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Challenges of Using AI in Contemporary Psychological Interventions

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Abstract:

The use of artificial intelligence (AI) in psychological interventions is growing rapidly along with the increasing need for practical, adaptive, and technology-based mental health services. This article aims to examine the challenges, trends, benefits, and implementation of AI in psychological interventions through a literature study approach. By reviewing more than 20 scientific sources in the last 10 years, this article reveals how AI has been applied in early detection of mental disorders, virtual therapy, and AI-based psychological support. It was found that AI is able to expand the reach of psychological services, but still leaves challenges related to ethics, professional competence, and limitations of emotional responses. This article provides an initial foundation for further research on optimizing collaboration between psychology and technology as well as important suggestions for stakeholders, at the government level as policy makers, as well as psychology organizations, academics, and psychology practitioners.

Keywords: artificial intelligence, psychological intervention, mental health technology.

Introduction

The development of artificial intelligence (AI) technology in recent decades has brought about major transformations in various fields, including clinical psychology and psychological intervention. The increasing need for mental health services, coupled with limited professional staff, has encouraged exploration of the use of technology to expand access and effectiveness of psychological services (Graham et al., 2019). In this regard, AI is seen as one of the breakthroughs that can answer various challenges in the modern mental health service system.

According to the WHO report, mental health disorders are one of the main contributors to the global burden of disease, with depression and anxiety disorders being two of the most common (D'Alfonso, 2020). On the other hand, limited human resources and infrastructure often make psychological services unable to reach all levels of society equally. In this context, AI is present as a promising tool to identify, monitor, and even provide psychological interventions to individuals without the need for a psychologist to be present in person.

The application of AI in psychological interventions includes various technologies, such as natural language processing-based therapeutic chatbots, machine learning-based applications for early detection of psychological symptoms, and virtual reality-based therapy controlled by automated systems (D'Alfonso et al., 2017; Freeman et al., 2022). One real example is the use of chatbots such as Woebot and Wysa which are able to provide psychological support based on cognitive-behavioral therapy (CBT) independently, anytime and anywhere. This technology is very useful in the context of limited time and access, especially for individuals who are reluctant to seek professional help due to stigma or geographic barriers.

In Indonesia itself, the use of AI in the field of psychology has begun to show development. A study by Wahyuni and Jamhur (2025) shows that AI-based applications have been used to monitor users' emotional conditions and provide feedback in the form of relaxation techniques or self-reflection. This study also highlights that although it has not been widely adopted, there is a high interest and need for technology that can help monitor mental health in real time. A similar thing was also stated by Zahira et al. (2025), who highlighted the importance of integrating AI into the public health service system as an initial step towards optimizing data-based mental health.

However, despite offering various advantages, the application of AI in psychological interventions also raises various issues, especially those related to ethics, scientific validity, and therapeutic relationships. Fiske, Henningsen, and Buyx (2019) warn that the presence of "robot therapists" can blur the line between professionalism and automation in psychological services. They emphasize the need for strict regulations and ethical principles in the development and application of AI in the field of psychology, especially in terms of data privacy, patient autonomy, and the reliability of the system in interpreting complex human psychological conditions.

Meanwhile, Bickman (2020) noted that the use of AI in psychological interventions is a continuation of the evolution of mental health services from the classic experimental model to what is known as precision mental health, where interventions are specifically tailored based on data and individual characteristics. He emphasized that AI can be a catalyst for a more personalized and evidence-based approach, if developed and implemented with a mature interdisciplinary approach.

Despite the potential and challenges, there is an urgent need to conduct a more systematic and comprehensive study of the trend of AI use in psychological interventions. This is because, although most studies have discussed the technological aspects and their applications, not many have examined in depth how AI actually changes the paradigm of psychological interventions, and how its integration can be done without sacrificing the basic principles of a humanistic therapeutic relationship (Gado et al., 2022).

Studies on psychological interventions generally still focus on conventional approaches, such as face-to-face counseling, cognitive-behavioral therapy (CBT), family therapy, and psychodynamic approaches (Novianty & Retnowati, 2016; Pati, 2022). Although these interventions have been proven effective, the approaches tend to be manual, time-consuming, and can only be carried out by a limited number of professionals. In fact, in certain situations such as a pandemic or disaster, the need for psychological interventions increases sharply, while professional resources are very limited.

On the other hand, although there are many studies discussing the potential of AI in mental health, most of them are exploratory or purely technical. Some of them only highlight the sophistication of the system, but have not studied in depth the psychological effects of using this technology, especially in the long term. Gado et al. (2022) even highlighted the lack of readiness of young psychologists in facing the integration of this technology due to the lack of psychology education curriculum that is relevant to AI.

Furthermore, studies such as those by Wibhowo and Sanjaya (2022) and Andriyani et al. (2025) provide an explanation of how AI can be used to intervene in cases of personality disorders or adolescent trauma. However, the use of AI has not provided a complete theoretical framework to explain the working mechanisms of AI in the context of relationship-based psychotherapy and mentalization (Camoirano, 2017).

The emergence of various forms of AI-based psychological interventions raises critical questions about the extent to which this technology is able to replace or complement the role of humans in the therapy process. Some of the main issues that arise include the formulation of the problem of how the development trend of AI in psychological interventions at the national and global levels, the concrete form of AI implementation in psychological interventions, the ethical, professional, and technical challenges faced in the application of this technology, and the response of the psychology community, including practitioners and students, to the integration of AI in clinical practice.

These questions are important to answer so that the development and implementation of AI in psychological interventions are not only innovative, but also ethically responsible and clinically effective. Therefore, based on the explanation above, the important questions in this article include, 1) How effective is AI-based psychological intervention? 2) What are the ethical and privacy challenges that arise? 3) How to integrate AI with human interaction? 4) What are the recommendations for the development and implementation of AI in psychological interventions that are effective and ethical?

The above questions are the main objectives of this literature study, namely to examine the trend of the use of artificial intelligence in psychological interventions based on available literature. Specifically, the objectives of this study are to identify and examine the trend of the use of AI in the context of psychological interventions, describe various forms of AI implementation in psychological services, ranging from early detection, emotional monitoring, to automated therapy, analyze the ethical, technical, and professional challenges in the use of AI in psychology, and provide initial and ongoing recommendations regarding ethical and effective AI integration strategies in future clinical psychology practices.

By understanding these trends and challenges comprehensively, it is hoped that the results of this study can provide real contributions to academic literature and psychological practice in the digital era. Especially in facing the paradigm shift towards inclusive and adaptive digitalization of mental health services to technological developments.

Method

This study uses a library research approach, which aims to review, analyze, and synthesize relevant literature related to the trend of using artificial intelligence (AI) in psychological interventions. Library research was chosen because this method allows researchers to explore information and empirical findings and other studies that have been published in the form of articles in journals, academic books, and scientific proceedings as a basis for theoretical and conceptual analysis (Barker, Pistrang, & Elliott, 2015).

The data sources in this study were obtained from various sources of scientific journals and books, with the topic of AI and psychological intervention. The literature used as a data source was selected from publications from 2015 to 2025 to maintain relevance to the latest technological developments, with a total of 20 primary sources used as the basis for the study. This scientific article also uses Grammarly and Google Translate to help translate English data sources into Indonesian, and the use of OpenAI ChatGPT to help organize the writing system.

To maintain the credibility of the study, the author conducted a direct search of literature data sources to check the credibility of the literature sources as data sources in this article. After ensuring

that the data sources came from verified scientific journals and books, the triangulation of the data sources was then carried out through a process of inter-literature analysis and a critical review of the methodology in previous studies that were used as the main data sources in this article. In addition, only literature that has a good academic reputation and direct relevance to the topic is included in the synthesis of this article.

Results and Discussion

1. Global and National Trends in the Use of AI in Psychological Interventions

Artificial intelligence (AI) in psychological intervention is now experiencing significant acceleration in development, both globally and nationally. Globally, the application of AI in mental health services has entered various phases of use, ranging from early detection, diagnosis, to digital-based therapeutic interventions. At the national level, although still in the embryonic stage, there are various promising initiatives, especially in the academic and mental health technology community (Andriyani et al., 2025; Wahyuni & Jamhur, 2025).

In general, the global trend of using AI in psychological interventions reflects a paradigm shift in mental health services, from conventional approaches based on face-to-face interactions to technology-based approaches that allow services to be more flexible, accessible anytime and anywhere, and automatically personalized (Graham et al., 2019; D'Alfonso, 2020). This application reinforces the principles of precision mental health—psychological services that are tailored to the unique characteristics of each individual (Bickman, 2020).

In Indonesia, Pujitresnani et al. (2025) emphasized that AI applications in psychology have reached the field of early detection of mental disorders based on digital social data, while Wahyuni and Jamhur (2025) developed a user-based emotion monitoring system that can recommend self-help actions automatically. This shows that there is an increasing awareness of the role of AI as a complement to human intervention in clinical contexts.

However, the increasing adoption of AI in psychological interventions is still not accompanied by adequate digital literacy and professional readiness. Gado et al. (2022) found that psychology students and academics showed high interest in AI, but felt unprepared to apply it ethically and professionally. This indicates a research gap in capacity development and relevant curricula, especially in developing countries.

2. Synthesis of Types and Implementation of AI in Psychological Interventions

In identifying the main forms of AI application in psychology, a synthesis of the available literature shows that AI technology in psychological interventions is applied through four main channels, namely as follows.

a. Therapeutic Chatbot

AI enables the creation of NLP (Natural Language Processing)-based chatbots that are able to provide therapeutic responses with certain psychological approaches, such as CBT (Cognitive Behavioral Therapy), ACT (Acceptance and Commitment Therapy), and DBT (Dialectical Behavior Therapy). Chatbots such as Woebot and Wysa have shown effectiveness in reducing symptoms of stress, mild depression, and anxiety (D'Alfonso et al., 2017; Graham et al., 2019).

Therapeutic chatbots have been shown to have advantages in terms of scalability, service consistency, and ease of access, especially for individuals who are uncomfortable consulting with a human therapist in person. However, limitations in interpreting complex emotional nuances and a lack of authentic empathy are major challenges (Fiske et al., 2019).

b. Virtual Reality and Augmented Intelligence

Freeman et al. (2022) through the gameChange study showed that AI-enhanced Virtual Reality (VR)-based therapy can significantly reduce social anxiety and overcome agoraphobia in psychosis patients. AI functions to adjust VR scenarios adaptively according to user responses. This technology opens up new opportunities in therapeutic exposure approaches, which have traditionally been difficult to do safely and in a controlled manner. The use of VR also allows simulation of environments that are impossible in the real world, such as work situations, public transportation, or public social interactions, which are useful in the intervention of phobias, PTSD, and social anxiety disorders.

c. Early Detection and Automatic Diagnosis

AI is used to screen for mental disorders through text analysis (such as social media posts), facial expressions, voice intonation, to sleep patterns and physical activity (Zahira et al., 2025; Pujitresnani et al., 2025). With machine learning, the system can predict the possibility of disorders such as depression, anxiety, or suicide risk before the client is subjectively aware of it.

These systems support preventive approaches in clinical psychology and public mental health. However, the accuracy of the algorithms is highly dependent on the quality and volume of training data, which is often culturally and socio-demographically biased.

d. Self-Monitoring and Self-Intervention Applications

Wahyuni and Jamhur (2025) developed an application that allows users to monitor their emotional condition daily through journal input or reflective questions, which are then processed by AI to provide intervention recommendations such as meditation, relaxation, or breathing exercises.

Such applications are very useful in increasing self-awareness and psychological independence. However, human involvement is still needed as a supervisor or validator for more complex cases.

3. Effectiveness and Relevance to the Goals of Psychological Intervention

The reviewed studies show that AI-based psychological interventions can have a positive impact, especially in mild to moderate conditions. In this context, AI can be a form of primary or secondary intervention (Novianty & Retnowati, 2016). For example, in students with mild anxiety, chatbots that facilitate CBT techniques have been shown to help reduce symptoms (Savitri & Swandi, 2023).

However, the effectiveness of AI in treating severe cases such as borderline personality disorder, schizophrenia, or complex PTSD is still questionable. Wibhowo and Sanjaya (2022) note that interventions in borderline personality require interpersonal sensitivity and a deep therapeutic approach that are not easily automated by AI systems.

Thus, the integration of humans and technology—or a hybrid approach—becomes a strategic choice. AI is used for the initial phase (screening, education, symptom tracking), while human

practitioners are involved in the subsequent intervention phase. This is in line with the stepped care approach in clinical psychology that prioritizes efficiency without sacrificing quality (Aji et al., 2022; Asmarany et al., 2024).

4. Ethical Challenges, Regulation, and Professional Competence

One of the fundamental challenges of using AI in psychology is the issue of ethics and data privacy. AI in this field works with highly sensitive psychological data, including trauma history, deepest feelings, and cognitive aspects of clients. Carelessness in managing this data can have negative social and legal consequences.

Fiske et al. (2019) emphasized that there is currently no comprehensive global regulation on the use of AI in psychotherapy. This also applies in Indonesia, where there are no standard ethical guidelines from the HIMPSI (Himpunan Psikologi Indonesia or Indonesian Psychological Association) or the Ministry of Health regarding the application of AI in clinical practice.

Another issue is AI bias, which is a system that adopts bias from training data or mental health services, potentially discriminating against certain groups. This threatens the principle of fairness in mental health services (Graham et al., 2019).

In addition, the limited professional competence in understanding how AI works is an obstacle. Gado et al. (2022) stated that many psychology practitioners are not ready to engage in multidisciplinary or interdisciplinary collaboration with technology developers. The lack of formal training in AI and technological literacy causes an imbalance between the speed of technological innovation and the readiness of Human Resources (HR).

5. Answering Research Questions

Based on the synthesis of findings from the various literatures that have been reviewed above, the following are the answers to the research questions:

a. How effective is AI-based psychological intervention?

AI has proven effective for early and intermediate interventions, especially for anxiety disorders, mild depression, and self-awareness. However, it has not been effective for severe cases without human assistance.

b. What are the ethical and privacy challenges that arise?

Key issues include psychological data security, algorithm transparency, system bias, and the lack of formal ethical guidelines. The potential for privacy violations and data misuse is high.

c. How to integrate AI with human interaction?

Through a hybrid model: AI is used for early detection, symptom screening, daily monitoring, and psychological education, while further interventions, clinical evaluations, and complex case management remain under the authority of human psychologists. This model not only improves service efficiency but also maintains the quality and ethics of the psychology profession. This kind of integration has been developed in stepped care and blended therapy approaches, which combine digital interactions with face-to-face interventions for optimal outcomes (Bickman, 2020; Freeman et al., 2022).

d. What are the recommendations for the development and implementation of AI in effective and ethical psychological interventions?

Based on the literature review and previous synthesis findings, here are some practical recommendations as follows.

1. **Development of Local Ethics and Regulatory Guidelines**

There is an urgent need to develop a legal framework and a national ethics committee that regulates the use of AI in psychology. HIMPSI, the Ministry of Health, and the Ministry of Communication and Information need to collaborate to create regulations on data privacy, system security standards, and certification of psychological digital devices.

2. **Improving Digital Literacy of Clinical Psychologists**

Psychology education needs to adapt by adding digital technology and AI curricula to prepare graduates who are able to work in the modern psychology service ecosystem. Cross-disciplinary training programs and workshops between psychologists, data scientists, and application developers are needed (Gado et al., 2022).

3. **Scientific Validation and Cross-Cultural Research**

AI systems must undergo a rigorous empirical validation process, with an evidence-based approach across cultural contexts. Longitudinal research is also important to assess the long-term effectiveness and potential side effects of AI-based interventions (Graham et al., 2019; D'Alfonso, 2020).

4. **Sustainable Interdisciplinary Collaboration**

AI advances cannot be achieved by one discipline alone. There needs to be collaboration between psychologists, software engineers, technology ethicists, and policymakers to ensure that AI in psychology is not only technically advanced, but also humane and socially responsible.

5. **Provision of Inclusive Technology Infrastructure**

AI can only function optimally if there is adequate technological infrastructure. Therefore, there is a need for state and private investment in building safe, accessible and user-friendly digital platforms, especially for vulnerable populations and disadvantaged areas.

The results of the analysis above show that AI has great potential to support and expand the reach of psychological interventions, both at the individual level and the mental health service system in general. AI has proven effective in simplifying the screening process, increasing the availability of services, and offering affordable psychological solutions.

However, the application of AI in psychology is not free from significant challenges, especially in terms of ethics, system accuracy, and human resource readiness. Therefore, the implementation of AI in psychological interventions must be understood as a tool that strengthens the role of humans, not replaces it.

There is still a lot of research room to develop more empathetic, contextual, and culturally inclusive AI models. In addition, strengthening the ethical framework and developing professional

capacity are key to implementing AI responsibly and sustainably in clinical psychology, both individual, group, and community interventions.

Conclusion and Suggestions

Conclusion

AI plays a significant role in expanding access and increasing the efficiency of psychological interventions, especially in early stages and cases with mild to moderate symptoms. Chatbot applications, virtual reality therapy, and early detection systems have shown positive potential in managing stress, anxiety, and depression.

AI-based psychological interventions are not yet fully capable of replacing human intervention, especially in severe or complex cases that require emotional sensitivity, in-depth clinical assessment, and a strong therapeutic relationship. Therefore, a hybrid approach between technology and humans is the most ideal solution.

The main challenges in implementing AI in psychology lie in the aspects of ethics, privacy, system accuracy, and professional readiness. The absence of a clear ethical and regulatory framework in Indonesia makes the use of AI in psychology practice still in a gray area that is prone to risk.

The identified research gaps in the form of a lack of longitudinal studies, limited cross-cultural validation, and low digital literacy among psychology professionals indicate that systematic and collaborative efforts are still needed to realize ethical and effective implementation of AI in psychology interventions.

Thus, AI is not a replacement for human psychologists, but rather a tool that, if used appropriately and ethically, can strengthen the practice of psychology and expand the reach of mental health interventions nationally and globally.

Suggestions to Stakeholders

Based on the findings and analysis in this study, the following are strategic suggestions to stakeholders as follows.

1. For the Government and Regulators (Ministry of Health and HIMPSI).

There are at least three important suggestions, namely 1) preparing ethical guidelines and a specific regulatory framework regarding the use of AI in psychology and mental health services, 2) establishing psychological data security standards and AI application evaluation protocols to ensure protection of clients' personal data, and 3) encouraging cooperation between ministries and the private sector in providing AI-based mental health technology infrastructure.

2. For Psychology Education and Training Institutions:

Three suggestions to psychology education and training institutions include, 1) integrating digital literacy and AI curricula into psychology education, especially in clinical and community settings, 2) conducting cross-disciplinary training for lecturers and students to strengthen collaboration between psychology and information technology, and 3) encouraging collaborative research on AI in psychology, especially those that are locally and cross-culturally based.

3. For Researchers and Academics

For researchers and academics, important suggestions include, 1) conducting longitudinal research and evaluating the effectiveness of AI in various therapeutic approaches and target populations, 2) examining aspects of algorithmic bias, emotional responses of AI, and the social impact of technology use in psychology, and 3) opening up research space for hybrid intervention models that combine AI and human therapy in a proportionate and ethical manner.

4. For Psychology Practitioners and Mental Health Professionals

Advice for practitioners and mental health professionals, 1) do not reject AI as a threat, but rather adopt it critically and ethically as a complement to clinical practice, 2) play an active role in participating in digital competency training and development to improve readiness to face the transformation of technology-based psychology services, 3) participate in testing, evaluation, and feedback on AI applications to remain oriented towards client needs and safety.

5. For Technology Developers and Digital Industry

For technology developers and digital industries, fundamental suggestions include 1) developing AI systems based on evidence-based practice and collaborating with professional psychologists in the design and validation process, 2) placing the principles of empathy, transparency, and user protection as the main pillars in the development of psychological intervention applications, 3) committing to conducting ethical tests and independent audits of AI systems launched in interdisciplinary fields of science.

With synergy from all parties—government, academics, practitioners, and technology developers—the use of AI in psychological interventions will not only encourage innovation, but also maintain the human essence of the psychology profession itself. The use of AI has major implications for psychological interventions, but the humans involved in the use of AI still play a role as decision makers who control and manage the use of AI. This role is important to implement to prevent the negative impacts of AI and increase the potential of AI in psychological interventions.

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