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Innovation in digital interventions for the mental health of university students in Latin America: Challenges, advances, and perspectives from recent evidence

Innovación en intervenciones digitales para la salud mental de estudiantes universitarios en América Latina: desafíos, avances y perspectivas desde la evidencia reciente

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SUMMARY

Digital interventions based on cognitive-behavioral therapy (iCBT) have become essential tools to reduce the mental health treatment gap among university students, particularly in low- and middle-income countries in Latin America. This reflective article critically examines recent advancements in clinical trials, cultural adaptation studies, precision treatment models, and analytic methods for compliance, integrating evidence from Colombia and Mexico. Ethical, methodological, and cultural challenges affecting implementation are analyzed, along with the roles of adherence, stigma, individual variability, and personalized treatment models. Implications for public policy, clinical practice, and the development of more accessible, sustainable, and culturally grounded university mental health systems are discussed.

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RESUMEN

Las intervenciones digitales basadas en la terapia cognitivo-conductual (iCBT) y otros enfoques contemporáneos han emergido como estrategias clave para reducir la brecha de atención en salud mental entre estudiantes universitarios, especialmente en países de ingresos bajos y medios, como los de América Latina. En esta reflexión se examinan críticamente los avances más relevantes en ensayos clínicos, estudios de adaptación cultural, análisis de precisión terapéutica y metodologías para el análisis del cumplimiento, integrando evidencia reciente proveniente de Colombia y México. Se analizan los desafíos éticos, metodológicos y culturales que condicionan la implementación de estas tecnologías, así como el papel de la adherencia, el estigma, la variabilidad individual y los modelos de tratamiento

personalizado. Se discuten implicaciones para la política pública, la práctica clínica y el desarrollo de sistemas universitarios de salud mental más accesibles, sostenibles y culturalmente pertinentes.

INTRODUCTION

University mental health in Latin America faces a complex scenario characterized by the convergence of structural, cultural, and socioeconomic factors that increase the risk of depressive and anxiety disorders, as well as suicidal behavior. The region presents a combination of socioeconomic inequalities, limited access to specialized clinical services, and significant gaps in care, with more than 80 % of students with emotional disorders not receiving adequate treatment. This context has driven growing interest in the development, implementation, and evaluation of digital mental health interventions, especially those based on online cognitive-behavioral therapy (CBT), whose scalability, cost-effectiveness, and cultural adaptability make them a strategic alternative (1-3).

Recent evidence indicates that Latin American university students exhibit characteristics that require intervention models sensitive to the regional context. Factors such as being the first generation in higher education, economic pressure, the prevalence of cultural stigma, the somatization of symptoms, and limitations in seeking professional help render traditional in-person approaches insufficient. Furthermore, the COVID-19 pandemic deepened these gaps, exacerbating symptoms of anxiety and depression and revealing the urgent need for hybrid and flexible systems of psychological care (1-3).

Integrated cognitive-behavioral therapy (iCBT) is emerging as an innovative approach to addressing these needs. Numerous multicenter studies conducted in Colombia and Mexico have provided strong evidence of its effectiveness and have identified critical elements, including adherence, treatment personalization, cultural adaptation, and machine-learning-based predictive models. This reflection broadens the conceptual discussion on these dimensions, articulating how they can be integrated to transform university-level healthcare systems in the region (1-3).

REFLECTION

The structural challenge of university mental health in Latin America

Socioeconomic conditions, most first-generation students, and the tensions between academic, work, and family responsibilities create a scenario of high psychological vulnerability. International comparative studies have shown that Latin American youth report higher levels of academic and emotional stress and are less likely to receive timely treatment.

This is linked to barriers such as: Structural shortages of psychologists, long waiting lists, and costs; Attitudinal: stigma, preference for individual or family coping; Cultural: tendency to somatize, fear of "being a burden" on the family.

A qualitative study conducted with Colombian and Mexican students reveals how students describe intense symptoms of anxiety and suicidal ideation in somatic terms: "chest pressure," "feeling out of control," a key finding for the design of culturally sensitive interventions (4).

Digital interventions as a viable and scalable alternative

Studies published in *Trials* (2022), *the Journal of Consulting and Clinical Psychology (2023), and JMIR (2025)* have evaluated both guided and self-guided iCBT among thousands of Latin American students, yielding robust findings (1,2,5): Guided iCBT is superior in the short term (3 months); In the long term (12 months), self-guided iCBT is more effective for patients with high adherence; Treatment as usual (TAU) offered in universities does not achieve sufficient levels of remission.

The asynchronous nature of the support, flexible access, and the ability to progress at one's own pace are advantages especially valued by students with multiple responsibilities.

Cultural adaptation: the heart of effectiveness

One of the studies consulted demonstrates that more than 80 % of the modifications needed to improve the acceptance of iCBT are directly related to language (5). This includes expressions, metaphors, photographs, and narratives that reflect Latin American realities, such as precarious urban life, rural contexts, and the centrality of the family (5).

The principles of deep cultural adaptation suggest that translation alone is insufficient; it is necessary to understand how communities explain their problems and how they conceive of seeking help. Users demand programs that "speak their language," that understand their context, and that do not simply reproduce Anglo-Saxon psychological models (5).

Treatment heterogeneity and precision models

Recent studies in JAMA Psychiatry (2023) and the *International Journal of Methods in Psychiatric Research* (IJMPR) (2024) show that digital interventions do not work equally well for everyone. Factors such as trauma history, self-efficacy, academic skills, social support, and baseline severity influence the likelihood of remission (3,5). Personalized treatment models (PTRs) enable the prediction of which students are most likely to respond to guided or self-guided iCBT, thereby optimizing resource allocation in institutions with limited budgets. This enables intelligent, adaptive systems that tailor treatment allocation to students' profiles.

The critical role of adherence

Adherence is the strongest predictor of therapeutic effectiveness. Longitudinal studies consulted show that those who maintain participation beyond the first few weeks are twice as likely to achieve remission (6-10). This presents two challenges: developing strategies to sustain engagement and identifying early those who might drop out (10-20).

Universities should consider hybrid models that combine technology, human support, and institutional actions that reduce academic and socioeconomic barriers (10-30).

In Table 1, the comparison of recent studies on digital mental health interventions for university students in Latin America.

CONCLUSIONS

Digital interventions represent a quiet yet profound revolution in university mental health in Latin America. The reviewed evidence shows that they not only expand therapeutic coverage but also offer an opportunity to transform paradigms about how mental health services are conceived, delivered, and evaluated.

First, iCBT interventions have proven to be as effective as face-to-face therapy, especially for students with moderate levels of anxiety and depression. Their flexibility, accessibility, and low operating costs make them a strategic resource for universities with limited budgets. However, their effectiveness is modulated by treatment adherence, which requires institutional support systems, ongoing support strategies, and technologies that facilitate sustained participation.

Second, cultural adaptation is not an add-on, but an essential component of effectiveness. Evidence indicates that language, examples, metaphors, and visual representations must resonate with Latin American experiences. This process improves user identification, reduces stigma, and increases engagement with the intervention.

Third, machine learning-based therapeutic precision models represent a crucial advance in optimizing resources. These models allow us to predict who will respond best to guided or self-guided treatment, and who requires more intensive alternatives. Their integration into university systems could improve treatment planning and reduce waiting times.

Finally, the integration of digital interventions must be understood as a systemic effort. Universities, governments, and health systems need to develop policies that facilitate the adoption of these technologies, ensure data protection, reduce barriers to access, and promote mental health literacy.

The findings suggest that the future of university mental health in the region will

Table 1. Comparison of recent studies on digital mental health interventions for university students in Latin America.

Study	Countries	Type of intervention	Sample (N)	Main findings	Reported limitations
Benjet et al., 2022 (1)	Colombia y México	Guided iCBT, self-guided iCBT, TAU	1 500	Guided iCBT showed better short-term results; PTR proposal.	Limited prolonged follow-up
Benjet et al., 2023 (2)	Colombia y México	iCBT vs TAU comparison	1 319	Greater remission with guided iCBT; significant heterogeneity.	Variable adherence
Benjet et al., 2023 (3)	Colombia y México	Personalized treatment rule	1 319	Subgroups respond better to self-guided iCBT.	External validation required
Castro-Ramírez et al., 2023 (4)	Colombia y México	Qualitative Study on suicidal ideation	55	Relevance of stigma and somatization.	Not generalizable
Albor et al., 2024 (5)	Colombia y México	Cultural adaptation of iCBT	765	High satisfaction with the adapted version.	Lack of effectiveness measurement
Benjet et al., 2025 (6)	Colombia y México	Evaluation at 3 and 12 months	1 319	Superior long-term self-guidance in adherents.	Need for monitoring strategies
Zainal et al., 2025 (7)	Colombia y México	Models for evaluating compliance	880	Compliance determines effectiveness	Requires external replication

depend on the institutional capacity to integrate technological innovation, cultural adaptation, and predictive analytics models that place the student at the center of the care system.

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