integrate symptoms, functioning, coping, and contextual risk factors to enhance early detection [35] [36].

A symptom-based, multidimensional model offers several advantages. It is scalable, enables early detection, supports triage by identifying high-risk individuals for referral, and offers a more holistic understanding of student well-being. However, it is not without limitations. These tools are not diagnostic; self-report bias can distort responses; and cultural or contextual validation is essential to ensure relevance and accuracy. There's also a risk of over-pathologizing normal emotional variability if not interpreted carefully.

In summary, while not a substitute for clinical diagnosis, multidimensional screening models—such as the MASS framework—serve as powerful tools for early identification and intervention in student mental health. When thoughtfully applied, they enhance mental health systems in universities by making care more proactive, inclusive, and responsive to emerging needs [37].

4. Staging Model in Psychiatry

This perspective aligns with the clinical staging model of mental disorders, first introduced in psychosis research, which classifies mental health risk into progressive stages—from nonspecific symptoms to full-blown disorders [38]. In student mental health, staging provides a structured framework for understanding who is at risk, for what kind of disorder, and at what level of urgency.

The staging model in psychiatry borrows from other branches of medicine—like oncology—where diseases are classified into stages of progression (e.g., Stage I to IV). In mental health, this model maps the course of mental disorders from early, non-specific symptoms to severe, chronic illness [39]. It recognizes that mental illnesses evolve over time and emphasizes early identification and tiered intervention. Unlike traditional diagnostic models, staging allows for dynamic monitoring, rather than a static diagnosis.

According to McGorry P.D. and colleagues, mental disorders typically begin with vague psychological distress (Stage 1), move toward attenuated or subthreshold symptoms (Stage 2), and may progress to full-syndrome disorders (Stage 3) or chronic, treatment-resistant conditions (Stage 4) [38]. This understanding enables

intervention at the earliest sign of dysfunction, potentially reversing or halting the progression.

Key principles of this model include:

- The progressive nature of mental disorders,
- The necessity of early intervention,
- The importance of individualized care pathways,
- The non-redundant contribution of various mental health domains—such as stress, psychiatric symptoms, resilience, and functioning—to risk profiling [40].

In the context of students, who face transitional life phases, academic pressure, identity challenges, and limited coping resources, the staging model helps institutions and health professionals detect emerging problems before they become clinical crises [41]. It also helps prevent unnecessary medicalization by matching care intensity to stage severity.

The idea of staging is drawn from physical medicine (e.g., cancer staging) and adapted to psychiatry to describe the progressive nature of mental health conditions. It provides a scaffold to understand the spectrum of vulnerability to disorder, enabling early identification, stratified care, and prevention of chronic mental illness [39].

In this staged model, individuals move through four defined levels of risk, each characterized by an increasing degree of distress, dysfunction, and diagnostic clarity. The stages are cumulative and non-redundant, with each level building on the previous one by adding complexity and severity.

Stage 1: Vulnerability without Symptoms

At this stage, the individual does not show any clinical symptoms of a mental disorder. However, predisposing vulnerabilities are present, including:

- Exposure to significant life events (family discord, academic transitions, relocation),
- Presence of psychosocial stressors,
- Genetic or familial predisposition,
- Low resilience or poor coping mechanisms.

This stage is preclinical, and individuals may still function normally. However, they are at increased risk if stress accumulates, or new triggers appear. Early mental health promotion, awareness, and psychoeducation are most effective at this stage.

Stage 2: Emerging Symptoms and Moderate Stress

In Stage 2, the individual continues to experience life events and stressors from Stage 1 but now develops moderate symptoms, such as:

- Anxiety,
- Mood disturbances (e.g., irritability, sadness),
- Difficulty sleeping or concentrating.

Stress levels may increase to moderate severity, interfering with day-to-day activities. However, the symptoms are not yet pervasive or intense enough to meet

diagnostic criteria for a mental disorder. This stage reflects a "subclinical" phase, where early intervention through counseling, peer support, and lifestyle changes can prevent deterioration [42].

Stage 3: High Risk—Severe Stress and Symptom Escalation

Stage 3 represents a critical transition point. Individuals experience:

- Severe stress that impacts academic, social, and personal functioning,
- Prominent psychiatric symptoms (e.g., panic attacks, persistent sadness, social withdrawal),
- Multiple risk factors, such as substance use, digital overuse, relationship breakdowns,
- Continued life adversities (e.g., trauma, academic failure).

This stage reflects the pre-diagnostic or prodromal phase, where symptoms are intense but may still not fulfill all criteria for a specific mental illness. Professional intervention is essential, as this stage marks a high-risk zone for progression to chronic illness or crisis [43].

Stage 4: Diagnosable Disorder with Critical Risk

At Stage 4, the individual meets the formal diagnostic criteria for one or more mental health disorders, such as:

- Major depressive disorder,
- Generalized anxiety disorder,
- Psychosis,
- Substance use disorder.

This stage is also marked by acute and critical symptoms, including:

- Suicidal ideation or behavior,
- Addiction,
- Severe hopelessness and worthlessness,
- Hallucinations and delusions,
- Functional breakdown (e.g., inability to attend school or manage basic routines).

Immediate psychiatric care, crisis intervention, and possibly hospitalization are required. Stage 4 represents the peak of risk and dysfunction, and if not treated adequately, may lead to long-term disability or life-threatening outcomes [44].

5. Relevance and Application

This risk staging model provides an essential framework for:

- Early identification of at-risk individuals,
- Stratified care, allowing interventions to be matched with severity,
- Efficient resource allocation in mental health systems,
- Reducing stigma by recognizing mental health as a progressive continuum.

Mental health risk staging is a practical and evidence-based approach that reflects the continuum of mental health and illness. By recognizing vulnerability and early symptoms, institutions, professionals, and families can take timely actions to prevent deterioration and promote well-being [45]. Especially in student pop-

ulations, this model ensures that no one falls through the cracks, offering a structured path from prevention to treatment.

6. Our Initiative and Applying Staging Model for MASS

One of the key objectives of our project is to develop effective methods for the screening and assessment of student mental health that are practical, accessible, and contextually relevant. In pursuit of this goal, we have created a comprehensive set of six psychometric tools specifically designed to evaluate the core domains associated with mental health in student populations. These domains include stress severity, psychiatric warning symptoms, mental health symptoms, functional impairment, resilience, and mental health risk factors. Each tool has undergone a rigorous process of psychometric validation and has demonstrated strong reliability, validity, and relevance in the context of Indian university students [46] [47].

To enhance usability and outreach, all six tools have been digitalized and integrated into a mobile- and web-based platform. This digital format ensures ease of access, allows for private and confidential self-assessment, and removes common barriers such as stigma and fear of judgment. The platform is designed to be user-friendly and intuitive, enabling students to engage independently in a safe and supportive environment [48].

Importantly, the system does not provide a clinical diagnosis. Instead, it identifies patterns of abnormalities across subscales and generates a stratified mental health risk profile. This is achieved through an algorithm grounded in a staging model commonly used in early intervention psychiatry. Based on the severity and constellation of symptoms, functioning, stress levels, and resilience factors, the algorithm categorizes users into different levels of risk: low or no risk, moderate or emerging risk, high risk requiring early intervention, and acute risk necessitating urgent referral [49] [50].

The strength of this initiative lies in its preventive and proactive approach. By identifying early signs of psychological distress and functional decline, it enables timely, tiered support without waiting for diagnosable disorders to emerge. It is a reliable, valid, confidential, and culturally sensitive method that offers a scalable solution for mental health screening in academic institutions. Ultimately, it bridges the gap between wellness promotion and clinical care, empowering universities to implement evidence-based mental health strategies focused on early detection, destigmatized support, and informed decision-making [51].

In our work, we developed the Mental Health Assessment Scales for Students (MASS)—a validated psychometric tool designed to detect these early markers. MASS includes six interlinked scales:

- Stress,
- Psychiatric warning symptoms,
- Mental health symptoms,
- Psychosocial risk,

- Functioning,
- Resilience.

Each scale has strong psychometric properties (Cronbach's alpha > 0.8) and provides a composite picture of mental health risk. We tested the MASS tool in a field study with 442 students at K.J. Somaiya Institute of Technology [52].

In mental health risk stratification, two broad approaches are commonly used: the clinical staging model and composite psychometric models. Both offer distinct strengths. The clinical staging model, widely adopted in early intervention psychiatry, classifies individuals based on symptom severity, chronicity, and functional impairment. It emphasizes early detection by identifying those at subclinical or preclinical stages who may benefit from timely, low-intensity interventions [53]. In contrast, psychometric models, such as cluster analysis, use statistical algorithms to group individuals based on patterns of responses across multiple validated scales, revealing naturally occurring risk profiles and symptom groupings [54].

In our study, we adopted the clinical staging model to classify participants into four stages of mental health risk. This method allowed for a structured and clinically meaningful categorization, using threshold scores on the six MASS subscales—severity of stress, psychiatric warning signs, mental health symptoms, risk factors, resilience, and functioning. The four stages were defined as follows:

- Stage 0—No or minimal symptoms; flourishing mental health,
- Stage 1—Emerging or subclinical symptoms; mild functional impairment,
- Stage 2—High distress and functional decline; possible need for early clinical intervention,
- Stage 3—Severe symptoms or marked impairment; high risk or need for urgent referral [55].

This staging approach enabled stratification of students according to their level of need and potential for clinical deterioration. It supports institutions in implementing tiered interventions, such as wellness promotion for Stage 0, peer support or psychoeducation for Stage 1, counseling for Stage 2, and referral for Stage 3 [56].

Although a composite psychometric approach using cluster analysis was conceptualized as a second model for stratification—wherein students would be grouped based on response patterns across MASS subscales—this was not applied in the current analysis. Work is ongoing to compare the staging algorithm with data-driven psychometric clusters, which may enhance diagnostic sensitivity and contextual precision in the future [57].

By focusing on the clinical staging method in this phase, our study provides a feasible, valid, and scalable framework for early detection of mental health risk in student populations. The future integration of both methods—clinical and psychometric—holds promise for creating a more refined and personalized mental health triage system, bridging the gap between population-level screening and individualized care planning [58].

The proposed staging model for student mental health offers several important

advantages. It is highly scalable, allowing for implementation through both digital platforms and paper-based formats using tools like the Mental Health Assessment Scales for Students (MASS). This makes it feasible across diverse institutional contexts, including those with limited mental health infrastructure. The model is also efficient, as it enables clear differentiation between clinical and subclinical cases, which helps reduce unnecessary referrals while prioritizing students who require immediate attention. Additionally, the model is prevention-oriented, facilitating early detection of distress and supporting upstream interventions before symptoms escalate into diagnosable disorders. Its customizability ensures it can be tailored to the specific needs, capacities, and resources of different educational institutions [59].

However, the model also has certain limitations. Primarily, it is not diagnostic; while it flags risk levels and symptom severity, it cannot replace a formal clinical evaluation by a trained mental health professional. There is also the possibility of false positives or negatives, meaning some students may be incorrectly classified, either overestimating or underestimating their level of risk. Furthermore, the model's cultural validity must be ensured through localized adaptation and validation, as mental health perceptions and symptom expression vary across cultural and regional contexts [60].

Despite these limitations, a multidimensional staging approach provides a robust, evidence-informed framework for early identification and strategic resource allocation. Its adoption in higher education institutions can significantly strengthen student mental health systems by enabling timely, need-based interventions and fostering a proactive culture of psychological well-being and academic resilience [61].

7. Staging in MASS Scale

Hypothesis and Justification for Composite Risk Stratification in Student Mental Health (MASS Framework)

MASS comprises six core subscales, each targeting a different aspect of mental health: stress, symptoms, psychiatric risk indicators, resilience, functioning, and psychosocial risk factors. Together, these subscales offer a comprehensive assessment that not only identifies those with diagnosable mental disorders but also detects subclinical distress and early warning signs. This framework aligns with a public mental health perspective, prioritizing both illness identification and the promotion of mental well-being through structured, risk-informed intervention strategies [62].

The Scale for Psychological Stress (SPS) within MASS consists of 13 items that assess students' perceived stress across academic, interpersonal, and family domains. Psychometrically, it has demonstrated strong internal consistency (Cronbach's alpha = 0.84) and correlates significantly with indicators of anxiety and depression. Elevated stress levels are often the first signs of psychological burden and have been linked to poor academic performance and emotional dysregulation in stu-

dents [63].

The Psychiatric Warning Symptom (PWS) scale contains 10 items that screen for psychological symptoms pathognomonic of future psychiatric disorders, including sadness, hallucinations, or delusions. This scale captures early expressions of mental illness and supports identification of psychiatric disorders. It has shown excellent internal consistency ($\alpha = 0.88$) [64].

The Mental Health Risk Factors (MHRF) scale focuses on high-risk thoughts and behaviors such as suicidal ideation, trauma, and feelings of worthlessness. This 6-item subscale serves as a critical alert mechanism for psychiatric referral [65].

The Resilience and Positivity Scale (RPS) includes 24 items measuring protective factors such as optimism, emotional regulation, and problem-solving. With a Cronbach's alpha of 0.82, the RPS demonstrates a strong inverse correlation with symptom severity ($r = -0.55$ to -0.64), underscoring its role in buffering psychological distress [66].

The Functioning and Well-Being Scale (FWB-22) assesses academic, emotional, social, and physical functioning. This 22-item scale helps in staging the severity of mental health disruption, as functional impairment often precedes clinical diagnosis. In a sample of over 400 university students, FWB-22 showed excellent reliability ($\alpha = 0.91$). Functional status is also a key predictor of treatment need and prognosis [67].

Together, these subscales form the basis for a five-stage risk model, classifying students as:

- Stage 0 (no risk),
- Stage 1 (mild distress),
- Stage 2 (subclinical disorder),
- Stage 3 (clinical disorder), and
- Stage 4 (psychiatric crisis).

This classification supports triage decisions—ranging from counseling referral to urgent psychiatric intervention—and can be integrated into digital platforms for rapid mental health decision-making [68].

Mental Health Risk Stratification Table (see Table 1)

Table 1. Staging and individual scale of MASS.

Stage	Risk Level	Description	Mental Health Status
Stage 0	No Risk	No evident symptoms or risk indicators; good academic, emotional, and social functioning.	Normal level of Scale for stress Normal level of scale of psychiatric warning and mental health symptom Adequate functioning Adequate Resilience
Stage 1	Mild Risk	Non-specific early signs of distress (e.g., exam stress, occasional sadness, poor sleep). Symptoms are mild and transient.	Mild level of stress Mild Psychiatric. warning and mental health symptoms Mild functional impairment

Continued

Stage 2	Moderate Risk	Clear but subthreshold symptoms of anxiety, low mood, irritability, or mild functional decline.	Moderate level of stress Moderate level of warning symptom Moderate level of Mental health symptoms
Stage 3	High Risk	Presence of symptoms but insufficient for a mental disorder, such as major depression or anxiety disorder. Noticeable functional impairment.	Clinical disorder confirmed; professional intervention needed
Stage 4	Very High Risk	Severe or chronic psychiatric illness. Suicidal ideation or self-harm present. May pose risk to self or others.	Psychiatric crisis requiring urgent care and possible hospitalization

Methods and Data Collection and Ethics

The study was conducted at the KJ Somaiya Institute of Technology, Mumbai, with ethical approval obtained from its Institutional Review Board. A total of 520 undergraduate students were recruited through classroom announcements, digital campus notices, and email invitations. Of these, 442 students (response rate: ~85%) completed the digital self-assessment in full. Students who were below 18 years of age, known to have a pre-existing diagnosed psychiatric disorder, or who did not provide digital consent were excluded from participation.

All data collection adhered to principles of confidentiality, voluntariness, and informed consent. The digital format minimized human handling of responses, thereby enhancing data privacy and reducing reporting bias. Data were analyzed using SPSS Version 26 [69].

The findings from the MASS (Mental Health Assessment Scales for Students) study present a compelling picture of the mental health burden among university students and highlight the importance of early detection and tiered interventions. The results demonstrate the effectiveness of using a structured, psychometric-based staging framework to stratify risk levels, revealing a high prevalence of stress, functional impairment, and resilience deficits. These findings reinforce previous studies that have emphasized the critical need for proactive screening mechanisms in higher education institutions [70] [71].

Tool Administration Procedure

The MASS digital tool was administered following a standardized protocol to ensure consistency and replicability. After obtaining institutional ethical clearance, eligible students were invited through classroom announcements, digital campus platforms, and email notifications. Participants accessed the tool via a secure web link or mobile app using a unique identifier and password provided individually to protect privacy. Digital informed consent was obtained at the start of the tool, with participants required to affirm their voluntary participation, confidentiality agreement, and understanding of the purpose. The tool was completed either during supervised sessions in designated computer labs with a proctor present to provide technical assistance (but without viewing individual responses), or individually on personal devices in quiet environments, such as library spaces or at home. All responses were encrypted and stored securely on institutional servers

compliant with national data privacy standards.

For comparing scores between groups at different risk levels, we mainly used average scores and simple group comparisons to highlight trends. We also looked at how different scales related to each other (such as stress and functioning) using straightforward comparisons and patterns in the data, making the findings easier to understand and apply in practice.

8. Results

Level 4: High Risk—Psychiatric Referral (6%)

A total of 6% of students were identified as Level 4 risk and were referred for urgent psychiatric evaluation (see Table 2). These individuals demonstrated severe mental health symptoms such as hallucinations, suicidal ideation, intense mood dysregulation, and significant functional impairment. This group represents the most vulnerable subset of students, with clear indicators of diagnosable psychiatric illness and imminent risk of harm. These findings highlight the need for immediate psychiatric care, including clinical risk assessment, psychotherapy, and possibly pharmacological intervention [72].

Table 2. MASS subscales by stage with means ± SD and notes the ANOVA significance.

MASS Subscale	Level 1: Low Risk (n = 128)	Level 2: At Risk (n = 137)	Level 3: Moderate-High Risk (n = 98)	Level 4: High Risk (n = 29)	ANOVA p-value
Stress (13-item)	0.9 ± 0.4	1.6 ± 0.5	2.3 ± 0.6	3.1 ± 0.5	< 0.001
Psychiatric warning Symptoms (10-item)	0.7 ± 0.3	1.3 ± 0.4	2.1 ± 0.5	2.8 ± 0.4	< 0.001
Mental Health symptoms (21-item)	0.6 ± 0.4	1.2 ± 0.5	2.0 ± 0.5	2.7 ± 0.4	< 0.001
Risk Factors (6-item)	0.5 ± 0.3	1.0 ± 0.4	1.6 ± 0.5	2.2 ± 0.4	< 0.001
Positivity (24-item)	3.1 ± 0.4	2.5 ± 0.5	1.9 ± 0.5	1.3 ± 0.4	< 0.001
Functioning (22-item)	3.0 ± 0.4	2.3 ± 0.5	1.8 ± 0.5	1.2 ± 0.4	< 0.001

All ANOVA tests show statistically significant differences across stages for each subscale ($p < 0.001$). Means reflect increasing severity of stress, symptoms, risk, and risk factors with higher stage, and declining positivity and functioning.

Level 3: Moderate to High Risk—Clinical Monitoring and Support (22.2%)

Approximately 22.2% of students fell into Level 3, denoting moderate to high psychological risk. These students displayed elevated scores on stress and psychiatric symptom domains, with complaints of persistent sadness, academic worry,

peer-related stress, emotional withdrawal, and disturbed sleep. Functional impairments such as difficulty concentrating, poor academic performance, and social isolation were also noted. Critically, resilience levels in this group were markedly low, indicating limited coping resources. These students, while not acutely ill, are in a high-risk preclinical state. Timely identification and targeted interventions at this level can prevent symptom escalation and psychiatric morbidity [73].

Level 2: At Risk—Counseling Referral (31%)

Nearly one-third (31%) of the student sample was categorized as Level 2 risk. These individuals showed moderate levels of psychological distress and functional decline without meeting clinical thresholds for psychiatric illness. Symptoms were milder but persistent—such as low motivation, fatigue, and social disengagement. Intervention at this stage through counseling, psychoeducation, and behavioral strategies can be highly effective. The large proportion of students in this group emphasizes the need for robust, accessible, mid-tier mental health infrastructure in academic settings [74].

Level 1: Low Risk—Healthy Students (29.1%)

Only 29.1% of students were classified as Level 1, indicating a low-risk or healthy mental health profile. These individuals reported minimal stress and demonstrated strong resilience, stable mood, good academic functioning, and healthy interpersonal relationships. From a public health perspective, this group holds potential as peer supporters, student mentors, or campus mental health champions. Their engagement in peer-led interventions can help normalize mental health discussions and promote early help-seeking among at-risk students [75].

Self-Harm Ideation (2.7%)

Within the Level 4 group, 2.7% of students reported suicidal ideation—a critical red flag for mental health crisis. Suicidal thoughts are a well-documented predictor of suicide attempts and require immediate clinical attention. The presence of such ideation in a university population reinforces the necessity of reliable digital screening tools like MASS, which can identify high-risk students who may not otherwise disclose such thoughts [76].

Warning Symptoms (10%)

Approximately 10% of the total sample reported significant psychiatric warning symptoms such as hallucinations, paranoia, frequent crying, and erratic mood swings. These students may appear superficially functional but are at elevated risk for psychiatric decompensation. MASS enables early triage and targeted support for this hidden-risk subgroup [77].

Severe Mental Health Symptoms (22%)

High symptom scores for anxiety, depression, and mood instability were found in 22% of the sample. While some retained functional capacity, these individuals showed clear clinical distress that, if unaddressed, could develop into chronic psychiatric illness. The findings validate the need for mental health professionals embedded within campus systems for ongoing therapeutic engagement and follow-up [78].

Table presents the mean ± SD for each MASS subscale by stage, with ANOVA p-values confirming statistically significant group differences across all subscales ($p < 0.001$).

9. Discussion

The MASS study underscores the existence of a mental health continuum among university students—ranging from well-being to subclinical distress to diagnosable disorders. Traditional binary diagnostic approaches fail to capture this complexity. Consistent with transdiagnostic and staging frameworks proposed in youth mental health research [72] [79], MASS uses a multidimensional, psychometric-based model to stratify risk and match students to appropriate levels of care.

Students at Level 3 (22.2%) represent a critical intervention window. They are often overlooked in traditional care models but experience significant emotional and functional burdens. Evidence suggests that early intervention at this stage—through counseling, resilience training, and lifestyle modifications—can reduce symptom progression and avert chronic mental illness [80] [81].

Those in Level 4 require immediate psychiatric evaluation. The presence of suicidal ideation in 2.7% of the overall sample mirrors global estimates and affirms the need for urgent, coordinated crisis response systems in universities [82] [83]. Unfortunately, many Indian institutions remain under-resourced and lack qualified mental health personnel [84]. The MASS tool thus addresses this systemic gap by providing a digital triage mechanism that facilitates rapid identification and referral.

Importantly, the data reveal that only 29.1% of students are in a low-risk category, while the remaining majority experience varying levels of distress. This has significant implications for campus functioning, dropout rates, and long-term employability. Emotional suffering, even in the absence of formal diagnosis, negatively impacts cognitive performance, motivation, and social participation [85] [86].

The findings also highlight the limitations of diagnosis-centric models in academic settings. Psychiatric interviews are resource-heavy and often inaccessible. Moreover, many students experiencing emotional distress remain undiagnosed because they appear outwardly functional. MASS provides a scalable, structured alternative that integrates symptom severity, resilience, functioning, and risk markers—offering a holistic picture of student mental health.

Studies of Apps in health sector have been ongoing in India with interesting cultural findings e.g. Nandhini *et al.* (2023) conducted a school-based survey using DASS-21 among adolescents in South India ($n \approx 300$), demonstrating that online self-report tools can effectively identify stress, anxiety, and depression in a school setting [87]. Similarly explored university psychology students' perceptions of mental health apps for resilience building, has also been studies for Indian users [88]. Sekhar *et al.* (2021) reported on high school digital screening and brief

intervention methods, showing lowered depression rates and feasibility of integrating self-report tools with school systems—offering a model adaptable to Indian higher education [89].

An important consideration in applying the MASS tool is the potential influence of cultural and regional variability in India. While the scales were developed and validated in an urban university setting, certain items—such as those assessing emotional expression, coping styles, and interpersonal functioning—may be interpreted differently across linguistic, cultural, and socio-economic groups. These differences could affect how students respond to specific questions, potentially influencing the screening outcomes. Future studies are needed to validate and, if necessary, adapt the MASS tool in diverse settings, including rural regions, non-Hindi/English-speaking populations, and culturally distinct communities. Such efforts will help ensure that the tool remains sensitive, relevant, and generalizable to the broad spectrum of student populations across India.

To sum up, MASS demonstrates promise as an evidence-based, scalable, and proactive screening tool for early detection and triage in student populations. Institutions should consider embedding this or similar tools within their student wellness infrastructure to improve access, engagement, and outcomes.

10. Conclusions

The MASS study reveals that a significant proportion of university students—nearly 75%—experience some level of psychological distress, with approximately one-third needing counseling and 6% requiring psychiatric referral. These figures emphasize that mental health screening is not a luxury but a necessity in academic institutions.

The study further validates the multidimensional staging model as a practical, scalable, and culturally sensitive approach to mental health risk identification. By shifting focus from diagnosis to early detection and risk stratification, MASS enables institutions to:

- Intervene before distress escalates into disorder,
- Reduce stigma through confidential digital screening,
- Direct students to appropriate levels of care,
- Promote psychological well-being and academic performance.

In a country where mental health infrastructure is scarce and stigma remains high, digitally enabled, evidence-informed tools like MASS can become integral to public health strategies for student mental health. Future efforts should focus on longitudinal validation, integration into national mental health programs, and training campus personnel to respond appropriately to risk signals.

Conflicts of Interest

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

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