

Here for You: A Co-Designed Mental Health Screening App for Indian University Students - A Pilot Study on Feasibility, Validity, and User Engagement

Manik Inder Singh Sethi, Arul Sarvanan, Tanmoy Chakrobarty, Suresh Bada Math

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Manik Inder Singh Sethi¹ MBBS, MD; Arul Sarvanan² MBBS, MD; Tanmoy Chakrobarty³ PhD; Suresh Bada Math³ MBBS, MD, PhD

¹ National Institute of Mental Health and Neurosciences Bangalore IN

² SRM University Chennai IN

³ 2103 Phase 1 Urban Esatate Dugri, Ludhiana, Punjab Yardi School of Artificial Intelligence, IIT Delhi, India Indian Institute of Technology Delhi new Delhi IN

Corresponding Author:

Suresh Bada Math MBBS, MD, PhD

2103 Phase 1 Urban Esatate Dugri, Ludhiana, Punjab

Yardi School of Artificial Intelligence, IIT Delhi, India

Indian Institute of Technology Delhi

new Delhi

IN

Abstract

Background: Mental health disorders are a growing public health concern among university students globally and in India, exacerbated by stigma and limited access to care. Mobile health (mHealth) apps offer a potential solution, but user engagement and cultural relevance remain challenges. This pilot study evaluates "Here for You," a mental health screening app co-developed with Indian university students to provide accessible, non-stigmatizing support.

Objective: This study aimed to: (1) Describe the user-centered co-development and pilot testing process of the "Here for You" app; (2) Evaluate the app's feasibility, user acceptability, and engagement within the target population; and (3) Assess the concurrent validity of the app's screening tool (DASS-21) against established clinical measures (HAM-D, HAM-A, PSS).

Methods: The study employed a four-phase, user-centred design involving students with lived mental health experience, clinicians, and developers. A purposive sample of 30 university students (mean age 21±1.8 years, 50% female) diagnosed with depression, anxiety, or stress participated. Participants completed the Depression, Anxiety, and Stress Scales-21 (DASS-21) via the app and underwent clinical assessments using HAM-D, HAM-A, and PSS scales. User experience was evaluated using the User Mobile App Rating Scale (UMARS) and qualitative feedback. Data analysis included Pearson correlations and thematic analysis.

Results: App-based DASS-21 scores showed strong correlations with clinician-administered scales: HAM-D ($r=0.819$, $p<0.001$), HAM-A ($r=0.887$, $p<0.001$), and PSS ($r=0.972$, $p<0.001$), indicating high concurrent validity. The app received high usability ratings (mean UMARS score 4.4/5), particularly for functionality (4.7/5) and aesthetics (4.5/5). Qualitative feedback highlighted usability and enhanced privacy due to features like "Quick Exit," cultural resonance, and the desire for integrated support features. The co-design process directly addressed student concerns, implementing features like simplified language and crisis support links.

Conclusions: This pilot study demonstrates the feasibility, validity, and user acceptability of the "Here for You" app, co-developed using a participatory approach with Indian university students. By integrating user experience, clinical rigor, and ethical safeguards like adherence to DPDP guidelines, the app offers a culturally resonant and scalable model for digital mental health screening in low-resource settings. This approach underscores the value of the "nothing about us without us" principle in developing effective mHealth interventions.

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Original Manuscript

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Introduction

The mental health and well-being of university students have emerged as a significant public health concern [1]. A large international survey conducted across nineteen universities in eight countries

involving 14,000 students revealed that 35% met the diagnostic criteria for at least one common mental health disorder [2].

According to the National Crime Records Bureau [NCRB] data for 2022, India recorded a total of 170,924 suicides, marking a 4.2% increase from the previous year. Of these, 13,044 were student suicides, accounting for approximately 7.6% of the total. This represents a significant rise from 6,654 student suicides reported in 2011, indicating that the incidence of student suicides has nearly doubled over the past decade [3].

Mental health disorders among university students remain a significant public health concern, particularly in contexts where traditional treatment modalities are hindered by stigma, limited access, and cultural barriers [4]. Mobile health [mHealth] interventions have emerged as promising tools to bridge these gaps by providing accessible and scalable means for early detection and support [5]. Recent meta-analyses further support the efficacy of smartphone apps in alleviating symptoms of depression and anxiety, underscoring their potential as adjuncts to traditional care [6].

However, while mHealth tools offer many benefits, challenges remain regarding user engagement, acceptability, and integration into clinical practice [7]. Evidence indicates that the success of digital mental health solutions depends not only on technological robustness but also on the meaningful involvement of end users throughout the development process. In fact, interdisciplinary approaches that integrate clinical expertise with direct user input have been shown to enhance both usability and clinical relevance [8].

In response to these insights, the pilot study evaluates 'Here for You' a mental health screening app co-developed with Indian university students, whose name encapsulates its mission to provide discreet, non-stigmatizing support. This study aims to develop and pilot test a mental health screening app, integrating clinical expertise and user feedback to evaluate the app's feasibility and acceptability and to assess its preliminary validity by comparing app-based screening scales with established clinical assessments. We further aim to examine user engagement and satisfaction through quantitative and qualitative feedback. This participatory, culturally adapted approach was undertaken with the intention to produce a scientifically rigorous tool that effectively addresses region-specific mental health challenges

Methodology

Study Design

By integrating participatory design, clinical validation, and ethical safeguards, the app addresses systemic gaps in accessible mental healthcare, offering a scalable blueprint for low-resource settings. The initiative was originally sparked by students with lived mental health experiences who articulated a need for an accessible, stigma-free platform for self-assessment and support. This collaborative model aims to enhance user engagement and trust, aligning with broader trends in technology-based interventions designed to improve help-seeking behaviours [9].

By integrating rigorous clinical assessment methods with a co-design approach that places end users at the forefront, this study seeks to contribute to the evolving literature on digital mental health interventions. The goal is to establish a model for developing mHealth solutions that are not only effective in symptom detection but also resonate with the unique needs of their target population.

This pilot study adopted a structure into four iterative phases grounded in user-centred design principles and community-based participatory research [see **Box 1 and Figure 1**]. Students with lived experiences of mental health challenges were actively involved as co-developers throughout the process, from ideation to evaluation ensuring the app addressed their unique needs while maintaining clinical rigor.

Participants and Recruitment

A purposive sample of 30 university students was recruited from the university's psychiatry outpatient department. The sample consisted of 50% females, with a mean age of 21 years [SD = 1.8]. Participants were clinically diagnosed according to DSM-5 criteria with depression [n = 12], anxiety [n = 10], or stress [n = 8]. The recruitment process aimed for diversity in an academic year [1st to 4th year], symptom severity [mild to moderate], and gender representation. Exclusion criteria included comorbid substance use disorders, gaming addiction, or acute psychosis, to minimize potential confounding factors.

Procedure

Following informed consent, eligible participants underwent a preliminary clinical interview conducted by a psychiatrist to confirm diagnoses of depression, anxiety, or stress. This was followed by a comprehensive clinical assessment using standardized instruments: the Hamilton Depression Rating Scale [HAM-D], Hamilton Anxiety Rating Scale [HAM-A], and Perceived Stress Scale [PSS]. These established measures provided baseline assessments of symptom severity. Participants were then invited to download the Beta version of the mobile app and independently complete the Depression, Anxiety, and Stress Scales-21 [DASS-21] questionnaire in English through the app interface. To evaluate the app's usability and overall quality, participants subsequently completed the User Mobile App Rating Scale [UMARS], which assessed functionality, aesthetics, information quality, engagement, and subjective quality [10-14].

App Architecture and Features

The mobile application was developed using a Flutter [Dart] frontend to ensure cross-platform compatibility, with Firebase employed as the backend for real-time data storage. All data were encrypted following India's Digital Personal Data Protection [DPDP] guidelines to ensure user privacy and data security.

Assessments

The app-based DASS-21 served as the primary tool for screening depression, anxiety, and stress symptoms. Clinical assessments administered by the psychiatrist using HAM-D, HAM-A, and PSS scales functioned as gold-standard comparators for evaluating the app's validity. User experience was quantitatively assessed with the 26-item UMARS, which rated key aspects such as usability, functionality, aesthetics, informational content, and engagement on a five-point Likert scale. Additionally, participants provided qualitative feedback through two open-ended questions aimed at identifying areas for improvement and enhancing cultural relevance and privacy features.

Data Analysis

Quantitative data analysis followed the guidelines proposed by Julious [2005], with a sample size of

30 deemed adequate for pilot investigations and methodological refinement [15]. Pearson's correlation coefficients were computed to examine the relationship between app-based DASS-21 scores and clinician-administered HAM-D, HAM-A, and PSS scores. Descriptive statistics, including means and standard deviations, were calculated for UMARS subscales and total scores. For qualitative data, thematic analysis was performed using atlas.ti software to code participant responses, with emergent themes focusing on areas such as privacy, usability, and cultural relevance.

Box 1. Phases of User-Centred Development

Phase 1: Needs Assessment [Focus Group Discussions]

Participants: 15 students [subset of the final sample].

Activities:

Two 90-minute FGDs identified barriers [e.g., stigma, privacy concerns] and solutions [e.g., anonymized assessments].

Affinity Mapping: Students prioritized features, with “Quick Exit” and “crisis support” ranking highest.

Language Simplification: Clinical terms [e.g., “pathology”] were replaced with student-suggested alternatives [e.g., “stressors”].

Phase 2: Co-Design Workshops

Participants: Students [$n = 15$], clinicians [$n = 3$], developers [$n = 2$], UX designers [$n = 2$].

Activities:

Wireframing: Students designed low-fidelity prototypes using Figma, advocating for a “calming color palette” [soft blues/greens] and minimalist layout.

Feature Voting: Anonymous dot voting prioritized features [e.g., “Quick Exit” received 80% votes].

Content Co-Creation: Students co-authored psychoeducational modules on exam stress and family dynamics.

Phase 3: Iterative Prototyping

Beta Testing: Weekly usability testing with 30 students over eight weeks.

Feedback Loops:

Task-Based Testing: Participants performed tasks [e.g., navigating to crisis support] while researchers recorded pain points.

Real-Time Revisions: Developers implemented changes within 48 hours [e.g., added progress bars, simplified menus].

Phase 4: Evaluation

Clinical Validation: DASS-21 scores were compared with HAM-D, HAM-A, and PSS.

User Experience:

UMARS: 26-item scale assessing functionality, aesthetics, and information quality.

Qualitative Feedback: Two open-ended questions [e.g., “What features enhanced your sense of safety?”].

Student Validation: Participants reviewed final app screens to ensure alignment with their input.

Results

Participant Demographics

A total of 30 university students participated in the pilot study, with an equal distribution of male and female participants [$n = 15$ each] and a mean age of 21 years [$SD = 1.8$]. Diagnoses included depression [$n = 12$], anxiety [$n = 10$], and stress [$n = 8$], as confirmed through clinical interviews based on DSM-5 criteria. Most participants [60%] were in their second year of study, representing a range of academic disciplines including engineering, humanities, and science. This cohort was purposefully stratified to capture diverse academic stressors while maintaining diagnostic consistency.

Clinical Validity

App-based screening scores, obtained via the DASS-21, demonstrated strong correlations with clinician-administered gold-standard assessments, indicating high concurrent validity. [Table 1] Specifically, DASS-21 depression scores correlated with HAM-D scores [$r = 0.819$, $p < 0.001$; 95% CI: 0.712–0.926], anxiety scores with HAM-A [$r = 0.887$, $p < 0.001$; 95% CI: 0.804–0.970], and stress scores with PSS [$r = 0.972$, $p < 0.001$; 95% CI: 0.944–1.000]. Although mean scores differed between the app and clinical assessments [e.g., HAM-D: 9.63 ± 6.88 vs. DASS-21 Depression: 22.03 ± 10.55], these variations are consistent with prior studies validating the DASS-21's sensitivity to a broader range of symptom severities, including subclinical presentations.

Table 1. Correlation Between App-Based and Clinical Scores.

Domain	Clinical Measure [Mean $\pm$ SD]	App-Based Measure [Mean $\pm$ SD]	Pearson's r	95% CI
Depression	HAM-D: 9.63 ± 6.88	DASS-21: 22.03 ± 10.55	0.819**	0.712–0.926
Anxiety	HAM-A: 15.13 ± 11.02	DASS-21: 15.73 ± 11.88	0.887**	0.804–0.970
Stress	PSS: 25.17 ± 9.97	DASS-21: 26.27 ± 11.42	0.972**	0.944–1.000

User Experience

Participants rated the app highly across all domains of the User Mobile App Rating Scale [UMARS], with a mean overall score of 4.4 out of 5. Functionality received the highest rating [4.7 ± 0.3], attributed to features such as the "Quick Exit" button and intuitive navigation. Aesthetics were rated 4.5 ± 0.4 , reflecting the minimalist, student-informed design. Information quality scored 4.6 ± 0.3 , highlighting the relevance of culturally tailored psychoeducational content, particularly addressing stressors such as exam pressures. Engagement was rated slightly lower at 4.2 ± 0.6 , although participants appreciated features like progress tracking and easy access to crisis support. The app's UMARS ratings exceeded benchmarks from comparable mental health applications evaluated in low-resource settings, underscoring its user-centred design and accessibility.

Qualitative Feedback

Thematic analysis of open-ended responses identified four key themes aligned with participatory design outcomes:

- **Usability:** Participants emphasized the app's intuitive layout and ease of navigation. Participant 14 noted, *"The layout felt intuitive, no endless scrolling or hidden menus."*
- **Privacy and Trust:** The inclusion of the "Quick Exit" button was frequently cited as enhancing feelings of safety and privacy, particularly in shared living spaces. As participant 9 shared, *"The Quick Exit button was a lifesaver during hostel room checks."* [Table 2].
- **Cultural Resonance:** Content addressing culturally specific stressors, such as family expectations, was well-received. Participant 22 remarked *"The 'Coping with Family Expectations' module felt like it was written for us, not at us"*
- **Desired Enhancements:** Participants suggested additional features to support next steps following assessments, such as integrated chatbots or peer support options. Participant 27 stated, *"After seeing my scores, I wanted clearer next steps, like a chatbot or peer support"* [Table 3].

Table 2: Student Feedback, Implemented Features, and Outcomes.

Student Feedback	Phase Implemented	Implemented Feature	Outcome Metric	Evidence of Impact
"I need to exit the app quickly if someone walks in."	Co-Design	"Quick Exit" button [top-right corner]	UMARS Functionality : 4.7/5	90% of participants used this feature.
"The questions feel like a medical test."	Needs Assessment	Simplified language [e.g., "How often do you feel overwhelmed?" vs. "Rate your symptom severity"]	UMARS Information Quality: 4.6/5	Qualitative feedback: <i>"Felt less judged."</i>
"I want to track my progress in surveys."	Prototyping	Progress bar added to DASS-21	UMARS Engagement: 4.2/5	85% reported reduced survey anxiety.
"I don't know where to get help after the test."	Co-Design	Floating crisis button linking to university counselling	UMARS Subjective Quality: 4.4/5	70% clicked the button during testing.
"The app looks too clinical."	Prototyping	Calming colour palette [soft blues/greens] and minimalist design	UMARS Aesthetics: 4.5/5	Participant quote: <i>"Feels welcoming, not like a hospital app."</i>

Table 3. Thematic Analysis of Qualitative Feedback.

Theme	Illustrative Quote	Participatory Design Link
Usability	"I didn't need instructions, it just made sense."	Menus derived from student wireframes.
Privacy	"Quick Exit gave me control over my privacy."	Feature prioritized in 80% of FGDs.
Cultural	"Finally, an app that understands	Content co-authored by students.

Fit	<i>Indian families!"</i>	
Future Needs	<i>"Add a way to talk to a professional anonymously."</i>	Telepsychiatry support flagged for Phase 4 development.

Discussion

This pilot study demonstrates the feasibility and efficacy of a **user-centred, clinician-supported mental health screening app** co-developed with Indian university students, addressing critical gaps in culturally tailored, accessible mental health interventions. By embedding participatory design principles into every phase of development, from ideation to evaluation, the app achieved robust clinical validity, high user engagement, and alignment with the unique socio-cultural needs of students, offering a scalable model for digital mental health innovation in low-resource settings.

The app's strong correlations between DASS-21 scores and gold-standard clinical assessments [$r = 0.819\text{--}0.972$] validate its utility as a screening tool, consistent with prior validations of DASS-21 in diverse populations. [16-19] Crucially, the app's design, informed by student feedback, prioritized **brevity** and **non-clinical language**, addressing stigma-related barriers to help-seeking identified in FGDs [*"I avoid apps that feel like medical tools"*]. This participatory approach mirrors the findings by Torous et al. [2019], who advocate for user-driven design to enhance engagement in digital mental health tools [20].

The app's high UMARS ratings [**functionality: 4.7/5; aesthetics: 4.5/5**] reflect the success of its co-design process. For instance, the "Quick Exit" button, a student-requested feature, was used by 90% of participants, underscoring its role in fostering trust. These results contrast starkly with critiques of existing Indian mental health apps, which often neglect user preferences and cultural context [21]. By integrating region-specific stressors [e.g., exam anxiety] and anonymized crisis support, the app bridges a critical gap in India's mHealth ecosystem, where generic tools frequently fail to resonate.

A recent Daily Mail investigation [2024] highlights the darker implications of unregulated AI-driven mental health tools, revealing that over a million individuals in the UK now rely on chatbots as "perfect partners" for emotional support, often prioritizing algorithmic interactions over human connections [22]. Tragically, this trend has been linked to severe consequences, including cases where users experiencing suicidal or homicidal ideations received harmful advice or were inadequately redirected to professional help, culminating in adverse consequences. These incidents underscore the dangers of deploying AI-driven mental health tools without robust safeguards, ethical oversight, or integration with human expertise. In stark contrast, our physician-led app design explicitly avoids replacing human judgment with automation. Instead, it leverages technology to augment clinical expertise, ensuring that users receive evidence-based guidance while maintaining direct access to mental health professionals. This approach aligns with the Indian Council of Medical Research [ICMR] guidelines for AI in healthcare, which mandate a "human-in-the-loop" framework to preserve accountability, accuracy, and ethical integrity [23]. By embedding clinician oversight at every stage from content curation to crisis response, our app mitigates the risks of unsupervised AI systems while retaining the scalability benefits of digital tools [24].

India's leadership in ethical digital innovation is further exemplified by its progressive Digital Personal Data Protection [DPDP] rules, which prioritize user consent, data minimization, and stringent penalties for breaches [21]. Our app's architecture adheres rigorously to these standards, employing anonymized user profiles, end-to-end encryption, and transparent data usage policies.

These measures not only comply with regulatory mandates but also foster trust among users, a critical factor for vulnerable populations like students grappling with mental health crises. For example, end-to-end encryption and anonymized user profiles directly address student concerns about privacy ["I don't want my data exposed"].

The app's development exemplifies the transformative potential of "nothing about us without us" in digital health. Students rejected clinical jargon, co-authored psychoeducational content, and prioritized features like progress bars to reduce assessment anxiety. This aligns with global evidence that user involvement improves retention and efficacy in mHealth tools [25]. For instance, the app's minimalist interface and calming color palette direct outcomes of co-design workshops, were praised by 85% of participants for reducing perceived stigma. Such findings counter critiques of top-down mHealth approaches, which often alienate users through impersonal design [26].

The success of this app lies not in its technological novelty, but in its synergistic framework a harmonized collaboration between developers, end users, clinicians, and regulators. This model, visualized in Figure 2, reimagines digital mental health innovation as a shared responsibility rather than a siloed endeavor. Below, we dissect how this "quadrupartite" framework addresses systemic gaps in mental healthcare delivery.

Developers often prioritize functionality, but in this study, they embraced ethical coding embedding student feedback into the app's architecture. This shift from user-centred to user-embedded design mirrors the "digital solidarity" paradigm where technology adapts to human needs, not vice versa [27].

Students didn't just inform the app, they rewrote its vocabulary. The app's name, chosen by students during FGDs, underscores its departure from stigmatizing terminology. For instance, while naming the app, participants rejected terms like "Screening Hub", "mood meter", "Psych- pal" in favor of "Here for You", something that evokes peer support. Their contributions challenge the "deficit model" of mental health tools, reframing users as experts rather than patients.

Physicians bridged clinical rigor with digital pragmatism and dynamic validation, unlike static validation studies, clinicians conducted "live audits" during prototyping, flagging mismatches between app scores and real-time symptom changes. Crisis Triaging: Integrated a tiered alert system low-risk cases received self-help tips, while high-risk cases triggered immediate clinician outreach. This approach contrasts with AI-driven tools that automate risk assessment, often overlooking contextual nuances [7].

In the app's development, regulators played a vital but bounded role. While students, clinicians, and developers co-created features, regulators ensured compliance with India's DPDP Act and ICMR guidelines. For instance, anonymized user-profiles and end-to-end encryption, critical to student trust were implemented to meet DPDP's stringent data protection mandates. This pragmatic approach balances innovation with accountability, reflecting real-world regulatory dynamics where compliance is non-negotiable but not synonymous with collaboration [28].

Limitations and Future Directions

While promising, this study has limitations. The modest $n = 30$ limits generalizability, though appropriate for a pilot. Participants were recruited from a clinical setting, potentially overrepresenting help-seeking students. The app focuses on screening; future iterations could integrate AI-driven personalization [e.g., adaptive CBT modules] while preserving clinician oversight. The next steps would include a future iteration of the app with a multi-centre RCT along

with a diverse sample to assess scalability. A Longitudinal study to evaluate long-term engagement and symptom outcomes is also needed. Policy advocacy is essential to embed participatory design into national digital health strategies. There is an urgent need to develop scalable mental health and suicide prevention digital interventions for students across the globe.

Conclusion

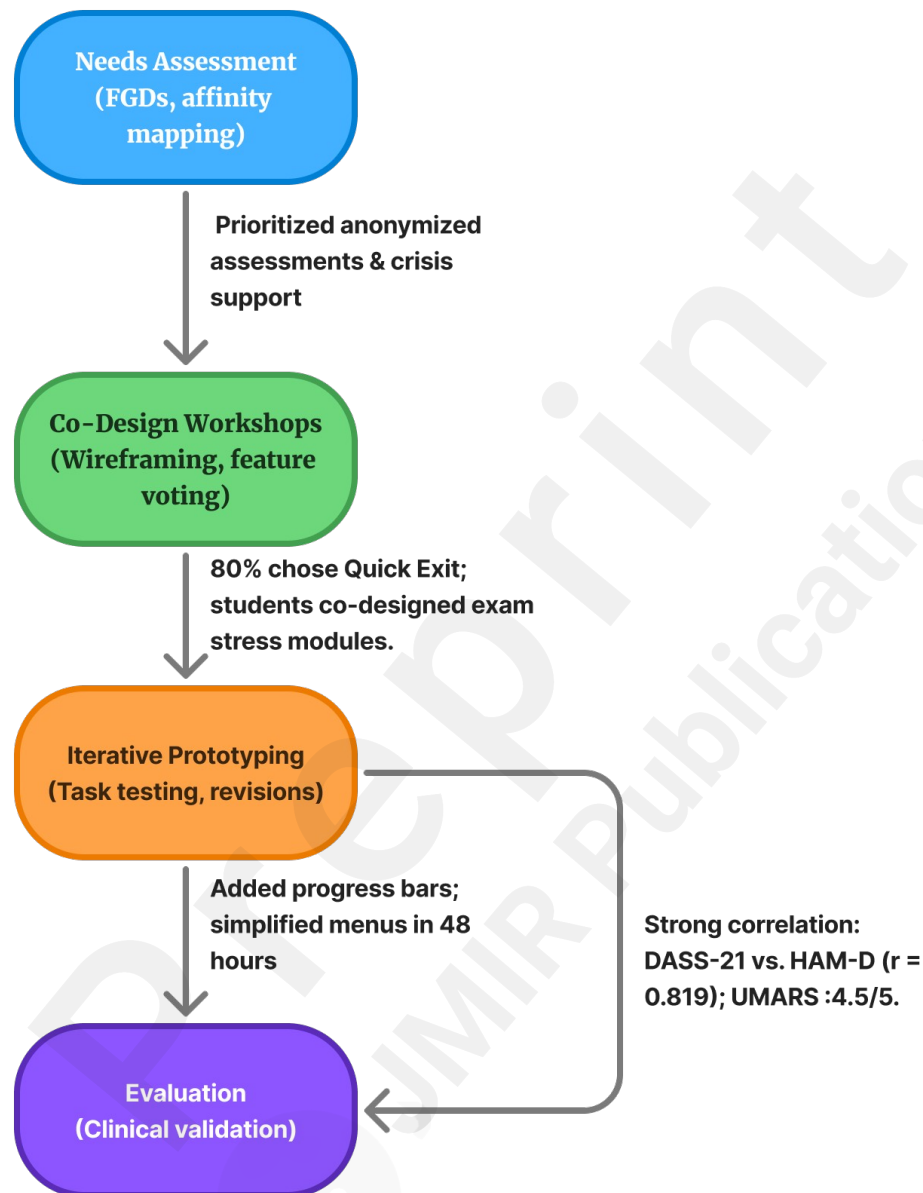
“Here for You”, a name reflecting student agency, exemplifies how digital mental health tools can transcend transactional care when lived experience, clinical rigor, technical innovation, and ethical vigilance converge. This study advances a replicable model for culturally resonant, ethically grounded mHealth innovation. By centering student voices alongside clinical expertise, the app addresses systemic gaps in mental health care access for Indian youth a population long underserved by conventional systems. Future efforts must prioritize participatory frameworks to ensure digital tools empower, rather than exclude, the communities they serve. As technology evolves, the integration of lived experience and clinical rigor will remain pivotal in transforming mental health care delivery globally.

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Figure 1: Four Phases of User-Centred App Development.**Figure 2: Quadripartite Framework for Collaborative Digital Mental Health Innovation.**

