MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 35 Issue 2, 2025, Pages: 2235-2239

The Role of AI in Counseling: Applications, Ethical Challenges, and Implications for LMICs

Shruti [1], Assistant Professor, Department of Psychology, Dr. Bhim Rao Ambedkar College, University of Delhi
Dr. Sunil Gupta [2], Assistant Professor, Department of Psychology, Aryabhatta College, University of Delhi
Dr. Tosendra Dwivedi[3], Professor of Psychology, ASLA Alliance University, Bengaluru Karnataka
Dr. Dinesh Kumar Gupt[4], Assistant Professor Department of Psychology, Dharma Samaj College Aligarh
Dr. Seema[5], Assistant Professor, Department of Psychology, Kurukshetra University Kurukshetra Haryana
Dr. Raj ratan[6], Assistant Professor, Department of Psychology, Kurukshetra University Kurukshetra Haryana

Abstract

Mental health disorders are one of the key worldwide issues in terms of public health, and a significant percentage of morbidity is revealed in low- and middle-income nations (LMICs), where the lack of specialization and a scarcity of mental health professionals, limited resources, and the overarching stigmatization of mental health concerns obstruct access to services. Over the years, AI-based tools, especially conversational agents and mental health chatbots, have become a scalable and cost-effective method to provide counseling services. This current review discusses the uses of AI in counseling and its existing evidence on effectiveness and user experience, which critically reflects on the ethical, cultural, and practical issues related to its application in LMICs. Existing studies suggest that AI-based chatbots could lead to a slight decrease in psychological distress, improve access, foster anonymity, and encourage help-seeking behavior, especially among young adults. Nevertheless, serious issues are to be addressed in terms of data privacy, informed consent, biases of algorithms, the culture-appropriateness, crisis management, and the threat of over-reliance on AI systems. Further, it was revealed that most empirical studies belong to high-income nations, restricting the applicability of the findings in the LMICs. The effective implementation of AI-based tools in the LMICs needs a culturally appropriate design, tailored language, rigorous ethical considerations, and the incorporation of human-driven mental health services. The incorporation of AI-based tools should not be used as a replacement but as an aid to the current healthcare systems. The paper concludes that despite the potential of AI in meeting the treatment gaps in LMICs, the responsible implementation of AI requires clear governance, human responsibility, contextualized and tailored design to establish ethical and sustainable delivery of mental health care.

Keywords: Mental health, LMICs, AI-based tools, Counseling

Globally, one in every three individuals suffers from a mental disorder during their lifetime, disrupting the state of their mental wellbeing (Vigo et. al, 2016). Mental health concerns are a crucial public health challenge, where socioeconomically disadvantaged individuals are disproportionately impacted. This is a specific concern in 152 Low- and middle-income countries (LMICs), where 85% of the world's population resides, and over 80% of these disorders also occur (Javed et al., 2021; Alloh et al., 2018; Rathod et al., 2017). Prevalence of MHDs has steadily increased in India, and approximately 15% of the Indian population struggles with some form of mental health concern that includes depression, anxiety, schizophrenia, bipolar, neurodevelopmental, and substance use disorders (Meghrajani et al, 2023). Among these, the youth represent the vulnerable group specifically. Studies have constantly shown that the prevalence of stress, anxiety, and depression is significantly higher among youth than in the general population (Moffateh, 2020). Low education levels, unemployment, stigma, low socio-economic status, poverty, rapid urbanization, lifestyle changes, discrimination against certain population subgroups, and younger population demographics have exacerbated these concerns (Alloh et al., 2018; Cia et al., 2018; Rathod et al., 2017).

Existing research reported a global shortage of funding, resources, and mental health literacy. This gap is specifically evident in LMICs, where only 0.1 psychiatrists are available per 1,000,000 people (Abd-Alrazaq et al., 2020; Oladeji & Gureje, 2018), which leads to a shortage of professionals. However, the demand for better mental health services has risen, and meeting these demands has become increasingly costly and difficult due to a lack of resources, necessitating scalable and alternative solutions (Abd-Alrazaq et al., 2020; Jones et al., 2018). Responding to this, artificial intelligence (AI) tools such as virtual assistants and chatbots has turned up as a favourable means to expand access to support, as these systems can provide evidence-based strategies (eg, CBT), 24/7 chat support, and enable users to share sensitive and personal information anonymously (Ankomah & Turkson, 2025; Haque & Rubya, 2023). Even after an increase in scrutiny of AI-driven mental health interventions, available research has originated from high-income countries that focuses on technological feasibility over contextual effectiveness. As a result, the integrative evidence regarding the cultural, ethical, and practical consequences of the use of AI in LMICs for young adults is scarce. Therefore, this review integrates recent literature on how AI is used in counseling while highlighting its ethical and safety concerns and examines cultural and practical implications for deploying AI tools in LMICs.

AI Applications in Counseling

AI-based virtual assistants and chatbots are popular tools that have been examined to potentially assist in mental health. These systems are based on machine learning and natural language processing to provide self-help intervention and facilitate interaction. Woebot and Wysa, and other apps are chat-based applications that assist users with mindfulness, CBT, and journaling (Chau et al., 2025; Haque & Rubya, 2023). Text-based chatbots, such as mobile applications or instant messengers, have been used as an alternative to avatars or voice-based interfaces. (Li et al., 2025). Studies have used text-based chatbots (mobile apps or instant messengers) as compared to avatars or voice-based interfaces.

Chau et al. (2025) further concluded that emerging AI tools go beyond the usual rule-based scripts. Previously, chatbots were based on decision tree-based scripts, whereas recent systems have used generative models or machine learning to generate more context-responsive and flexible interactions. Substantially more reductions in psychological distress were found in AI-based chatbots that were programmed with machine-driven responses than in rule-based chatbots in a systematic review. In that meta-analysis, an AI-chatbot-based intervention yielded a moderate effect on reducing distress (g=-0.36) as compared to a negligible change for rule-based chatbots. Collectively, advanced AI can enhance user experience and performance; the overall effect sizes were small to moderate, suggesting the incremental as compared to transformational benefits.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 35 Issue 2, 2025, Pages: 2235-2239

Effectiveness and User Experience

The evidence base for AI tools is still developing. Recent research has shown that chatbots can modestly reduce symptoms of mental health concerns, with varying results. Feng et al. (2025), in their systematic review and meta-analysis, also concluded that chatbots have potential to address mental health concerns while promoting healthy behaviors among young adults. Li et al. (2025) found that chatbot use led to a small yet significant reduction in distress compared to the control group ($g \approx -0.28$). However, heterogeneity was high, and broader well-being was nonsignificant. Platform subgroup analysis indicated that clinical group and multimodal interaction mode bots had greater benefits. In conclusion, users reported a positive experience with chatbots, appreciating human-like, personalized interaction and 24/7 availability (Li et al., 2025; Ankomah & Turkson, 2025). A study conducted in Ghana that used GPT-3.5 to facilitate empathic and context-sensitive interactions found that 81% of 311 users believed it to be culturally relevant, 89% found it usable, 66% reported it encouraged them to seek professional help, and 78% felt it provided emotional support (Ankomah and Turkson, 2025). Users also appreciated the anonymity and accessibility of AI support in environments with limited mental health practitioners, where stigma is a barrier (Ankomah and Turkson, 2025; Haque and Rubya, 2023). Stigma reduces access to mental health services, delays help-seeking, leads to suboptimal care, and results in negative outcomes.

On the other hand, Feng et al. (2025) reported that retrieval-based dialog systems have demonstrated reliable and consistent effects, while generative systems have promised results, but their overall usefulness was inconclusive. Another point they made is that the evaluation frameworks and safety guidelines that will prove the long-term impact of AI on mental health should be developed in the future. Moreover, the quality of evidence is limited. A meta-analysis reported that even when the chatbots have the potential to improve mental well-being, the evidence is still insufficient to be conclusive due to high bias and limited studies (Abd-Alrazaq et al., 2020). Haque & Rubya (2023) also reported that human-like personalized interactions were positively received by users, but assumptions and improper responses about the personalities of the users led to a loss of interest. Therefore, these technologies can be used to benefit people who do not prefer the conventional treatment; however, they are used as a complement instead of a substitute to human mental health providers. Despite all these advantages, the integration of AI in counseling wherein critical ethical and safety issues that must be considered.

Ethical and Safety Challenges

The application of AI technology in counseling is associated with significant ethical issues, especially the privacy and confidentiality of data, due to the sensitivity of mental health interactions. The ethical guidelines should provide adherence to the privacy and confidentiality, such as the HIPAA and other laws and regulations, especially in cases of the involvement of third-party applications. The developers and the clinicians must make sure that they are encrypted, the data is where it is supposed to be, minimize sharing data, and informed consent processes should be made in such a way that the client knows what data is being collected and also to whom it is shared. They should also be informed of the limitations and capabilities in the treatment while allowing clients to opt out of AI-assisted and offer a human-based alternative when feasible (Pillay, 2025). In the absence of this transparency, AI is going to harm therapeutic relationships and erode trust.

Informed consent: Ethical guidelines emphasize that users must be informed when using AI for counseling. This means that the apps should be completely transparent about their data practices and functionality; otherwise, their opaque or "black box" mechanisms can obstruct user understanding and create wrong impressions about the system capabilities. Furthermore, when the AI is not disclosed in practice, it frequently leads to the problem of therapist misconception as people anthropomorphize the chatbot and think that he/she is concerned about them, which results in false predictions and deep attachments. Such deception may lead to breach of trust and autonomy, which form therapeutic relationships. Therefore, AI tools must inform their limitations by clearly informing the individual with whom they will be interacting (Rahsepar Meadi et al., 2025).

Risk of over-dependence: Chatbots, being an accessible tool, can make some users over-reliant on them. Recent researchers have confirmed that high use of AI can lead to higher loneliness and dependence and lesser real-world socialization (Perry, 2025; Hall, 2025). Haque & Rubya (2023) also reported that it being convenient and accessible, users became overly attached and preferred them over interpersonal interactions. Furthermore, chatbots can also offer crisis support whenever needed; they still cannot identify the crisis effectively and offer proper support. To counter such dangers, developers should be recommended to deploy built-in prompts for human help. Eg, Chatbots must be programmed to encourage human connection or signpost to external resources when they reach their limits. By nudging these messages to users to professionals, or loved ones, such features reinforce real-world support and help prevent the harmful impact and managing the crises alone (Yuan et al., 2025).

Crisis management: The most crucial and necessary safety concern is AI management of crises. Evidence suggests that the majority of AI chatbots cannot safely and effectively handle suicidal ideation. Users have reported several failures, for eg, A study conducted by Stanford concluded that therapy chatbots could misinterpret suicidal ideation cues. In one of the experiments, the chatbot answered a suicidal prompt by providing bridges in New York, which unintentionally reinforced suicidal ideation (Wells, 2025). Others have noted that, despite offering 24/7 support, recent chatbots cannot properly identify and address crises (Haque & Rubya, 2023). Li et al. (2025) in their meta-analysis also reported that even after the rising importance of addressing safety challenges concerning mental health chatbots, only 14 of 29 studies included safety measures. Hence, built-in protocols are required; otherwise, AI may give harmful advice or escalate urgent cases. This is where the accountability issue arises; since bots cannot make the same judgment and empathy that a human therapist can, who will take the blame when it goes wrong? Experts are concerned that AI machines should not be trusted to handle psychosis and active suicidal ideation without human therapist supervision (Well, 2025; Pozzi and Proost, 2024).

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 35 Issue 2, 2025, Pages: 2235-2239

Stigma, bias, and fairness: AI models are trained on existing data and may inherit bias. For eg, research by Stanford has recorded chatbots developing stigma towards schizophrenia and alcohol dependence as opposed to depression, among others. This stigma may affect users negatively and may result in them stopping to receive the necessary mental health care (Wells, 2025). These biased reactions might either scare away or deceive the users. Further, when training data is not heterogeneous, it may result in algorithmic bias, can may not represent poorly underrepresented groups. The same results were obtained by Ali et al. (2025), who also stated that there were recurring issues in artificial intelligence, such as algorithmic bias and low dataset diversity, that affect the credibility of AI-based mental health tools. Therefore, on an ethical level, developers are encouraged to test the chatbots on a population-wide basis and remove the known biases.

Cultural and practical implications for LMICs

In the LMICs, where mental health facilities are limited, AI tools can be used to access mental health support rapidly. Even in a low-resource environment, smartphones or messaging applications are ubiquitous, offering a platform with an AI chatbot. Pozzi and Proost (2025) reported that AI-based technologies could be seen as a possible remedy to therapy in places with a few mental health professionals. For eg, A chatbot named "Karim" was deployed to support Syrian refugees in Lebanon via Facebook Messenger or SMS texts (Pozzi & Proost, 2024; Solon, 2016). Equally, a study on GPT-3.5 chatbot in Ghana showed satisfaction, feasibility, and acceptability in the public health scenario, as well as dealing with stigma with limited resources (Ankomah and Turkson, 2024). These examples indicate that mental health bots that are AI-driven could be effectively used to target underserved communities and motivate patients to turn to professional assistance with the proper design and implementation.

Cultural and practical challenges are, however, significant. The major concerns present are cultural and language adaptation. AI models trained on Western inputs or the english language may not translate well to other norms and languages. Eg, The chatbot named Karim, which is designed to support Syrian refugees, had significant dialect problems because users experienced some dialect problems, which motivated the developers to employ native speakers to translate text written in standard Arabic to the Levantine dialect instead of using tools such as Google Translate (Pozzi and Proost, 2024; Solon, 2016). Mental health concepts are culturally bound, and therefore, Western notions of therapy may not fit in all contexts. To address this, experts suggested cultural sensitivity in the design of AI and the prevention of the imposition of Western models and the interaction with local communities (Drescher, 2025). Further, the research carried out in Ghana was formally implemented against Ghanaian emotional expressions and applauded for its cultural appropriateness, which contributed to an increase in the acceptability. Effectiveness and trust can be enhanced in the incorporation of such culturally relevant metaphors and indigenous healing practices. Similarly, Wang et al. (2025) conducted a study with a culturally-adapted CBT-based AI chatbot, showing that students experienced a reduction in loneliness and depression. In this way, it proves the advantages of the customization of language and a culturally oriented context.

Infrastructure and equity: Even today, access to the internet remains highly unbalanced in LMICs. Only 95% of the world population is covered with mobile internet connectivity, leaving approximately 5% with no coverage, and nearly 94% of the unconnected reside in LMICs. Even at locations with a network, there are numerous users blocked because of the existence of skills and an affordability gap. Surveys have concluded that the high cost of phones and limited digital literacy are the top barriers to mobile internet use (Delaporte & Bahia, 2022). In order to address these limitations, developers ought to focus on offline and low-bandwidth solutions. Eg, SMS text-based AI-driven chatbots, which are capable of working offline, are not accessible to many older, rural, and less educated users because they cannot easily manoeuvre complicated apps (Stanford Center for Digital Health, 2025). Equity also remains a major challenge, as rural adults in LMICs are approximately 33% less likely than urban adults, and women, being 16% less likely than men, are able to access mobile internet connectivity (Delaporte & Bahia, 2022). Lack of affordable devices, community-based digital training, simple and local language interfaces, and AI counseling tools risk excluding the population who are in the utmost need of mental health support and services.

Stigma and Privacy: Mental health issues that are perceived with high levels of stigma by many LMICs, which leads to shame, fear, and ostracism, thus making the individuals who are going through them avoid seeking help. The AI chatbots will assist in overcoming these by providing an anonymous support that is not judgmental. A study conducted by Haque and Rubya (2023) found that users feel more comfortable in disclosing sensitive information to chatbots, reaching individuals who are reluctant to seek professional support due to stigma. Moreover, Privacy is a major concern for AI chatbot users; users are still less familiar with this technology, with a higher risk of exposing users to risks through the sharing of data (Kretzschmar et al., 2019). The users have expressed doubts regarding the way in which data is stored and utilized. Absence of transparency and explicit guidelines on how to handle data deterred open communication and a lack of trust (Thunstrom et al., 2025). This is one particular problem in most LMICs where the digital use of mental health interventions trails behind their use. For eg, the South African legal system could not tackle regulatory challenges and keep pace with regulatory control, thus creating loopholes in the processing of sensitive information (Botes, 2025; Mishi and Anakpo, 2018). The concept of anonymity in the application of AI can be used to promote help-seeking behavior among stigma-induced individuals, provided that these people are incorporated with the expression of explicit confidentiality measures, as well as with the protection of data safety to foster trust (Haque and Rubya, 2023).

Ethical oversight and regulations: Studies have suggested that many LMICs do not have clear policies regarding AI or digital mental health, which increases the possibility of abuse and consent violations. Eg, A company named Koko provided AI AI-based emotional support chat service for individuals in distress without consent. Users were deceived when they realized what they were subjected to in their experiment (Pozzi & Proost, 2024). In the absence of supervision, the vulnerable users may be deceived or abused. It is necessary to adapt internationally (guidelines may be

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 35 Issue 2, 2025, Pages: 2235-2239

IEEE, WHO, etc.), which is helpful. Ultimately, LMIC implementations should follow the same ethical principles of confidentiality, informed consent, and human accountability (Pillay, 2025).

Opportunities to bridge gaps: Despite these challenges, AI tools can be used to respond to the increasing concerns about the treatment gaps in LMICs. Studies have suggested that the majority of LMIC patients with mental health concerns receive no care; the use of AI chatbots could provide them with basic support. Past studies have pointed out that mental health services can be augmented using culturally and emotionally adaptive AI chatbots across underresourced contexts because of low-cost and scalable interventions. Therefore, chatbots should be incorporated into current health systems so as to maximize their effects. Eg, Linking chatbots to referrals involving local counselors and hospitals in case of a crisis to guide resource allocation.

Conclusion

Tools utilizing AI in counseling, in particular, interactive chatbots, have significant potential to expand the range of mental health services in LMICs. They can provide evidence-based strategies at the scale, mitigate the level of stigma, and remain active around the clock. There has been some initial information that it has a small yet favourable impact on relieving distress. Nevertheless, the significant ethical and safety issues, such as the necessity of privacy of data, informed consent, appropriate communication, and the maintenance of a person-centered approach, have been associated with these advantages. Cultures, local languages, and infrastructural constraints should be adjusted in LMICs in order to implement AI chatbots effectively. Transparency, cultural customizing, and hybrid solutions that incorporate human control can help the AI chatbots make a significant contribution to the counseling gap in LMICs. Further studies, ethical leadership, and inclusive design will be of great importance in order to use AI to benefit global health in a responsible way.

References

Abd-Alrazaq, A., Rababeh, A., Alajlani, M., Bewick, B. M., & Househ, M. (2020). Effectiveness and safety of using chatbots to improve mental health: Systematic review and meta-analysis. *Journal of Medical Internet Research, 22*(7), e16021. https://doi.org/10.2196/16021

Ali, M., Ali, S., Abbas, Q., Abbas, Z., & Lee, S. W. (2025). Artificial intelligence for mental health: A narrative review of applications, challenges, and future directions in digital health. *Digital Health, 11*, 20552076251395548. https://doi.org/10.1177/20552076251395548

Alloh, F. T., Regmi, P., Onche, I., van Teijlingen, E., & Trenoweth, S. (2018). Mental health in low- and middle-income countries (LMICs): Going beyond the need for funding. *Health Prospect: Journal of Public Health, 17*(1), 12–17. https://doi.org/10.3126/hprospect.v17i1.20351

Ankomah, E., & Turkson, R. E. (2025). Emotion-aware AI chatbots for mental health support in low-resource public health systems: A case study from Ghana. *World Journal of Public Health, 10*(3), 265–272. https://doi.org/10.11648/j.wjph.20251003.17

Botes, M. (2025). Regulatory challenges of digital health: The case of mental health applications and personal data in South Africa. *Frontiers in Pharmacology, 16*, Article 1498600. https://doi.org/10.3389/fphar.2025.1498600

Chau, L., Lam, R., Minas, H., Hayashi, K., Nguyen, V., & O'Neil, J. (2025). Digital health interventions for depression and anxiety in low- and middle-income countries: Rapid scoping review. *JMIR Mental Health, 12*, e68296. https://doi.org/10.2196/68296

Cía, A. H., Stagnaro, J. C., Aguilar-Gaxiola, S., Benjet, C., Borges, G., Caraveo-Anduaga, J. J., De Girolamo, G., Fiestas, F., Gureje, O., Karam, E. G., Lee, S., Medina-Mora, M. E., Posada-Villa, J., & Torres, Y. (2018). Lifetime prevalence and age-of-onset of mental disorders in adults from the Argentinean Study of Mental Health Epidemiology. *Social Psychiatry and Psychiatric Epidemiology, 53*, 341–350. https://doi.org/10.1007/s00127-018-1492-3

Delaporte, A., & Bahia, K. (2022). *The state of mobile internet connectivity 2022* (GSMA Intelligence). GSMA. https://www.ictworks.org/wp-content/uploads/2022/12/The-State-of-Mobile-Internet-Connectivity-Report-2022.pdf

Drescher, D., Blain, S. D., Jeevanandham, A., & Hsu, A. (2025, December 4). *AI mental health chatbots for low-resource settings: A prioritization framework*. Impartial Priorities. https://impartial-priorities.org/p/ai-mental-health-chatbots-for-low

Feng, X., Tian, L., Ho, G. W. K., Yorke, J., & Hui, V. (2025). The effectiveness of AI chatbots in alleviating mental distress and promoting health behaviors among adolescents and young adults: Systematic review and meta-analysis. *Journal of Medical Internet Research, 27*, e79850. https://doi.org/10.2196/79850

Haque, M. D. R., & Rubya, S. (2023). An overview of chatbot-based mobile mental health apps: Insights from app descriptions and user reviews. *JMIR mHealth and uHealth, 11*, e44838. https://doi.org/10.2196/44838

Javed, A., Lee, C., Zakaria, H., Buenaventura, R. D., Cetkovich-Bakmas, M., Duailibi, K., Ng, B., Ramy, H., Saha, G., Arifeen, S., Elorza, P. M., Ratnasingham, P., & Azeem, M. W. (2021). Reducing the stigma of mental health disorders with a focus on low- and middle-income countries. *Asian Journal of Psychiatry, 58*, Article 102601. https://doi.org/10.1016/j.ajp.2021.102601

Jones, S. P., Patel, V., Saxena, S., Radcliffe, N., Al-Marri, S. A., & Darzi, A. (2014). How Google's "Ten Things We Know to Be True" could guide the development of mental health mobile apps. *Health Affairs, 33*(9), 1601–1608. https://doi.org/10.1377/hlthaff.2014.0380

Kretzschmar, K., Tyroll, H., Pavarini, G., Manzini, A., Singh, I., & NeurOx Young People's Advisory Group. (2019). Can your phone be your therapist? Young people's ethical perspectives on the use of fully automated conversational agents (chatbots) in mental health support. *Biomedical Informatics Insights, 11*, 1178222619829083. https://doi.org/10.1177/1178222619829083

Li, J., Li, Y., Hu, Y., Ma, D. C. F., Mei, X., Chan, E. A., & Yorke, J. (2025). Chatbot-delivered interventions for

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 35 Issue 2, 2025, Pages: 2235-2239

improving mental health among young people: A systematic review and meta-analysis. *Worldviews on Evidence-Based Nursing, 22*(4), e70059. https://doi.org/10.1111/wvn.70059

Meghrajani, V. R., Marathe, M., Sharma, R., Potdukhe, A., Wanjari, M. B., & Taksande, A. B. (2023). A comprehensive analysis of mental health problems in India and the role of mental asylums. *Cureus, 15*(7), e42559. https://doi.org/10.7759/cureus.42559

Mishi, S., & Anakpo, G. (2022). Digital gap in global and African countries: Inequalities of opportunities and COVID-19 crisis impact. In *Digital literacy, inclusivity and sustainable development in Africa* (pp. 1–30). Facet Publishing. https://doi.org/10.29085/9781783305131.002

Mofatteh, M. (2020). Risk factors associated with stress, anxiety, and depression among university undergraduate students. *AIMS Public Health, 8*(1), 36–65. https://doi.org/10.3934/publichealth.2021004

Mofatteh, M. (2020). Risk factors associated with stress, anxiety, and depression among university undergraduate students. *AIMS Public Health, 8*(1), 36–65. https://doi.org/10.3934/publichealth.2021004

Oladeji, B. D., & Gureje, O. (2016). Brain drain: A challenge to global mental health. BJPsych International, 13(3), 61–63. https://doi.org/10.1192/S2056474000001240

Perry, M. J. (2025, December 5). *AI, loneliness, and the value of human connection*. George Mason University, College of Public Health. https://publichealth.gmu.edu/news/2025-09/ai-loneliness-and-value-human-connection

Hall, R. (2025, March 25). *Heavy ChatGPT users tend to be more lonely, suggests research*. *The Guardian*. https://www.theguardian.com/technology/2025/mar/25/heavy-chatgpt-users-tend-to-be-more-lonely-suggests-research

Yuan, Y., Zhang, J., Aledavood, T., Zhang, R., & Saha, K. (2025). *Mental health impacts of AI companions: Triangulating social media quasi-experiments, user perspectives, and relational theory* (arXiv:2509.22505v1). arXiv. https://arxiv.org/abs/2509.22505

Pillay, Y. (2025). Ethical decision-making guidelines for mental health clinicians in the artificial intelligence (AI) era. *Healthcare, 13*(23), 3057. https://doi.org/10.3390/healthcare13233057

Pozzi, G., & De Proost, M. (2025). Keeping an AI on the mental health of vulnerable populations: Reflections on the potential for participatory injustice. *AI and Ethics, 5*(3), 2281–2291. https://doi.org/10.1007/s43681-024-00523-5

Rahsepar Meadi, M., Sillekens, T., Metselaar, S., van Balkom, A., Bernstein, J., & Batelaan, N. (2025). Exploring the ethical challenges of conversational AI in mental health care: Scoping review. *JMIR Mental Health, 12*, e60432. https://doi.org/10.2196/60432

Rathod, S., Pinninti, N., Irfan, M., Gorczynski, P., Rathod, P., Gega, L., & Naeem, F. (2017). Mental health service provision in low- and middle-income countries. *Health Services Insights, 10*, 1–7. https://doi.org/10.1177/1178632917694350

Solon, O. (2016, March 22). *Karim the AI delivers psychological support to Syrian refugees*. *The Guardian*.https://www.theguardian.com/technology/2016/mar/22/karim-the-ai-delivers-psychological-support-to-syrian-refugees

Stanford Center for Digital Health. (2025). *Generative AI for health in low- and middle-income countries: White paper* (Version 16) [PDF]. Stanford University. https://cdh.stanford.edu/sites/g/files/sbiybj29486/files/media/file/stanford_scdh_genaiwhitepaper_v16_compressed.pdf

Thunström, A. O., Ali, L., Krage Carlsen, H., Bohm, M., Wesén, L., Wrede, O., Sarajlic Vukovic, I., Hellström, A., Larson, T., & Steingrimsson, S. (2025). Behavior emotion therapy system and you: Co-design and evaluation of a mental health chatbot and digital human for mild to moderate anxiety in healthy participants. *JMIR Formative Research, 9*, e66163. https://doi.org/10.2196/66163

Vigo, D., Thornicroft, G., & Atun, R. (2016). Estimating the true global burden of mental illness. *The Lancet Psychiatry, 3*(2), 171–178. https://doi.org/10.1016/S2215-0366(15)00505-2

Wang, Y., Li, X., Zhang, Q., Yeung, D., & Wu, Y. (2025). Effect of a cognitive behavioral therapy–based AI chatbot on depression and loneliness in Chinese university students: Randomized controlled trial with financial stress moderation. *JMIR mHealth and uHealth, 13*, e63806. https://doi.org/10.2196/63806

Wells, S. (2025, June 11). *Exploring the dangers of AI in mental health care*. Stanford Institute for Human-Centered Artificial Intelligence. https://hai.stanford.edu/news/exploring-the-dangers-of-ai-in-mental-health-care