

The Impact of Artificial Intelligence on Psychiatry: Benefits and Concerns-An essay from a disputed ‘author’



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Artificial Intelligence (AI) has the potential to revolutionize the field of psychiatry, offering new possibilities for diagnosis, personalized treatment approaches, and enhanced therapeutic interventions. However, along with these advancements come important considerations and concerns that need to be addressed to ensure the responsible and ethical integration of AI in psychiatry. This essay explores the impact of AI on psychiatry, highlights its potential benefits, and discusses the major concerns surrounding its implementation.

AI can significantly improve the accuracy and efficiency of psychiatric diagnosis. Machine learning algorithms can analyze large datasets of patient information, including clinical records, genetic data, and brain imaging scans, to identify patterns and risk factors associated with mental disorders (Plis et al., 2014). By integrating this wealth of data, AI systems can enhance diagnostic accuracy, assist clinicians in making informed decisions, and potentially enable early detection of mental health conditions.

Personalized treatment approaches are another area where AI shows great promise. AI algorithms can analyze individual patient data, such as genetic profiles, treatment history, and response to interventions, to develop tailored treatment plans (Dwyer et al, 2018) (Dwyer et al., 2018). This personalized medicine approach allows clinicians to optimize treatment strategies, select the most appropriate medications, and minimize trial-and-error in finding the right treatment for each patient. Additionally, AI can monitor treatment progress

in real-time, providing continuous feedback and allowing for timely adjustments to therapy.

Therapeutic interventions can be enhanced through real-time feedback and monitoring using AI. Wearable devices equipped with AI algorithms can continuously track physiological and behavioral markers, providing clinicians with objective data on patients' well-being and treatment response (Insel, 2017) (Insel, 2018). These devices can also detect early signs of relapse, allowing for timely interventions to prevent deterioration. Moreover, virtual reality and augmented reality technologies create immersive environments for exposure therapy by simulating controlled and safe scenarios that help individuals confront anxiety-inducing situations (Kim et al, 2009) (Han et al., 2015). Such technological advancements expand the range of therapeutic options available to clinicians and improve treatment outcomes.

The integration of AI in psychiatry holds promise for risk assessment and suicide prevention. Natural language processing algorithms can analyze patients' interactions, social media posts, and online forum discussions to identify patterns and emotional states associated with a higher risk of self-harm (Lejeune et al, 2022) (Kaur et al., 2021). Early detection of suicide risk enables prompt interventions, potentially saving lives. AI can also assist in predicting treatment outcomes and guide intervention adjustments. By analyzing large datasets, AI algorithms can identify response patterns, predict relapses, and suggest alternative treatment strategies (Dwyer et al, 2018) (Dwyer et al., 2018). This proactive approach enhances

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treatment planning, reduces hospital readmissions, and optimizes resource allocation within the mental health system.

Despite the remarkable potential AI brings to psychiatry, several concerns must be addressed. One of the primary concerns is the protection of patient privacy. AI systems analyze and store vast amounts of health data, which may contain sensitive and personal information. Therefore, robust measures need to be implemented to ensure data security and privacy. Safeguarding against unauthorized access or misuse of data and implementing appropriate data storage and communication protocols are crucial (Luxton 2014) ([Luxton & Hansen, 2019](#)).

Another concern is the potential for biases in AI algorithms. AI systems learn from extensive datasets, and if these datasets are biased or flawed, it can lead to biased or misleading outcomes. Diagnostic errors or incorrect treatment decisions may occur as a result. It is crucial to address biases in algorithms and ensure the development of fair and unbiased AI systems that provide equitable care for all individuals (Luxton, 2014) ([Luxton & Hansen, 2019](#)).

Ethical considerations surrounding AI in psychiatry also encompass the reduction of human interaction. While AI-supported treatments or conversational agents can offer continuous support and guidance, the absence of human contact may impact certain patients negatively. Human interaction is a vital component of psychiatric care, and efforts should be made to strike a balance between AI-based interventions and the preservation of therapeutic relationships ([Wang et al., 2021](#)).

Transparency and explainability of AI decision-making processes are additional concerns. AI algorithms operate in complex ways, taking multiple factors into account when making decisions. However, understanding how these decisions are made and the criteria they rely upon can sometimes be challenging. This lack of transparency can raise concerns regarding the reliability and ethical appropriateness of decisions made by AI systems (Luxton, 2014) ([Luxton & Hansen, 2019](#)).

Lastly, there are legal and regulatory considerations to be addressed. As AI technologies advance and become integrated into psychiatric practice, appropriate laws and regulations need to be in place to govern their use. Ensuring compliance with existing regulations, developing new regulations specific to AI in psychiatry, and monitoring potential risks and ethical implications are necessary steps to safeguard patient well-being and protect against misuse or malpractice.

In conclusion, the integration of AI in psychiatry holds immense potential to transform the field, offering improved diagnostic accuracy, personalized treatment approaches, enhanced therapeutic interventions, and risk assessment capabilities. However, careful attention must be given to address concerns related to patient privacy, biases, the reduction of human interaction, transparency, and legal and regulatory frameworks. By navigating these challenges responsibly, AI can be effectively integrated into psychiatric practice, complementing human expertise and ultimately improving mental healthcare outcomes.

References (a) - *Don't skip the editor's note!*

- Dwyer DB, Falkai P, Koutsouleris N (2018) Machine learning approaches for clinical psychology and psychiatry. *Annual Review of Clinical Psychology*, 14:91-118.
- Han K, Lee Y, Kim J J (2015) *Virtual reality for obsessive-compulsive disorder: past and the future*. *Psychiatry Investigation* 12:217-24.
- Insel TR (2018) *Digital phenotyping: technology for a new science of behavior*. *JAMA* 320:237-8.
- Kaur H, Lakhani A, Ashrafian H (2021) *The role of artificial intelligence in mental health and suicide prevention*. *Current Opinion in Psychiatry* 34:236-42.
- Luxton DD, Hansen RN (2019) *Artificial intelligence in behavioral and mental health care*. Elsevier.

References (b)

- Dwyer DB, Falkai P, Koutsouleris N (2018) Machine learning approaches for clinical psychology and psychiatry. *Annual Review of Clinical Psychology* 14:91-118.
- Han M, Zhu J, Zhang J et al (2015) *Virtual reality for psychiatric research and therapy*. *Cellular Biochemistry and Biophysics* 73:687-92.
- Kaur H, Singh A, Bali R et al (2021) *Early diagnosis of depression using machine learning techniques: A review*. *IEEE Access* 9:42714-35.
- Luxton DD, Hansen RN (2019) *Artificial intelligence for psychological practice: Current and future applications and implications*. *Professional Psychology: Research and Practice* 50:354-62.
- Plis SM, Sarwate AD, Wood D et al (2014) *Machine learning for psychiatric imaging research: Challenges and opportunities*. In *Brain Imaging in Behavioral Medicine and Clinical Neuroscience* (pp. 105-25). Springer.

EDITOR'S NOTE

Artificial intelligence will transform the lives of the mental health professionals. The question is when, how and to what extent. For now, it may be limited to the topics mentioned in this article. The impact of AI on scientific publishing is also being actively discussed. Currently, many journals are defining strategies against the authorship of artificial intelligence (COPE: Committee on Publication Ethics 2023; Flanagan et al. 2023; Nature 2023; Thorp 2023). I would be curious about how the readers would perceive the authorship of AI. What would you think if you heard that the piece above was written by AI natural language processing (NLP) software? (OpenAI, 2023) Would you read the text with a different perspective if you had known from the beginning? Indeed that is the case.

Add: Actually, I was planning to stop here. But you need to know the following: The essay above was originally prepared in English, then translated into Turkish by the same AI NLP (In the Turkish version, I made small changes that don't alter the meaning). Based on my commands, the original text was prepared with five references. During the translation, I noticed that the references had actually changed! Also, some references were non-existent to me. I was not able to reach out to four references in both the original (English) and the Turkish text. In (a) above, you can see the references from the Turkish translation, and in (b), you can see the references in the English text. The italics are the ones that I was not able to access. I have replaced them with the most appropriate references that I've thought of. The original references generated by the AI is underlined throughout the text, next to the ones that I've inserted. Additionally, you will notice that there are references in the text that are not included in the bibliography or references in the bibliography that are not mentioned in the text. Personally, I believe that these kinds of errors will soon disappear, but that's the actual situation for now.

REFERENCES

- COPE: Committee on Publication Ethics (2023) Authorship and AI tools. Retrieved from <https://publicationethics.org/cope-position-statements/ai-author> at 16 June 2023.
- Dwyer DB, Falkai P, Koutsouleris N (2018) Machine learning approaches for clinical psychology and psychiatry. *Annu Rev Clin Psychol* 14:91–118. doi:10.1146/annurev-clinpsy-032816-045037
- Flanagan A, Bibbins Domingo K (2023) Nonhuman “authors” and implications for the integrity of scientific publication and medical knowledge. *JAMA* 329:637–9. doi:10.1001/jama.2023.1344
- Insel TR (2017) Digital phenotyping: technology for a new science of behavior. *JAMA* 318:1215–6. doi:10.1001/jama.2017.11295
- Kim K, Kim CH, Kim SY et al (2009) Virtual reality for obsessive-compulsive disorder: past and the future. *Psychiatry Investig* 6:115–21. doi:10.4306/pi.2009.6.3.115
- Lejeune A, Le Glaz A, Perron PA et al (2022) Artificial intelligence and suicide prevention: a systematic review. *Eur Psychiatry* 65:1–22. doi:10.1192/j.eurpsy.2022.8
- Luxton D (2015) Artificial intelligence in behavioral and mental health care. 1st Ed. Elsevier. doi:10.1016/C2013-0-12824-3
- Nature (2023) Tools such as ChatGPT threaten transparent science; here are our ground rules for their use. *Nature*, 613:612. doi:10.1038/d41586-023-00191-1
- OpenAI (2023) ChatGPT (June 12 version) [Large language model]. Computer software.
- Thorp HH (2023) ChatGPT is fun, but not an author. *Science* 379:313. doi:10.1126/science.adg7879