

# Towards a New Era in Science, Education, and Clinical Practice: The Promise of Artificial Intelligence in Psychiatry



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The interest to Artificial Intelligence (AI) in medicine, and psychiatry in particular is growing rapidly given its potentially groundbreaking impact. This interest is evident by the consistently increasing number of publications; simply search PubMed with the terms AI and Medicine or AI and Psychiatry and see the significant rise over the last five years. Within the scope of this editorial, let's take a look at the promises of AI in psychiatry, with specific references to the articles published in this issue of the Journal (Ballı et al. 2024, Ince Guliyev and Uçok 2024, Ozden 2024, Ozer 2024).

AI enables a comprehensive analysis of speech content, behavioral data, neuroimaging, genetic, and other biological findings. Thus, it can help reevaluate the traditional classification systems in psychiatry, help transition to more accurate diagnostic systems, and lead to the advancement of personalized medicine, such as determining individually appropriate interventions and selecting the best possible drugs and doses (Ballı et al. 2024). These technical advancements may represent a significant leap; we may be able to witness improvements which could be accomplished only by combining the effort of many generations, in a much shorter period of time.

Another field in which we may see major developments is education. We are in the beginning of a new era in medical education. Technologies capable of handling a heavy workload in this field are coming into our lives. With the tools developed, it may be possible to change teaching and learning

styles, reveal individual student needs with “personalized education” as in the concept of “personalized medicine”, create learning environments based on needs, and even plan a career with AI-supported consultancy applications (Nagi et al. 2023).

AI technologies offer great potential to assist psychiatrists in their clinical practice. Large Language Models, which analyze complex data such as emotions, thoughts, and behavioral tendencies from conversations, can provide novel screening tests for psychiatric disorders, or practical algorithms for evaluating and managing psychiatric emergencies, such as suicide risk (Ballı et al. 2024). These are only a few examples of potential advancements in clinical practice. Even changes in psychotherapy methods may occur with the emergence of possibilities to identify critical content that humans/therapists may not be able to recognize during the sessions (Ozden 2024).

Let us not forget about the potential developments in the field of publishing. AI can boost efficiency by accessing data, compiling information, producing output, and suggesting priority areas on which research should focus by discovering gaps in big data. It will make our jobs easier at every level of the research process, from conceptualization to data analysis, article writing, review, and publication. During these processes, redefining the duties and obligations of researchers, authors, referees, and editors seems inevitable.

Current AI applications are not without flaws. Biases in algorithms, concerns about data privacy, ethical challenges,

Received: 06.12.2024, Accepted: 11.12.2024, Available Online Date: 14.12.2024

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and confabulation of Large Language Models are among the problems discussed (Ballı et al. 2024). AI answers queries using patterns acquired from big datasets (Ballı et al. 2024). Biases in the big data used to train AI may result in erroneous or biased outputs. You can find examples of confabulations, a class of these errors, in Ayhan's editorial which was written by an AI natural language processing application, previously published in the Turkish Journal of Psychiatry (Ayhan 2023). In this issue, Ozer (2024) discusses the hallucination/confabulation phenomenon related to AI. He particularly emphasizes the negative consequences derived from the biases of big data, which comprises a fundamental risk for AI applications (Ozer 2024). Within that context, "education" is a must for achieving accurate outcomes from AI (Ballı et al. 2024). AI training is not limited to a single step, it requires continuity. It also requires an effective consultation (supervision) process and competent consultants (supervisors). Being more cautious about the outcomes of the applications in the early stages seems reasonable. It appears that new horizons can be opened over time as new information is added, AI-supported technologies mature, and experienced AI applications emerge.

One of the most important issues that is addressed in the Turkish Journal of Psychiatry is the adoption of terminology to track these new developments and discuss them on a common ground. It is critical to discuss and thoroughly understand the newly described AI-related phenomena and to name them accurately. Understanding human experiences seems to be necessary to select the most appropriate terms for AI-related phenomena. In that sense, the experience of hallucinations or confabulations in humans as an analogous phenomenon to some algorithm biases in AI technology is discussed by Ince Guliyev and Ucok (2024).

It is projected that advances in AI will transform the way humans work, interact, and live. Then, is it possible that advancements in AI could minimize the time and effort required by psychiatrists by making their jobs easier as physicians, educators, and scientists? The future may include the production of skills and knowledge that humans symbiotically accelerate with "machine intelligence", as well as cultural shifts and the development of novel interactions (Brinkmann et al. 2023). At this point, it becomes apparent that new duties await us, which will reshape the topics and practices we focus on.

AI applications may trigger ethical discussions and require rethinking of how to apply the ethical standards throughout the development and use phases. AI technologies are currently being revised, updated, and developed by various companies. If gender, gender identity, religion, culture, race, or socioeconomic status are not appropriately represented in big

data, it risks perpetuating "real" prejudices and discrimination on an "artificial" scale. If the development of AI is solely directed by the needs of the consumption economy or if the conflict of interests and competition becomes a major factor; a new global challenge may arise for such a highly efficient technology. These processes may confront psychiatrists with entirely new challenges as physicians, scientists, and human rights defenders. We should consider what steps should be taken to prevent these risks. "Possible challenges" must be identified and the responses must be implemented as quickly as possible with a global and dynamic perspective, based on scientific principles (Gurcan et al. 2024). Potential risks are not limited to errors in AI outputs; AI production has extensive economic and environmental costs. Who will use these technologies, how to ensure fair use, and the detrimental effects of technology production on climate change owing to energy requirements are all topics of serious debate (Ueda et al. 2024).

As with the other scientific and technological developments, AI-based applications should follow the ethical guides and the principles of fair use. A new area of responsibility emerges for psychiatrists to ensure that this potentially groundbreaking scientific development provides equal and beneficial opportunities for humanity and avoids creating new power imbalances.

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