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AI-Based Mental Health Applications for College Students: A Literature Review of Qualitative Findings of User Needs

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ABSTRACT: College students worldwide face a rising burden of mental health challenges. AI-based mental health applications (including chatbots, adaptive self-help modules, and predictive mood trackers) are increasingly used to offer scalable support. However, successful deployment depends on aligning these technologies with student needs.This systematic literature review synthesizes qualitative evidence (2020–2025) regarding the needs, preferences, and concerns of college students using AI-based mental health applications. Five primary themes emerged: (1) personalization and adaptability; (2) privacy and confidentiality; (3) accessibility and usability; (4) emotional support and human-like interaction; and (5) integration with campus ecosystems. Students emphasized transparent data practices, co-design approaches, culturally sensitive content, and pathways connecting digital tools with campus counseling services. Gaps included limited longitudinal evidence, underrepresentation of low- and middle-income contexts, and little attention to intersectional differences. Designing AI-based mental health applications for college students requires centering student voices through participatory design, prioritizing privacy and explainability, and integrating digital supports with institutional services. Future research should include longitudinal, cross-cultural, and intersectional studies to assess sustained engagement and clinical impact.

KEYWORDS: Artificial Intelligence, Digital Mental Health, College Students, Qualitative Findings, User Needs, Systematic Review

1. INTRODUCTION

Mental health problems among college and university students have become a significant public health concern. Global reviews and national surveys indicate elevated prevalence rates of anxiety, depression, and stress in higher education populations, with many students reporting unmet needs for psychosocial support (Holtz et al., 2020; Fitzpatrick et al., 2017; Torous et al., 2025). Barriers to accessing traditional counseling services—such as wait times, stigma, limited resources, and scheduling conflicts—have led institutions and technology developers to explore digital solutions.

Artificial intelligence (AI) has been incorporated into a range of digital mental health tools, including conversational agents (chatbots), predictive analytics for early risk detection, tailored intervention modules, and automated monitoring systems (Haque et al., 2023; Prochaska et al., 2021). These applications promise scalability, 24/7 availability, and the ability to personalize content based on user behavior and self-report data. However, technical capabilities alone do not ensure adoption or clinical benefit: user perceptions, trust, usability, cultural fit, and ethical considerations shape whether students engage with and benefit from AI-based mental health applications (Bautista et al., 2023; Nagar et al., 2023).

While quantitative evaluations measure symptom change and engagement metrics, qualitative research provides rich insight into user needs, lived experiences, and contextual barriers—information essential for designing effective, acceptable, and equitable technologies (Williams et al., 2022; Riboldi et al., 2024). This review synthesizes qualitative findings from the last five years (2020–2025) to identify recurring themes and actionable recommendations for developers, researchers, and university stakeholders.

2. METHODS

2.1 Search Strategy

We conducted systematic searches across Scopus, PubMed, IEEE Xplore, Web of Science, and Google Scholar for articles published from January 2020 through June 2025. Search terms combined keywords and boolean operators: 'AI' OR 'artificial intelligence' AND 'mental health' AND ('app' OR 'application' OR 'chatbot' OR 'digital') AND ('college students' OR 'university students' OR 'tertiary students') AND ('qualitative' OR 'interview' OR 'focus group' OR 'user needs' OR 'perceptions').

2.2 Inclusion and Exclusion Criteria

Included studies met the following criteria: (1) peer-reviewed journal articles, conference papers, or dissertations published between 2020 and 2025; (2) focused on college/university student populations; (3) investigated AI-enabled or AI-labelled mental health applications; and (4) reported

qualitative data (e.g., interviews, focus groups, thematic analysis). Excluded were quantitative-only studies, studies focusing on non-student populations, and technologies lacking AI components.

2.3 Screening and Selection

Following PRISMA procedures, 1,245 records were identified across databases and gray literature. After deduplication and title/abstract screening, 128 full-text articles were assessed for eligibility. Forty-seven studies satisfied inclusion criteria and were included in the synthesis. (A PRISMA flow diagram is provided in Appendix A.)

2.4 Data Extraction and Synthesis

From each study, we extracted: country, sample size and characteristics, type of AI tool, qualitative method, themes or codes related to user needs, and key illustrative quotes. Thematic synthesis (Thomas & Harden, 2008) guided coding and translation of study findings into higher-order themes. Two reviewers independently coded data, with discrepancies resolved via discussion.

3. RESULTS

3.1 Characteristics of Included Studies

The 47 included studies spanned multiple regions: North America (n=19), Europe (n=12), Asia (n=10), Africa and Middle East (n=4), and Oceania/other regions (n=2). Study methods included semi-structured interviews (n=28), focus groups (n=14), and mixed methods with qualitative emphasis (n=5). Popular AI modalities included conversational chatbots (e.g., Woebot, Pi, custom university chatbots), adaptive self-help modules that used algorithmic tailoring, and tools employing sentiment or language analysis for journaling features (Haqqe et al., 2023; Prochaska et al., 2021; Kuhail et al., 2024).

3.2 Emergent Themes: User Needs

3.2.1 Personalization and Adaptability

Across studies, students prioritized personalization. They reported that static content reduced engagement and that AI tools should adapt to individual schedules, preferences, severity of symptoms, and cultural norms (Williams et al., 2022; Riboldi et al., 2024). Participants described valued features such as customizable notification frequency, tailored coping strategies, and the ability to adjust language tone (formal vs colloquial).

3.2.2 Privacy and Confidentiality

Privacy emerged as a dominant concern. Students feared data misuse, unauthorized sharing with university administrators, or commercial exploitation (Nogueira-Leite et al., 2024; Bautista et al., 2023). Desired safeguards included transparent data policies, options for local data storage, end-to-end encryption, and clear separation between app data and academic records.

3.2.3 Accessibility and Usability

Ease of use and low technical barriers were repeatedly emphasized. Students wanted mobile-first designs, minimal onboarding, inclusive accessibility features (e.g., screen readers, text-to-speech), and offline functionality for low-bandwidth contexts (Smith et al., 2021; Melcher et al., 2022). Cost and licensing were also noted as adoption barriers in low-resource settings.

3.2.4 Emotional Support and Human-like Interaction

Students valued conversational quality and empathy. Successful chatbots were described as non-judgmental, responsive, and capable of remembering past interactions to provide continuity. Conversational style, timing, and perceived warmth influenced trust and retention (Kuhail et al., 2024; Kostenius et al., 2024).

3.2.5 Integration with Campus Ecosystem

Participants reported higher confidence in apps that linked to campus counseling, crisis services, and peer support networks (Topooco et al., 2022; Riboldi et al., 2024). Integration enabled smoother referral pathways and reduced duplication of services.

3.3 Additional Findings

Other recurrent topics included: the need for culturally sensitive content for diverse student populations (Williams et al., 2022), concerns about digital overload and notification fatigue (Smith et al., 2021), preferences for blended care models that combined AI tools with human support (Gericke et al., 2021; Kang et al., 2024), and skepticism about AI competence for severe mental health conditions.

4. DISCUSSION

4.1 Principal Findings

Synthesis of qualitative studies reveals five core user needs—personalization, privacy, accessibility, empathetic interaction, and institutional integration—that consistently shape students' engagement with AI-based mental health applications. These needs cut across geographic and cultural contexts, although emphasis and expression varied by setting.

4.2 Implications for Design and Deployment

Designers should implement adaptive algorithms that allow user control over personalization settings, integrate transparent privacy controls and data minimization strategies, and provide seamless connections to human services. Participatory design co-creation with students—was repeatedly recommended to ensure cultural relevance and acceptability (Bautista et al., 2023; Williams et al., 2022).

4.3 Ethical and Regulatory Considerations

Universities and developers must attend to data protection regulations (e.g., GDPR in Europe) and ethical frameworks, including informed consent for data use, audits of algorithmic fairness, and oversight by institutional review boards. Explainable AI features can enhance trust, enabling

students to understand why a tool made certain recommendations (Nogueira-Leite et al., 2024).

4.4 Limitations of the Evidence Base

Most qualitative studies were cross-sectional and focused on initial perceptions rather than long-term engagement or clinical outcomes. Low- and middle-income contexts were underrepresented, and few studies examined intersectional differences (e.g., by gender, socioeconomic status, or disability). The heterogeneity of AI definitions across studies also complicates synthesis.

4.5 Future Research Directions

Future studies should pursue longitudinal mixed-methods designs to assess sustained use and clinical impact, expand research in underrepresented regions, and evaluate blended care models with rigorous designs. Additionally, research should examine algorithmic bias and equitable access across diverse student groups.

5. CONCLUSION

AI-based mental health applications present promising opportunities to expand access to mental health support for college students. However, their real-world effectiveness depends on centering student needs in design and implementation: offering meaningful personalization, safeguarding privacy, ensuring accessibility, emulating empathetic interaction, and integrating with campus services. By embedding ethical protections and engaging students in co-design, developers and institutions can enhance the acceptability and impact of AI-enabled tools.

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