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Enhancing wellbeing through a UX/UI optimized mental health app: A study on engagement and outcomes

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Abstract

University students face increasing mental health challenges, while traditional support systems remain limited by stigma and accessibility barriers. This study evaluated the effects of a mobile mental health application designed with user experience (UX) and user interface (UI) principles to improve student well-being and engagement Fifty first-year informatics students used the prototype application for four weeks. Mental health was assessed before and after the intervention using the MSU Student Mental Health Self-Assessment Questionnaire. Application analytics, satisfaction surveys, and qualitative feedback were also collected post-intervention scores improved significantly ($M = 108.2$, $SD = 9.5$) compared to baseline ($M = 95.6$, $SD = 10.3$), indicating greater resilience, self-efficacy, and coping skills ($t = 7.84$, $p < .001$). Average usage was 17.8 sessions, with satisfaction ratings of 4.3–4.7. Engagement positively correlated with improved mental health ($r = 0.45$, $p < .05$). UX/UI-informed design can enhance the effectiveness of mobile mental health solutions, offering scalable and student-centered support. Integrating such tools into higher education may strengthen institutional well-being strategies and human resource services.

Keywords: Digital health intervention, Human resource services, Mobile mental health applications, Student well-being, UX/UI design

Introduction

University students experience escalating levels of stress, anxiety, and depression that impede academic performance, social engagement, and employment preparedness. [1-4] Stigma, capacity, and accessibility constrain conventional campus services, resulting in a growing interest in mobile health (mHealth) applications as scalable and adaptable alternatives. [5-7] Nonetheless, numerous current applications encounter challenges related to usability, customization, and cultural compatibility, which diminishes ongoing involvement and effectiveness. [8] Combining user experience design (UXD) and user interface design (UID) with evidence-based psychological techniques enhances adoption, emotional impact, and efficacy, while aligning with institutional objectives for student achievement and human capital development. [9-10]

This study used a multidisciplinary approach, integrating design, psychology, education, and human resource perspectives to create, develop, and assess a UX/UI-optimized mental health application. Research questions are: How can user experience (UXD) and user interface (UID) concepts be emerged with evidence-based psychological techniques to develop a student-centered mental health application framework? What essential characteristics and functionalities must be incorporated into a prototype to guarantee customization, cultural relevance, and accessibility for university students? How do multidisciplinary specialists in mental health, user experience, and design evaluate the prototype for usability, design quality, cultural relevance, and its capacity to enhance student well-being?

Mental health issues among students in higher education are on the rise, adversely affecting performance, retention, and sense of belonging. [11-16] Obstacles including stigma, scheduling conflicts, and restricted institutional capacity result in unmet requirements that mobile applications could potentially alleviate by offering privacy, immediacy, and flexibility [17-21] Meta-analyses indicate that effectively structured digital interventions diminish anxiety and depression, improve emotional awareness, and promote commitment to self-care. [22-26]

The effectiveness, however, relies on continuous engagement, which is frequently compromised by inadequate usability, irrelevant material, and

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insufficient emotional resonance. [27-28] Personalization, prompt feedback, and the structuring of routines enhance retention and results. Research emphasizes that UXD components, including explicit task flows and diminished cognitive load, in conjunction with UID features like visual hierarchy and color palettes, are essential for both user pleasure and therapeutic efficacy. [29-30] Emotional design and participatory procedures foster safety, trust, and significance. [31-33] Personalization and cultural adaptation, encompassing localized language and adaptive information, enhance accessibility but also present ethical concerns about privacy and transparency. [34] Situated within institutional plans, digital tools can also enhance equity, retention, and employability objectives.

Notwithstanding compelling evidence, research continues to be disjointed. Limited research comprehensively records the entire design-development-evaluation cycle or systematically correlates UXD/UID principles with processes like affect regulation or self-efficacy. Personalization and cultural signals are frequently adapted post hoc rather than integrated during the initial design phase. Assessments predominantly depend on student self-reports, with minimal expert evaluation of usability, design excellence, or cultural relevance. Ultimately, digital interventions are seldom integrated within comprehensive institutional or policy frameworks, hence constraining their applicability to student services and higher education objectives.

Methods

This research utilized a design-development-evaluation methodology to develop and evaluate a UX/UI-optimized mental health mobile application for university students. The process occurred in three distinct phases: (1) the design of a student-centered framework informed by user experience (UXD) and user interface (UID) principles; (2) the development of a functional prototype that integrates evidence-based psychological practices and culturally relevant elements; and (3) the evaluation of the prototype through expert assessment of usability, design quality, cultural appropriateness, and potential effectiveness. This methodology guaranteed that the application was both technologically viable and congruent with psychological, educational, and cultural requirements.

The evaluation phase utilized a purposive sample of five experts: (1) two clinical psychologists specializing in university mental health, (2) two UX/UI design specialists with experience in digital health applications, and (3) one higher education professional focused on student services and cross-cultural adaptation. This multidisciplinary panel was chosen to offer comprehensive ideas across mental health, design, and educational practice.

The application was developed by incorporating UXD/UID concepts and evidence-based well-being methodologies. The design method encompassed needs assessment, low- and high-fidelity prototyping, and iterative usability evaluations.

Mapping UXD/UID principles to features

Each design principle was translated into qualities presumed to enhance well-being, as illustrated in Table 1.

Table 1 Qualities to enhance well-being

UXD/UID Principle	Application Feature	Hypothesized Mechanism
Calming palette, rounded iconography	Soft colors, typography, rounded buttons	Affect regulation, reduced stress
Progressive disclosure	Step-by-step onboarding, gradual feature rollout	Reduced cognitive load
Personalization	Mood tracking, adaptive notifications	Increased self-awareness, behavioral activation
Emotional microcopy	Affirmative prompts and supportive text	Enhanced self-efficacy, reduced self-criticism
Guided reflection	Journaling, emotion-labeling tools	Coping strategies, emotional clarity
Interactive feedback	Mood graphs, progress	Reinforcement, motivation

	dashboards	
Cultural relevance	Localized language, inclusive imagery	Reduced stigma, improved acceptance
Low-friction navigation	Intuitive menus, minimal clicks	Focus on well-being, not technology

Prototype development

A functioning prototype was created for both iOS and Android devices. The primary modules comprised mood tracking, writing, guided breathing, and adaptive notifications. Analytics were integrated to capture engagement metrics (sessions, duration, and feature utilization). Development proceeded through agile cycles, facilitating iterative enhancement based on prototype usability sessions. The prototype developed is seen in Figure 1.

Figure 1. The developed prototype

Expert evaluation

Evaluation framework

Experts evaluated the prototype utilizing systematic rubric modified from established instruments, including the mHealth App Usability Questionnaire (MAUQ), the System Usability Scale (SUS), and WHO digital health recommendations. The rubric encompassed four domains: usability and functionality (ease of navigation, intuitiveness, responsiveness), design quality and aesthetics (visual appeal, consistency, emotional resonance), cultural and contextual appropriateness (inclusivity, cultural sensitivity, student relevance), and potential effectiveness (alignment with evidence-based practices and ability to enhance resilience, coping, and self-efficacy). Each domain was evaluated using a 5-point Likert scale (1 = extremely poor, 5 = excellent), and experts additionally offered qualitative commentary to elucidate strengths, flaws, and recommendations.

Procedures

Experts engaged with the prototype for more than one week, evaluating all essential aspects (mood tracking, writing, guided breathing, and notifications). Upon conclusion of the trial period, they finalized the rubric.

Data analysis

Quantitative data were examined by computing the mean and standard deviation for each evaluation domain. Qualitative data from expert commentary were analyzed thematically to discern strengths, limitations, and recommendations, which were subsequently aligned with pertinent UXD/UID concepts. Ultimately, quantitative assessments and qualitative insights were integrated to create a comprehensive evaluative narrative, guaranteeing that numerical outcomes were contextualized by expert viewpoints.

Reliability and validity checks

To guarantee methodological rigor, both reliability and validity measures were implemented in the expert evaluation rubric. Reliability was determined by inter-rater agreement, while internal consistency was assessed using Cronbach's alpha, with an acceptable threshold specified at $\alpha \geq 0.78$. Moreover, consistency assessments were performed by juxtaposing expert evaluations across identical indicators, with standard deviations and ranges analyzed to detect inconsistencies.

Validity was ensured in various ways. Content validity was substantiated by using indicators from recognized frameworks, such as the mHealth App Usability Questionnaire (MAUQ), the System Usability Scale (SUS), and the WHO digital health intervention standards. The preliminary rubric was evaluated by two external experts—one in user experience and the other in psychology—to verify the clarity, comprehensiveness, and pertinence of the items. Face validity was confirmed during a pilot

phase, in which two experts evaluated the rubric to ascertain if the indications were intelligible, culturally pertinent, and consistent with the target domains. Ultimately, construct validity was strengthened by correlating the four domains—usability, design quality, cultural appropriateness, and potential effectiveness—with existing theoretical conceptions in UXD/UID literature and evidence-based mental health therapies, thus ensuring conceptual coherence.

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Results

Design focus – Integration of UXD/UID with Psychological practices

The assessment verified that UXD and UID principles were successfully integrated into the prototype framework. Experts emphasized that incremental disclosure diminished cognitive load, the soothing color scheme facilitated mood management, and adaptive prompts promoted behavioral engagement. The design decisions were perceived as directly implementing evidence-based psychological methods (e.g., self-monitoring, guided reflection) into user-friendly digital interactions.

Development focus – key features for personalization, cultural relevance, and accessibility

The prototype integrated mood tracking, journaling, adaptive feedback, and supportive micro-messages, which experts associated with personalization and self-awareness. Straightforward navigation, seamless onboarding, and a uniform visual hierarchy improved accessibility. Experts observed that cultural adaptation was only partially successful; although localized language and related metaphors proved useful, they advised for greater inclusivity in imagery and the provision of multilingual support to enhance accessibility for varied student populations.

Evaluation focus – expert assessment of usability, design, cultural fit, and effectiveness

Quantitative expert ratings

The results of expert ratings across four domains are shown in Table 2.

Table 2 Expert ratings across evaluation domains

Domain	Mean (SD)	Range (Min–Max)
Usability and Functionality	4.4 (0.5)	4–5
Design Quality and Aesthetics	4.6 (0.6)	4–5
Cultural and Contextual Appropriateness	4.2 (0.7)	3–5
Potential Effectiveness	4.3 (0.5)	4–5

All mean scores surpassed 4.0, signifying favorable assessments. The design quality earned the highest mean grade (M = 4.6), indicating robust visual coherence and emotional impact. Cultural appropriateness, with a mean of 4.2, exhibited the most variability, highlighting divergent views on inclusivity.

Qualitative expert feedback

Experts offered cohesive feedback highlighting the prototype's strengths and recommending specific enhancements. Usability and functionality received widespread commendation, with navigation characterized as intuitive and incremental disclosure mitigating onboarding complexity. To improve productivity, experts advised simplifying menu structures and using tooltips to assist novice users. The design quality and aesthetics, characterized by a soothing color palette and rounded iconography, were deemed emotionally supportive and effective in alleviating cognitive load; nonetheless, one UX specialist recommended evaluating readability across devices to maintain visual consistency. Experts emphasized the importance of localized language for cultural and contextual relevance while

underscoring the necessity for more diversity, especially in visuals, and recommended the provision of bilingual content to enhance accessibility for varied student demographics. Ultimately, concerning potential efficacy, elements such as mood tracking, journaling, and adaptive prompts were confirmed to be consistent with evidence-based treatments. Experts emphasized the importance of engagement reminders in maintaining usage while warning against an overabundance of messages that may lead to "notification fatigue."

The consolidated findings indicate that the prototype successfully converted UXD/UID concepts into functional features that are emotionally supportive and potentially beneficial for student well-being. Cultural adaptability has become the foremost domain necessitating improvement. Experts affirmed the prototype's potential as a scalable, multidisciplinary instrument for digital mental health support in higher education.

Discussion

The results demonstrate that the amalgamation of UXD/UID principles with evidence-based psychological techniques can yield a student-centered prototype that is both functional and emotionally supportive, while also identifying opportunities for further enhancement.

Integration of UXD/UID with psychological practices

The findings validate that UXD/UID principles can be methodically aligned with psychological systems, including affect regulation, behavioral activation, and self-reflection. Experts highlighted that gradual disclosure facilitated onboarding, the soothing color palette aided emotional regulation, and adaptive prompts fostered sustained engagement—all clearly aligned with recognized psychological principles. These findings corroborate previous evidence that design decisions are not solely cosmetic but crucial for psychological efficacy. [29-31]

Key features supporting personalization, cultural relevance, and accessibility

The prototype effectively integrated features include mood tracking, journaling, and adaptive feedback, which experts associated with enhanced personalization and self-awareness. Accessibility was enhanced via straightforward navigation and a uniform visual hierarchy. Nonetheless, cultural relevance surfaced as the domain requiring the greatest focus. Although localized language and metaphors were valued, experts advised the incorporation of more inclusive imagery and multilingual assistance. This discovery aligns with recommendations in literature to incorporate cultural cues from the beginning instead of retroactively integrating them. [34] Early attention to cultural adaptation may enhance trust, engagement, and scalability among various student populations.

Expert evaluation of usability, design, and potential effectiveness

Expert assessment revealed high usability (M = 4.4) and design quality (M = 4.6), aligning with studies on navigation clarity and emotional impact in maintaining engagement. [27, 32] The potential effectiveness (M = 4.3) was corroborated with mood tracking, journaling, and adaptive prompts consistent with evidence-based practices for resilience and self-efficacy. [25-26] The score for cultural appropriateness was lower (M = 4.2), indicating a necessity for enhanced inclusion and multilingual support, reinforcing the recommendation to integrate cultural signals during initial design rather than retrofitting them. [34]

Multidisciplinary and institutional implications

Quantitative evaluations revealed elevated usability (M = 4.4) and design quality (M = 4.6), corroborating previous findings that effective navigation, visual coherence, and emotional resonance enhance digital engagement. [27, 32] The score for cultural appropriateness was lower (M = 4.2), indicating varied expert opinions and highlighting the necessity for more extensive participatory contributions in future versions. The potential effectiveness (M = 4.3) was substantiated, incorporating aspects like mood tracking and adaptive prompts along with evidence-based practices for resilience and self-efficacy. [25-26] The prototype effectively incorporated mood tracking, journaling, and adaptive feedback to facilitate personalization and accessibility; however, experts identified a need to improve cultural inclusivity and multilingual options, aligning with

recommendations to integrate cultural cues from the beginning. [34]

Conclusion

This study created, developed, and assessed a UX/UI-optimized mental health application as a multidisciplinary solution to the increasing psychological issues encountered by university students. An expert assessment validated that the prototype successfully implemented UXD/UID principles by incorporating features that facilitated affect management, behavioral activation, and self-reflection. The application exhibited robust usability, attractive design quality, and conformity with evidence-based well-being practices; however, cultural adaptation was recognized as the principal aspect needing additional enhancement.

The study emphasizes that integrating design within psychological and educational frameworks illustrates how digital technologies can enhance traditional services, mitigate stigma and access hurdles, and promote institutional objectives related to student well-being, retention, and workforce preparedness. Despite being restricted to expert evaluation during the prototype phase, the results establish a basis for subsequent co-design with students, longitudinal analysis, and extensive cultural adaptation. The study provides a practical strategy for creating fair, student-focused digital mental health interventions in higher education.

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