

ORIGINAL ARTICLE

Ethical opportunities and challenges of AI in mental health in Latin America

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Abstract

Artificial intelligence (AI) has emerged as a promising alternative to address the mental health crisis in Latin America and the Caribbean, characterized by a high prevalence of disorders, a shortage of professionals, and profound structural inequalities. This study aims to critically analyze the opportunities, applications, and ethical challenges of AI in mental health within the regional context. Using a critical and integrative narrative review, academic literature and normative documents published between 2020 and 2025 are examined, including empirical studies, reviews, and regulatory frameworks relevant to the region. The results reveal an emerging landscape in predictive diagnosis, emotional monitoring, and chatbots, yet limited by algorithmic biases, the lack of representative data, and the absence of specific regulations. It is concluded that the effective implementation of AI in mental health requires a responsible development approach that articulates ethical governance, strengthening of local capacities, and sociocultural adaptation, prioritizing equity and protection of vulnerable populations.

Introduction

Over the past decade, artificial intelligence (AI) has become established as a major driver of transformation across multiple sectors, including mental health. In the Latin American context, this technology has gained relevance in response to persistent challenges such as a shortage of professionals, limited access to quality services, high demand and territorial inequalities, all of which are intensified by stigma, low levels of public investment, and the lack of preventive strategies.



AI offers alternatives to reduce these gaps through tools such as therapeutic chatbots, predictive models, and generative systems, which can optimize care delivery, reduce costs, and provide continuous support. Recent studies show that machine learning and natural language processing facilitate early detection and management of symptoms associated with anxiety, depression, and other prevalent disorders.

However, implementation in the region remains incipient. Limitations persist in regulatory frameworks, the availability of representative data, and cultural acceptance. A central challenge is algorithmic bias derived from the use of data from high-income countries, which affects the validity and equity of solutions in Latin American contexts. This chapter presents a narrative review of the current state of AI in mental health, with particular attention to its applicability, ethical challenges, and development opportunities in Latin America.

Methods and Materials

This study is based on a critical and integrative narrative review aimed at synthesizing available knowledge on the use of artificial intelligence (AI) applied to mental health in Latin America and the Caribbean (LAC). Unlike a systematic review, whose primary objective is exhaustiveness, this approach seeks to interpret trends, contrast perspectives, and analyze regional implications based on diverse and recent evidence. This methodological choice responds to the emerging nature of the topic and the heterogeneity of studies available in the region.

Sources consulted: Academic literature published between 2020 and 2025 was reviewed, including empirical studies, systematic reviews, scoping reviews, and meta-analyses indexed in PubMed, Scopus, SciELO, and Google Scholar. In addition, public policy documents, science and technology agendas, guidelines from multilateral organizations, and analyses of regulatory frameworks related to health and AI were included. The incorporation of grey literature reflects the fact that much regulation, governance, and pilot experience has not yet been reported in indexed journals.

Selection criteria: Priority was given to publications meeting at least one of the following criteria: (a) studies conducted in LAC countries or with results applicable to the region; (b) research on AI applications in mental health; (c) normative or technological governance documents; and (d) evidence on inequality, access, or social impact related to digital health technologies.

Synthesis and organization. The evidence was analyzed thematically and structured into five dimensions: regional context; technological landscape; structural inequalities, barriers, and ethical challenges; regulatory situation; and proposals for responsible development.

This methodological approach makes it possible to understand the current state of the field, identify critical gaps, and propose development opportunities aligned with the sociotechnical realities of LAC. For this purpose, it is first necessary to situate the current state of mental health and its determinants in Latin America and the Caribbean.



Results

The results of this review reveal an emerging landscape of AI applications in mental health across LAC. Analysis of the literature shows advances in the adoption of predictive models, natural language processing tools, and therapeutic chatbots, mainly oriented toward diagnosis, prevention, and emotional support. The evidence makes it possible to identify prevailing technological trends, the most frequently studied disorders, and persistent methodological gaps.

Mental health context in Latin America

Mental health in Latin America and the Caribbean (LAC) is characterized by a high prevalence of disorders, limited institutional capacity, and deficiencies in the quality of epidemiological data. A recent review identified 69 national surveys conducted over the past decade, with an emphasis on substance use and violence, while depression, anxiety, suicidal behavior, and dementias remain underrepresented (Ramírez-Bontá et al., 2023). In addition, the concentration of instruments in Mexico and Colombia hinders a balanced regional perspective.

These limitations also affect research in artificial intelligence (AI). Tornero-Costa et al. (2023) point to recurrent methodological shortcomings such as small sample sizes, limited external validation, and data not originally designed for AI applications, which restrict the development of culturally relevant models and perpetuate existing gaps. The COVID-19 pandemic further intensified these weaknesses; a meta-analysis reported pooled prevalences of 35% for anxiety, depression, and insomnia, higher than those observed in Asia and Europe (Zhang et al., 2022), with a particularly strong impact in South America.

Taken together, the evidence points to high mental health needs combined with insufficient capacity, shaping public policy design and conditioning the ethical and effective adoption of emerging technologies such as AI, whose success depends on reliable and context-specific information.

Current landscape of AI applied to mental health: Recent initiatives in Latin America and the Caribbean

In recent years, Latin America has increased its scientific output in AI and mental health, mainly concentrated in Colombia, Mexico, and Chile. Applications based on machine learning (ML), natural language processing (NLP), and therapeutic chatbots predominate, focusing on depression, anxiety, stress, bipolar disorder, and behavioral difficulties.

Table 1 summarizes the most relevant initiatives identified in the region. In Colombia, Santamaría-García et al. (2023) applied ML to analyze healthy aging; in Chile, Gaona et al. (2025) used Random Forest algorithms for bipolar disorder; and Daza et al. (2023) documented rapid growth in ML applications across the region. In parallel, NLP-based chatbots show promising results: Entenberg et al. (2023) reported good acceptability among young people with behavioral problems, while Terán et al. (2024) highlighted their potential to expand access in public health contexts.

Despite these advances, the field remains fragmented and methodologically weak, with predominantly descriptive studies, small samples, and limited external validation. Nevertheless, these initiatives reflect growing interest and openness to AI-based solutions adapted to the Latin American context as a complement to traditional clinical practice.



Table 1. *Initiatives in Latin America and the Caribbean*

Author(s) / Year	Country(ies)	AI Technology / Approach	Disorders or problems addressed	Main findings
Santamaría-García et al. (2023)	Colombia	Machine Learning (ML) / predictive models	Psychosocial factors related to healthy aging	Identified relevant patterns using ML to characterize well-being and mental health in older adults; highlighted predictive utility with limitations in generalizability.
Daza et al. (2023)	Multi-country (LAC)	Systematic review of ML in mental health	Depression, anxiety, stress	Documented rapid growth in ML use across the region, alongside methodological shortcomings such as small samples and lack of external validation.
Entenberg et al. (2023)	Uruguay / Chile	NLP-based chatbot	Behavioral problems in youth	The microintervention chatbot showed good user acceptability; preliminary results suggest utility for behavioral support.
Terán et al. (2024)	Ecuador	Narrative review on chatbots and public health	Stress, general emotional distress	Analyzed the potential of chatbots to expand access to services; highlighted adoption challenges and sociocultural barriers in LAC.
Gaona et al. (2025)	Chile	Random Forest (RF)	Bipolar disorder	RF models identified relevant patterns that could support diagnosis and monitoring; emphasized the need for larger samples and clinical validation.

Source: Authors' own elaboration.

Technological applications

Significant advances are observed in the region with the use of predictive models, particularly for diagnosis and risk prediction of disorders such as anxiety and depression, using machine learning (ML) and natural language processing (NLP) algorithms. In addition, therapeutic chatbots such as Woebot and Wysa, based on cognitive-behavioral therapy (CBT), are being used successfully to provide emotional support and monitor patients in resource-constrained settings. Table 2 presents additional examples.

Table 2. *Examples of AI technologies applied to mental health*

Technology	Main applications	Disorders addressed
Machine Learning (ML)	Clinical prediction, risk classification	Anxiety, depression, suicide risk
Natural Language Processing (NLP)	Therapeutic chatbots, emotion analysis	Anxiety, depression
Deep Neural Networks (DL)	Voice analysis, neuroimaging	Schizophrenia, bipolar disorder



Technology	Main applications	Disorders addressed
Generative AI	Development of intervention plans, psychoeducational materials	Depression, bipolar disorder

Source: Authors' own elaboration.

However, the expansion of these applications raises important ethical and social questions, especially in a region marked by deep inequalities. The following section analyzes barriers, risks, and ethical challenges associated with the use of AI in mental health in LAC.

Barriers, ethical, social, and structural challenges: Adoption of AI in mental health in Latin America

The adoption of artificial intelligence (AI) in mental health in Latin America and the Caribbean (LAC) is shaped by a set of interrelated barriers reflecting historical structural inequalities, institutional limitations, and ethical challenges. Social factors such as poverty, stigma, and unequal access to health services combined with gaps in digital infrastructure, professional capacity, and the production of high-quality data, directly affecting the feasibility and equity of AI-based solutions.

These conditions have a particularly strong impact on vulnerable populations. A recent study on adolescents exposed to social inequality in the region shows that structural factors such as violence, food insecurity, and discrimination operate as chronic stressors associated with increased risk of depression and anxiety (Sánchez-Castro et al., 2024). This illustrates how socioeconomic disparities affect not only disorder prevalence but also the ability to benefit from digital tools amid connectivity and digital literacy gaps.

At the same time, ethical and social challenges persist regarding the use of sensitive data, potential cultural and linguistic biases, algorithmic transparency, and protection of user autonomy. Systems trained on non-representative data may generate inaccurate decisions or perpetuate inequities. Institutionally, scientific agendas often marginalize mental health and lack clear strategies for the development or regulation of AI (Ragusa et al., 2025).

Recommendations to address ethical and social challenges

The literature proposes concrete measures to strengthen the ethical use of artificial intelligence (AI) in mental health in Latin America and the Caribbean (LAC):

- Develop clear and specific regulatory frameworks, with standards for the management of sensitive data, algorithmic audits, and mandatory human oversight (Rubeis, 2022; Fanarioti & Karpouzis, 2025).
- Foster transparency and applicability by adopting documentation practices, technical reporting, and mechanisms that enable understanding of the underlying logic of AI models (Saeidnia et al., 2024; Olawade et al., 2024).
- Promote representative datasets, built with the participation of local communities and cultural diversity, to reduce bias and improve clinical accuracy (Mancilla-Caceres & Estrada-Villalta, 2022).
- Advance digital literacy strategies, targeting both professionals and patients, to ensure informed and responsible use of these technologies (Ruano et al., 2021).



- Ensure community participation, including users, families, and professionals, in the design and evaluation of technological tools in order to guarantee cultural relevance and social legitimacy (Mancilla-Caceres & Estrada-Villalta, 2022).

While these recommendations provide practical guidance for a more ethical and socially responsible use of AI, their implementation requires regulatory frameworks that support their operationalization. Therefore, it is necessary to examine the current regulatory landscape and normative needs in the region.

Regulatory situation and normative needs

Regulation of artificial intelligence (AI) applied to health in Latin America and the Caribbean (LAC) remains at an early stage, with uneven progress across countries. Existing frameworks mainly focus on data protection, digital ethics, and general transparency. However, specific regulation for AI in mental health is scarce and usually subsumed under broader digital health guidelines, limiting oversight of technologies that handle highly sensitive information.

Regulatory development is heterogeneous. Brazil has implemented the General Data Protection Law (LGPD), which recognizes the right to explanation and review of automated decisions automatizadas (De Araujo Dourado & Aith, 2022). Peru is the only country with a specific regulation for AI in medicine, although its implementation is still being consolidated (Zavaleta-Monestel et al., 2025). In Argentina, Mexico, Colombia, and Chile, proposals focus primarily on privacy and risk management (Ragusa et al., 2025). Significant gaps remain in legal responsibility, institutional oversight, and protection against bias, particularly for vulnerable populations.

The literature highlights the need for specific frameworks for AI in mental health due to risks of bias, discrimination, or manipulation (Fanarioti & Karpouzis, 2025). In LAC, there are no regulations exclusively targeting this area, nor minimum standards for clinical validation or crisis protocols. The EU Artificial Intelligence Act (Regulation (EU) 2024/1689), which classifies mental health tools as high-risk, is frequently cited as a global reference underscoring the need for more specific frameworks in LAC (Eraso, 2024).

Based on the regional and comparative analysis, several urgent regulatory needs can be identified in Latin America and the Caribbean (LAC):

1. Specific regulations for AI in mental health, establishing minimum requirements for safety, clinical validation, and oversight.
2. Regional standardization of ethical and technical criteria, particularly for the management of sensitive data and vulnerable populations.
3. Legal accountability mechanisms for automated decisions affecting diagnoses, prognoses, or interventions.
4. Algorithmic validation and auditing protocols, including assessments of linguistic, cultural, and socioeconomic bias.
5. Clear definitions of the role of human oversight, especially in emotional support tools or chatbot-based interventions.
6. Regulation of generative models applied to psychological interaction, which is currently absent in the LAC region.

These needs constitute a natural bridge to the following section, which focuses on proposals and lines of action for responsible development.

Proposals for the responsible development of AI in mental health in Latin America and the Caribbean

Responsible development of AI applied to mental health requires the integration of ethical principles, technical standards, specific regulations, adequate infrastructure, and community participation. The literature emphasizes the adoption of international governance frameworks, strengthening of local capacities, and regional and interdisciplinary collaboration to ensure safe, equitable, and effective solutions in LAC.

Ethical governance and international frameworks

Core principles include privacy, equity, bias mitigation, transparency, explainability, informed consent, and accountability (Saeidnia et al., 2024; Fanarioti & Karpouzis, 2025; Olawade et al., 2024; Rubeis, 2022; Wang et al., 2024). International organizations emphasize regulatory frameworks and continuous risk assessment (Shaw et al., 2024), while ISO, IEC, and IEEE promote technical standards for quality and transparency (Goktas & Grzybowski, 2025). The EU AI Act serves as a reference for guiding frameworks in LAC given the high-risk nature of these applications (Eraso, 2024).

Technical standards and scientific validation

Clinical reliability depends on adherence to standards such as TRIPOD-AI, CONSORT-AI, and STARD-AI. TRIPOD-AI provides criteria for predictive models (Collins et al., 2021; Collins et al., 2024); CONSORT-AI extends reporting guidelines for trials involving AI (Liu et al., 2020; Ibrahim et al., 2021); and STARD-AI adapts diagnostic accuracy guidelines to predictive technologies (Sounderajah et al., 2021). Adherence rates remain around 50%, highlighting the need for greater methodological rigor (Kleine et al., 2024; Martindale et al., 2024; Wilhelm et al., 2024; Koutsouleris et al., 2022).

Infrastructure, technical capacity, and specialized training

AI adoption requires investment in secure and interoperable platforms. Frameworks such as GDPR, HL7 FHIR, and ISO/IEC 27001 are key references for security and traceability (Pesqueira et al., 2025; Löchner et al., 2025). The development of academic and clinical hubs capable of certifying tools prior to implementation is recommended, along with scalable infrastructures for federated learning, private clouds, and ethical use of generative models (Ng et al., 2025; Naik, 2023; Strudwick et al., 2025). Integrating data science and AI into the training of psychologists and psychiatrists is a key enabler for informed adoption (Jazayeri et al., 2025).

Cultural adaptation of technology

Implementing AI in mental health in Latin America requires trained models on representative data of local realities. Cultural, linguistic, and social differences influence how digital interventions are perceived (Katsina, 2024; Kasaudhan, 2025). Ensuring cultural relevance improves accuracy, therapeutic utility, and acceptance, particularly in contexts where stigma persists (Vielma-Aguilera & Castro-Alzate, 2021).



Interdisciplinary collaboration

Responsible adoption requires coordination between engineering, mental health, and ethics to ensure technically robust solutions that respect privacy and align with clinical practice principles, especially when managing sensitive data (Spytska, 2025). This collaboration helps ensure that digital tools complement rather than replace human interaction (Cecil et al., 2025).

Community participation, equity, regional research, and international cooperation

The involvement of users, families, and professionals strengthens cultural relevance and social acceptance of AI (Paz et al., 2025). Epistemic justice promotes local agency, although funding limitations persist. Regional research networks and international organizations, such as RedeAmericas, HEROES and LAC-CD, support collaborative initiatives aimed at ethical, equitable, and sustainable AI development (Ragusa et al., 2025; Paz et al., 2025).

Conclusions

Artificial intelligence (AI) offers significant opportunities to improve mental health care in Latin America and the Caribbean, particularly in predictive diagnosis, continuous monitoring, and expanded access in contexts with professional shortages. Its implementation could help reduce longstanding barriers and support more timely, personalized, and sustainable care strategies.

Nevertheless, limitations related to data availability and quality, research fragmentation, and the still incipient validation of models designed for the regional context persist. Ethical challenges associated with bias, transparency, and privacy are amplified in a setting marked by social inequalities and digital divides, requiring caution and responsible design.

The absence of coherent regulatory frameworks represents both a challenge for oversight and user protection and an opportunity to design norms tailored to regional realities. Advancing toward AI applied to mental health that is effective, equitable, and culturally relevant requires strengthening local research capacities, fostering interdisciplinary collaboration, and consolidating regional agreements that ensure minimum standards of safety, transparency, and quality.

Ultimately, the promise of AI in mental health will depend less on technology adoption itself and more on the collective construction of a responsible innovation ecosystem. Integrating ethical principles, local knowledge, and community participation can transform these tools into meaningful support for guaranteeing the right to mental health and expanding opportunities for well-being across the region.

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Declaration of interests

The authors declare that there are no conflicts of interest related to this research.

Author contributions

During the preparation of this work, DeepSeek was used as an assistance tool to improve readability, synthesize information, and preliminarily structure the content, and ChatGPT was used to refine the translation. Following the use of these tools/technologies, the authors assumed full responsibility for reviewing and editing the content in its entirety, ensuring the accuracy and integrity of the published information and taking full intellectual responsibility for the final manuscript.

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