

Revista Latinoamericana de Difusión Científica
Volumen 8 – Número 14
Depósito Legal ZU2019000058 - ISSN 2711-0494

Revista Latinoamericana de Difusión Científica



Volumen 8 - Número 14
Enero – Junio 2026
Maracaibo – Venezuela

Digital and Alternative Therapies for Depression: An Integrative Review of Effectiveness, Acceptability, and Implementation Challenges

DOI: <https://doi.org/10.5281/zenodo.18437543>

Antero Claiton Varela*

ABSTRACT

Depression is among the most prevalent mental disorders, impairing quality of life and imposing substantial economic costs. Despite effective treatments, access to traditional care is limited by cost, availability, and stigma. Digital and alternative therapies have emerged to expand access, support self-management, and improve adherence. Objective: To map and synthesize evidence on the effectiveness and acceptability of digital and alternative interventions for depression. Methods: Following PRISMA, searches in major databases (2020–2025) identified randomized trials, pilot studies, systematic reviews, and meta-analyses with DOIs. We extracted design, population, interventions, comparators, outcomes, and results. Quality was assessed with RoB 2, ROBINS-I, and AMSTAR-2. Results: Seven studies met criteria. Internet-based CBT showed moderate effectiveness with variable adherence. Mobile apps reduced depressive symptoms but were heterogeneous. In low- and middle-income settings, digital approaches were effective yet hindered by access and engagement barriers. Virtual reality interventions were feasible, acceptable, and promising. Mindfulness-based programs reduced depression, anxiety, and stress, particularly with comorbidities. A multiverse meta-analysis supported overall effectiveness across analytic choices. Conclusion: Digital and alternative therapies appear effective, scalable, and acceptable for depression management, though challenges in adherence, cultural adaptation, and validation persist. Future work should emphasize large randomized trials, cost-effectiveness, inclusion, and equitable global implementation.

KEYWORDS: Depression, Digital therapy, Alternative therapy, Mental health intervention, Integrative review.

*Postgraduate degree in Psychiatry and Mental Health, Postgraduate degree in Urgency and Emergency Care. Institution: Faculdade do Vale Elvira Dayrell. Address: Belo Horizonte –Minas Gerais, Brazil. ORCID: <https://orcid.org/0009-0009-3006-0227>. E-mail: claitonvr@yahoo.com

Recibido: 09/09/2025

Acceptado: 05/11/2025

Terapias digitales y alternativas para la depresión: Una revisión integral de su eficacia, aceptabilidad y desafíos de implementación

RESUMEN

La depresión se encuentra entre los trastornos mentales más prevalentes, deteriorando la calidad de vida e imponiendo costos económicos sustanciales. A pesar de la eficacia de los tratamientos, el acceso a la atención tradicional se ve limitado por el coste, la disponibilidad y el estigma. Han surgido terapias digitales y alternativas para ampliar el acceso, apoyar la autogestión y mejorar la adherencia. Objetivo: Mapear y sintetizar la evidencia sobre la eficacia y la aceptabilidad de las intervenciones digitales y alternativas para la depresión. Métodos: Siguiendo el método PRISMA, las búsquedas en las principales bases de datos (2020-2025) identificaron ensayos aleatorizados, estudios piloto, revisiones sistemáticas y metanálisis con DOI. Se extrajeron datos sobre el diseño, la población, las intervenciones, los comparadores, los resultados y los resultados. La calidad se evaluó con RoB 2, ROBINS-I y AMSTAR-2. Resultados: Siete estudios cumplieron los criterios. La TCC basada en internet mostró una eficacia moderada con una adherencia variable. Las aplicaciones móviles redujeron los síntomas depresivos, pero fueron heterogéneas. En entornos de ingresos bajos y medios, los enfoques digitales resultaron eficaces, pero se vieron obstaculizados por barreras de acceso y participación. Las intervenciones de realidad virtual resultaron viables, aceptables y prometedoras. Los programas basados en mindfulness redujeron la depresión, la ansiedad y el estrés, especialmente en pacientes con comorbilidades. Un metanálisis multiverso confirmó la eficacia general en las distintas opciones analíticas. Conclusión: Las terapias digitales y alternativas parecen eficaces, escalables y aceptables para el manejo de la depresión, aunque persisten dificultades en cuanto a la adherencia, la adaptación cultural y la validación. Los trabajos futuros deben centrarse en ensayos aleatorizados a gran escala, la rentabilidad, la inclusión y una implementación global equitativa.

PALABRAS CLAVE: Depresión, Terapia digital, Terapia alternativa, Intervención en salud mental, Revisión integrativa.

Introduction

Depression is characterized as one of the most common and frequent psychological disorders worldwide, exerting a considerable unfavorable impact on the quality of life of affected individuals. Moreover, this mental condition represents a significant burden on public health systems, requiring considerable attention and resources for its treatment and management (Kowal et al., 2021). Although the clinical

importance of the conventional model of psychological care is indisputable, it has some significant limitations. Among these limitations are the difficulty of access to services and the stigmatization faced by individuals seeking this type of assistance. These issues, in turn, end up compromising both the scope and the effectiveness of the interventions available to the population in need of this psychological support.

In this context, digital interventions and alternative therapies are progressively standing out as innovative approaches that have the capacity to expand the reach of mental health care. Moreover, these strategies have the potential to promote more significant adherence to treatment while encouraging self-care practices among individuals. The progress that has been observed in technologies dedicated to information and communication has made it feasible to create a variety of ways to intervene in this field, which includes the development of mobile applications, the creation of online platforms, the development of digital games, and also the application of hybrid approaches that combine different methods and are integrated into existing health services (Burger, Neerincx & Brinkman, 2020).

More recent investigations indicate that these tools are not limited to assisting in the reduction of symptoms related to depression, but also promote greater patient participation and involvement in the process, especially among young people and adults who already have a good familiarity with the use of currently available digital resources (Marshall, Dunstan & Bartik, 2020). However, there are still significant gaps in the academic literature regarding the evaluation of the comparative effectiveness of different approaches, the consistency and robustness of their theoretical foundations, as well as the safety of interventions that are offered on the market without having been previously subjected to rigorous scientific validation (Meyer & Okuboyejo, 2021). These issues are fundamental for understanding the practices currently in use.

Considering the presented scenario, the purpose of this article is to conduct a detailed mapping and synthesis of the available evidence regarding the efficacy, acceptability, as well as the various types of digital and alternative interventions aimed at the treatment of depression. This work aims to provide valuable information that can be useful both for daily clinical practice and for guiding future investigations.

1. Methodology

The study in question uses the integrative literature review design, based on the PRISMA methodological guidelines, with the aim of ensuring transparency and rigor in

the selection and synthesis of evidence. The research question was developed based on the PICO strategy, being formulated as follows: P (Population) – adults, adolescents, or elderly individuals who present symptoms or a diagnosis of depression; I (Intervention) – digital therapies, such as internet-based cognitive-behavioral therapy (iCBT), mobile applications, virtual reality, telehealth, and digital therapeutics (DTx), as well as alternative therapies, including mindfulness, music therapy, and other complementary approaches; C (Comparator) – usual treatment (TAU), waiting list, placebo, or other conventional interventions; O (Outcomes) – reduction of depressive symptoms measured thru validated instruments (such as PHQ-9, BDI), adherence to interventions, acceptability by participants, and occurrence of adverse events.

The bibliographic search was conducted solely in databases of high scientific impact, aiming to ensure the quality of the evidence obtained. PubMed, Web of Science, Scopus, ScienceDirect, Springer, Wiley, and Elsevier were used as sources. The selected time frame includes studies published between the years 2019 and 2020, extending until 2025, with the aim of encompassing the most recent period related to the development and use of digital technologies in mental health.

The research approaches used controlled descriptors (MeSH/DeCS) and keywords combined thru Boolean operators. Among the terms used, the following stand out:

depression) AND (digital OR "internet-based" OR "mobile app" OR teletherapy OR "virtual reality" OR "digital therapy" OR "digital intervention"); (depression) AND ("alternative therapy" OR mindfulness OR "music therapy" OR "complementary therapy"); "Depression"[MeSH] AND ("Telemedicine"[MeSH] OR "Mobile Applications"[MeSH]).

Inclusion criteria were established that encompassed empirical articles, such as randomized clinical trials (RCTs), controlled studies, systematic reviews, and meta-analyses, which were published in English or Portuguese, available in full, and with a valid DOI. The exclusion criteria included isolated case reports without empirical support, research protocols without results, articles that were not peer-reviewed or do not have a DOI, except in adequately justified circumstances.

The selection of studies was conducted in two phases: first, the titles and abstracts were examined by two independent reviewers; subsequently, the full texts of the selected articles were evaluated. In situations of divergence, a third reviewer was called upon to make the conclusive decision.

Data collection was carried out using a standardized instrument, covering information regarding the author, year of publication, country, methodological design, population (including the number of participants and their characteristics), nature and duration of the intervention (whether guided or self-applied), comparator, assessment instruments, main outcomes and results, retention, adherence, risks or adverse effects, as well as the study's DOI.

The analysis of the methodological quality of the studies was conducted using specific tools for each type of design: RoB 2 for randomized clinical trials, ROBINS-I for non-randomized studies, AMSTAR-2 for systematic reviews, and the GRADE methodology to assess the robustness of the evidence.

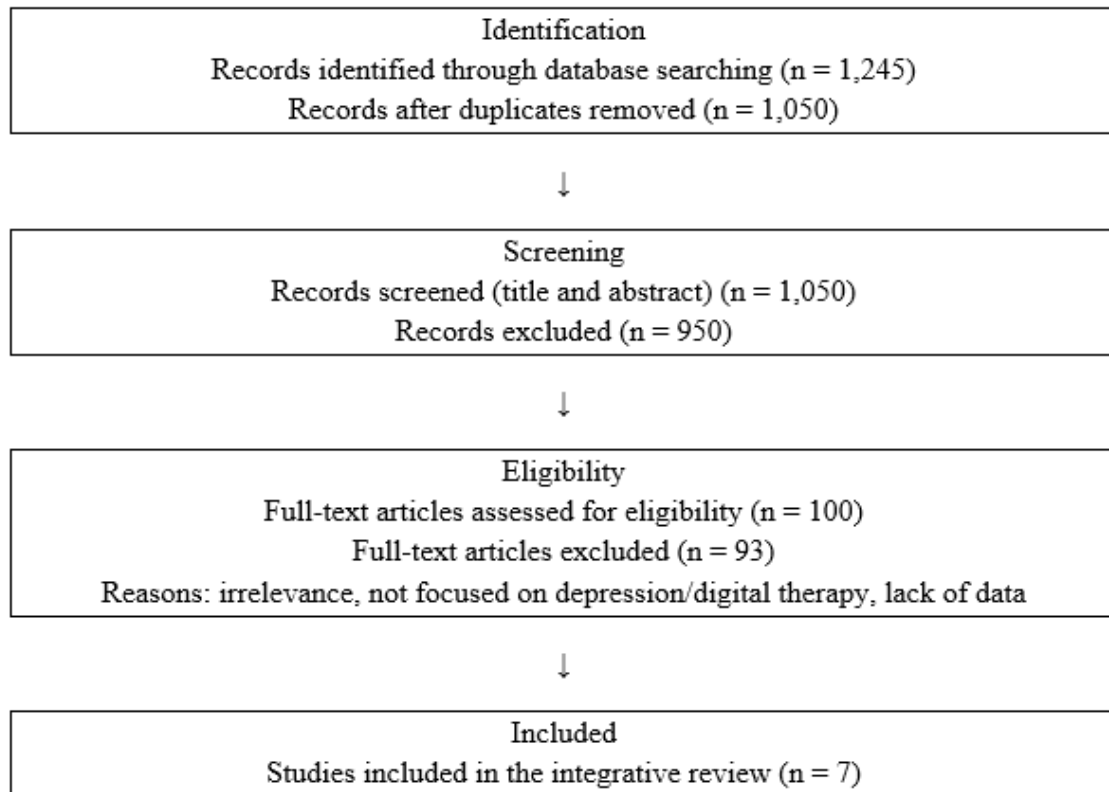
Finally, the synthesis of the results was structured in a narrative manner and presented in descriptive tables regarding the characteristics of the studies considered. Whenever feasible, the quantitative integration of information was carried out thru meta-analysis, taking into account common and statistically compatible outcomes. Furthermore, subgroup analyzes were conducted with the aim of examining the divergences associated with the type of intervention (guided versus unguided, apps compared to web platforms), the demographic characteristics of the population (adults in contrast to adolescents), and the socioeconomic context (high-income nations in opposition to low- and middle-income nations).

2. Results and Discussion

The methodical search in databases of significant relevance generated 1,245 records, of which 1,050 were evaluated after the exclusion of duplicates. After the analysis of titles and abstracts, 100 articles were selected for full reading, while 93 were rejected for not meeting the inclusion criteria. At the end of the process, seven studies were incorporated into the present integrative review, as can be observed in Figure 1.

The studies, arranged in Table 1, considered ranged from randomized clinical trials (pilot RCTs), systematic reviews accompanied by meta-analyses, and a multiverse meta-analysis, encompassing various populations (adults, adolescents, patients with cardiovascular comorbidities) and different intervention modalities (iCBT, mobile apps, virtual reality, telehealth, and mindfulness).

Figure 1: PRISMA fluxogram.



Source: The author (2026).

In general, the conclusions suggest that:

- Digital interventions based on cognitive-behavioral therapy conducted over the internet (iCBT) have demonstrated moderate effectiveness in reducing depression symptoms, although adherence varies significantly across different studies (Karyotaki et al., 2021; McCall et al., 2021).
- Mobile device applications have shown a significant reduction in symptoms related to depression; however, they have exhibited high heterogeneity among the studies conducted (Serrano-Ripoll et al., 2022).
- Interventions in low- and middle-income nations have also shown favorable results, although they face obstacles related to access and adherence (Kim et al., 2023).

Table 1: Final portfolio of articles.

Author/Year	Country	Design	Population	Intervention	Comparator	Outcomes	Main Findings
Karyotaki et al., 2021	Multinational	Systematic review + meta-analysis (IPD-NMA)	Adults with depression (n > 9,000)	iCBT (internet-based CBT)	TAU, waitlist, placebo	Reduction of depressive symptoms, moderators	iCBT effective (moderate effect), variable adherence
Paul, Bullock & Bailenson, 2022	USA	Pilot RCT	Adults with MDD (n=30)	VR Behavioral Activation	2D controlled activity	Depressive symptoms, adherence	Feasibility demonstrated, preliminary symptom reduction
Serrano-Ripoll et al., 2022	Multinational	Systematic review + meta-analysis	Individuals with depression (n=5,000+)	Smartphone apps (various interventions)	Control (waitlist, TAU)	Depressive symptoms	Apps reduce symptoms (moderate effect), high heterogeneity
Kim et al., 2023	LMICs (various)	Systematic review + meta-analysis	Adults/adolescents in LMIC countries	Digital tools (iCBT, apps, telehealth)	TAU, waitlist, others	Depressive and anxiety symptoms	Significant efficacy in LMICs, but adherence and access remain challenging
McCall et al., 2021	Multinational	Systematic review + meta-analysis	Adults with depression/anxiety	Unguided iCBT + persuasive design elements	Traditional iCBT	Depressive and anxiety symptoms	Persuasive design increases efficacy in unguided interventions
Plessen et al., 2025	Multinational	Multiverse meta-analysis	Adults with depression (multiple RCTs)	Digital interventions (apps, iCBT, telehealth)	TAU, waitlist, placebo	Depressive symptoms	Findings robust across analytic decisions, consistent efficacy
Abdul Manan et al., 2024	International	Systematic review + meta-analysis	Patients with coronary artery disease (n > 1,000)	Mindfulness-based interventions	TAU, placebo, active control	Anxiety, depression, stress	MBI significantly reduced depressive and anxiety symptoms

Source: The author (2026).

- Emerging technologies, such as virtual reality, have demonstrated satisfactory feasibility and acceptability, showing an initial reduction in symptoms in a pilot randomized clinical trial (Paul et al., 2022).
- The multiverse meta-analysis corroborated the robustness of the effects of digital interventions, highlighting the consistency of the results, even in the face of varied analytical options (Plessen et al., 2025).
- Among the alternative approaches, mindfulness-based interventions have demonstrated considerable efficacy in reducing symptoms of depression, anxiety, and stress, especially in individuals with coronary artery disease (Abdul Manan et al., 2024).

The results of this review demonstrate that digital therapies constitute effective and scalable options for the treatment of depression, especially when considering the increase in access to mobile devices and the internet. The consistency of the results across various contexts and methodological approaches strengthens the relevance of these interventions as an addition or, in certain situations, as an alternative to conventional treatment.

However, the literature indicates significant challenges:

- Adherence and engagement — Research such as that by Serrano-Ripoll et al. (2022) and McCall et al. (2021) indicates that the effectiveness of digital interventions is closely linked to persuasive design and strategies that encourage continuous use. The high dropout rate is a frequent constraint.
- Heterogeneity of results — The variation in populations, cultural contexts, and methodological particularities results in diverse outcomes, which compromises the universal generalization of evidence. The multiverse meta-analysis conducted by Plessen et al. (2025) is especially significant, as it demonstrates that, even in the face of this heterogeneity, the effects remain consistent.
- Low and middle-income settings — Despite the demonstrated effectiveness (Kim et al., 2023), elements such as restricted connectivity, linguistic barriers, and socioeconomic inequalities make the execution and maintenance of large-scale digital interventions challenging in these contexts.
- Alternative therapies — The inclusion of methods such as mindfulness and music therapy highlights a promising field, especially in groups with

comorbidities, indicating that complementary approaches can optimize the treatment of depression in more intricate clinical contexts.

- Emerging technologies — The application of virtual reality (Paul et al., 2022) remains in a preliminary phase, however, it demonstrates innovative potential, especially in behavioral activation programs, allowing for future investigations in more extensive and varied samples.

Conclusions

This integrative review shows that digital and alternative therapies appear as promising strategies for managing depression, providing options that are not only effective but also scalable and socially accepted. These approaches can serve as a viable alternative to traditional methods, expanding access to treatment for a larger number of people. Moreover, digital therapies, in particular, present themselves as an innovative solution that can be easily implemented, reaching individuals in different social and geographical contexts. Consequently, the use of these treatment modalities represents a significant evolution in the search for alternatives in coping with depressive conditions.

Cognitive-behavioral therapy conducted via the internet, mobile applications, and virtual reality interventions have shown significant benefits in various contexts. In turn, mindfulness-based practices highlight the importance of complementary approaches, especially when dealing with populations that have comorbidities, that is, the simultaneous presence of multiple health conditions that can impact well-being and treatment effectiveness. These different methodologies can be seen as a way to diversify care and improve intervention strategies, taking into account the specific needs of these groups.

Despite the progress that has been made so far, significant challenges still persist, especially regarding adherence, diversity, and variability of the results obtained, the cultural adaptation necessary for solutions to fit different social contexts, as well as the validation of tools that are commercially available. To address these existing gaps, it is necessary to conduct large-scale randomized clinical trials, studies that analyze the cost-effectiveness of interventions, and research that is inclusive, taking into account the socioeconomic and cultural diversity of the target populations that are intended to be reached. Such initiatives are fundamental to ensuring that the proposed solutions are

truly effective and appropriate for the different realities and contexts of the people who will benefit from them.

Strengthening the base of scientific evidence will be of utmost importance to ensure the safe and effective integration of these innovations within mental health systems. This approach is fundamental for the proper incorporation of new technologies and methods, taking into account both the safety and effectiveness in the care of people who need psychological support. Therefore, the construction of a robust body of scientific evidence is crucial to support and validate these changes in the field of mental health.

References

- Abdul Manan, H., Mir, I. A., Humayra, S., et al. (2024). Effect of mindfulness-based interventions on anxiety, depression, and stress in patients with coronary artery disease: A systematic review and meta-analysis of randomized controlled trials. *Frontiers in Psychology, 15*, 1435243. <https://doi.org/10.3389/fpsyg.2024.1435243>.
- Burger, F., Neerincx, M. A., & Brinkman, W.-P. (2020). Technological state of the art of electronic mental health interventions for major depressive disorder: Systematic literature review. *Journal of Medical Internet Research, 22*(1), e12599. <https://doi.org/10.2196/12599>.
- Karyotaki, E., Efthimiou, O., Miguel, C., et al. (2021). Internet-based cognitive behavioral therapy for depression: A systematic review and individual patient data network meta-analysis. *JAMA Psychiatry, 78*(4), 361–371. <https://doi.org/10.1001/jamapsychiatry.2020.4364>.
- Kim, J., Aryee, L. M. D., Bang, H., et al. (2023). Effectiveness of digital mental health tools to reduce depressive and anxiety symptoms in low- and middle-income countries: Systematic review and meta-analysis. *JMIR Mental Health, 10*, e43066. <https://doi.org/10.2196/43066>.
- Kowal, M., Conroy, E., Ramsbottom, N., Smithies, T., Toth, A., & Campbell, M. J. (2021). Gaming your mental health: A narrative review on mitigating symptoms of depression and anxiety using commercial video games. *JMIR Serious Games, 9*(2), e26575. <https://doi.org/10.2196/26575>.
- Marshall, J. M., Dunstan, D. A., & Bartik, W. (2020). Apps with maps—Depression and anxiety mobile apps with evidence-based frameworks: Systematic search of major app stores. *JMIR Mental Health, 7*(6), e16525. <https://doi.org/10.2196/16525>.
- McCall, H. C., Hadjistavropoulos, H. D., Sundström, C. R. F., et al. (2021). Exploring the role of persuasive design in unguided internet-delivered cognitive behavioral therapy for depression and anxiety: Systematic review, meta-analysis, and meta-regression. *Journal of Medical Internet Research, 23*(4), e26939. <https://doi.org/10.2196/26939>.
- Meyer, J., & Okuboyejo, S. (2021). User reviews of depression app features: Sentiment analysis. *JMIR Formative Research, 5*(12), e17062. <https://doi.org/10.2196/17062>.

Paul, M., Bullock, K., & Bailenson, J. (2022). Virtual reality behavioral activation for adults with major depressive disorder: Feasibility randomized controlled trial. *JMIR Mental Health*, 9(5), e35526. <https://doi.org/10.2196/35526>.

Plessen, C. Y., Panagiotopoulou, O. M., Tong, L., et al. (2025). Digital mental health interventions for the treatment of depression: A multiverse meta-analysis. *Journal of Affective Disorders*, 369, 1031–1044. <https://doi.org/10.1016/j.jad.2024.10.018>.

Serrano-Ripoll, M. J., et al. (2022). Impact of smartphone app–based psychological interventions for reducing depressive symptoms in people with depression: Systematic literature review and meta-analysis of randomized controlled trials. *JMIR mHealth and uHealth*, 10(1), e29621. <https://doi.org/10.2196/29621>.

Conflicto de interés

El autor de este manuscrito declara no tener ningún conflicto de interés.

Declaración ética

El autor declara que el proceso de investigación que dio lugar al presente manuscrito se desarrolló siguiendo criterios éticos, por lo que fueron empleadas en forma racional y profesional las herramientas tecnológicas asociadas a la generación del conocimiento.

Copyright

La *Revista Latinoamericana de Difusión Científica* declara que reconoce los derechos de los autores de los trabajos originales que en ella se publican; dichos trabajos son propiedad intelectual de sus autores. Los autores preservan sus derechos de autoría y comparten sin propósitos comerciales, según la licencia adoptada por la revista.

Licencia CreativeCommons

Esta obra está bajo una Licencia CreativeCommons Atribución-NoComercial-CompartirIgual 4.0 Internacional

