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Research Article

# Al in psychiatry: Perspectives of patients from Southeast Europe on ChatGPT

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#### **ABSTRACT**

The integration of Artificial Intelligence (AI) into healthcare presents new possibilities and challenges. Large Language Models have shown potential in various psychiatric applications. However, the perspectives of patients with mental disorders on the use of such technologies remain underexplored. The present study aimed to evaluate the perceptions of patients with diagnosable mental disorders regarding the advantages and drawbacks of using ChatGPT for acquiring information about their conditions and medications. The data were collected at major psychiatric centres in Croatia and Bosnia and Herzegovina throughout October 2023. The sample consisted of 89 outpatients. The procedure involved inviting outpatients to participate in a questionnaire-based study that assessed their internet access, prior use of ChatGPT, and, after using ChatGPT to inquire about their mental health conditions and medications, their experiences interacting with ChatGPT. Data were analyzed using descriptive statistics, chi-square tests, t-tests, and logistic regression. The study found that 47.2% of the participants had used ChatGPT before. The main advantages noted were ChatGPT's availability and immediate response capability. However, significant drawbacks included the lack of personal contact and the generality of the responses. Participants expressed concerns about the quality and specificity of information regarding their medical conditions. While ChatGPT offers notable advantages such as accessibility and promptness, the lack of

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emotional engagement and the sometimes vague nature of its responses limit its effectiveness from the patients' perspective. These findings suggest a need for enhancements in AI technologies to better address the unique needs and preferences of psychiatric patients.

Keywords: artificial intelligence, ChatGPT, mental disorder, personal experience

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## Introduction

Artificial intelligence (AI) (a term coined by computer scientist John McCarthy) is a field that involves technologies and applications that aim to simulate human intelligence (Ferdush et al., 2023; Graham et al., 2019). The use of AI in psychiatry dates back to the 1960s, with computer programs supporting diagnostic decisions and the creation of treatment plans. For instance, they could predict the suitability of specific medications for individual patients (Van Dellen, 2023). Furthermore, AI has been used to predict suicide based on fewer predictors or based on unstructured texts, to predict depression based on sociodemographics and comorbid conditions or based on social media posts, to predict which patients will respond to which medication, to distinguish unipolar from bipolar disorder based on EEG, and to increase medication adherence in patients with schizophrenia (Graham et al., 2019). The accuracies ranged from 62 to 98% (lower for smartphone data and higher for physical function measurements and sociodemographic data) (Graham et al., 2019).

Large language models (LLMs) are complex deep-learning programmes capable of comprehending and producing text in a manner that is comparable to that of humans. They can summarise, translate, predict, and create texts (Garg et al., 2023). A chatbot is a type of software that creates text akin to human-like conversation; therefore, some call chatbots conversational artificial intelligence (Amram et al., 2023). Chat Generative Pre-trained Transformer (ChatGPT) is one such chatbot (LLM), launched on November 30, 2022, by San Francisco-based OpenAI (Galido et al., 2023; Singh, 2023). ChatGPT was trained on a massive amount of culled textual data and can generate human-like responses (i.e., it can replicate human discourse; Galido et al., 2023). It generates responses via an autoregressive statistical model, which outputs a word based on the probabilities of different words following the previous ones, i.e. it produces text that is statistically a good fit, given the prompt text (Amram et al., 2023; Eshghie & Eshghie, 2023). Words are represented as vectors, with certain values calculated based on the type of word, its frequency, context, etc. Therefore, ChatGPT can make context-dependent and context-specific replies to queries (McGowan et al., 2023).

Due to its characteristics, there are many potential applications of ChatGPT in psychiatry. For instance, ChatGPT can be used to generate medical content (to save time and increase accuracy), to provide detailed drug-related information, to be a patient educator, or to generate summaries from medical records and put them in admission notes or discharge summaries (Çaliyurt, 2023; Cheng et al., 2023). Previous studies have shown ChatGPT may identify schizophrenia based on the initial three symptoms. provide a list of differential diagnoses and a list of assessment procedures, a list of medications, and a holistic management plan - including pharmacological and non-pharmacological approaches (Galido et al., 2023). It was also used to list therapeutic modalities for the treatment of alcoholrelated disorders (Prada et al., 2023). It was less successful in recognizing women with birth-related PTSD from their narratives describing childbirth (at least in a zero-shot and few-shot learning; yet, with the embedding usage, the sensitivity and specificity increased to 85% and 75%, respectively; Bartal et al., 2023). It was the least successful in diagnosing personality disorders (Cheng et al., 2023).

Psychiatrists assessed the accuracy, completeness, and nuance of ChatGPT's answers to psychiatric questions as high (i.e., a composite score of 8.0 out of 10; Luykx et al., 2023). Furthermore, Luykx et al. (2023) showed that psychiatrists using ChatGPT scored higher when answering psychiatric questions compared to those using other sources of information.

Moreover, Nov et al. (2023) showed that lay subjects were willing to use ChatGPT for health advice, especially for logistical issues and preventative care; diagnostic and treatment advice had the lowest trust ratings. Furthermore, they were able to identify who wrote the answers (i.e., ChatGPT versus human-generated responses) only weakly (from 49 to 86% for different questions).

Other studies have shown ChatGPT can provide companionship, support, and therapy. For instance, there have been some positive results in reducing depression among college students and in patients with social anxiety disorder (Imran et al., 2023; Singh, 2023). At the moment, multiple healthcare systems are piloting the use of GPT-4 to draft responses to patients' messages (Singh et al., 2023).

However, we need to emphasize that ChatGPT was not trained only on medical data(Bartal et al., 2023; Nov et al., 2023). As it was trained on text from various sites, some of which are biased and not credible, it can provide wrong information and inappropriate advice (Ferdush et al., 2023; Singh, 2023; Singh et al., 2023; Wei et al., 2023). It can produce words or sentences that are semantically or syntactically plausible but incorrect or nonsensical (computer scientists call them hallucinations, although the more appropriate term is confabulations; Arbanas, 2024; Cheng et al., 2023; McGowan et al., 2023).

The aim of the present study was to determine what patients with different mental disorders think about the advantages and problems of ChatGPT when asking questions about their mental disorders and the medication they were using.

## Method

## Sample

We collected our data in October 2023 (1–31). All patients who came to the outpatient clinic to see any of the authors were asked if they had access to the internet. Those who answered positively were asked if they wanted to participate in a study aiming at determining the satisfaction of patients suffering from different mental disorders with the answers given by ChatGPT. Only patients with diagnosable mental disorders (having been diagnosed with a disorder from the F section in ICD-10) were included in the study. The study was done in the largest psychiatric centre in Croatia and one in Bosnia and Herzegovina. The ethical committee of the Croatian hospital approved the study. Patients were offered to either fill in a paper or an online form of a questionnaire.

#### Instruments

The questionnaire (created by the authors) consisted of two parts. The first part was about sociodemographic data: gender, age, marital status, education (elementary school – secondary school – bachelor's degree – master's degree), working status, socioeconomic status (Likert scale with five possible answers – much worse compared to an average family; worse;

not better, nor worse; better; much better), age of first contact with a psychiatrist, and prior use of ChatGPT.

The second part was about satisfaction with the information provided by the chatbot. Patients were advised to search for information about their disorder and medications on ChatGPT. They were then asked two questions: "What seems to you to be the biggest advantage of ChatGPT in regard to answering your questions about your mental disorder and medications you are using?" and "What seems to you to be the biggest disadvantage of ChatGPT in answering your questions?".

The questionnaire underwent content validation through an expert review. A panel of experts in psychiatry and computer science addressed the items for clarity, relevance, and comprehensiveness.

#### **Procedure**

Of 121 patients who visited the two psychiatric institutions as outpatients, had internet access, and were diagnosed with a mental disorder, 89 agreed to participate in our study. During the initial meeting, participants completed a sociodemographics-related questionnaire (described earlier) and were asked to list the reasons they typically use the internet. With this open-ended question, we wanted to minimize response bias and gather a more authentic reflection of their habits.

Subsequently, participants were asked if they had used ChatGPT before and, if so, for what purposes. After answering these preliminary questions, they were directly asked whether they had used ChatGPT to search for information about their mental disorder or the medications they were taking. This two-step questioning approach helped us assess the extent of engagement with AI tools while avoiding initial bias.

Participants were then instructed to use ChatGPT to inquire about their mental disorders and medications before the next meeting. They were informed that they could contact a psychiatrist (the authors of this manuscript) if they had any questions or concerns regarding the answers provided by ChatGPT. At the follow-up meeting, participants were asked to share the biggest advantages and disadvantages of using ChatGPT in relation to their inquiries.

# Data analysis

Statistical analysis was conducted using SPSS version 26.0. Descriptive statistics, including means, standard deviations, and percentages, were used to summarize the sociodemographic data and the patterns of internet and ChatGPT usage.

Chi-square tests were employed to examine the association between categorical variables, such as gender and diagnosis, and the use of the internet and ChatGPT for health-related inquiries. For continuous variables, t-tests (for two groups) were utilized to determine if there were significant differences in the mean values among different groups (e.g., age groups, types of mental disorders).

Logistic regression analysis was performed to assess the impact of various factors (such as age, gender, diagnosis, and previous technology use) on the likelihood of using ChatGPT for mental health inquiries. The results were presented as odds ratios with 95% confidence intervals. The level of significance was set at p < 0.05 for all tests. This threshold was chosen to minimize the risk of Type I errors while acknowledging the exploratory nature of this study.

Thematic analysis was used to analyze qualitative data gathered through open-ended survey questions regarding the advantages and disadvantages of using ChatGPT. The analysis was conducted manually, following Braun and Clarke's (2006) six-step framework: familiarisation, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. To enhance reliability, three researchers independently coded the data and discussed discrepancies until a consensus was reached.

# Results

The majority of participants were women, had average socioeconomic status, had either secondary education or college, and were not married/in a relationship (Table 1). Moreover, the majority of participants were diagnosed with 1. neurotic, stress-related, and somatoform disorders, 2. schizophrenia, schizotypal, and delusional disorders, and 3. mood/affective disorders (Table 2).

**Table 1**Sample Description

	Total sample	Men	Women	
	(N = 89)	(N = 35, 39%)	(N = 54, 61%)	
Age	40.1 ± 12.4	38.5 ± 12.9	41.1 ± 12.2	t = -0.947
				p = 0.347
married/in a relationship	yes 30; no 59	yes 10; no 25	yes 20; no 34	$\chi^2 = 0.681$
				p = 0.409
employed	yes 60; no 29	yes 18; no 17	yes 42; no 12	$\chi^2 = 6.712$
				p = 0.010
socioeconomic status	below average 15 average 46 above average	below average 6 average 16 above average	below average 9 average 30	$\chi^2 = 0.993$ $p = 0.609$
	28	13	above average 15	ρ 0.000
education	primary 5 secondary 42 college 42	primary 4 secondary 23 college 8	primary 1 secondary 20 college 33	$\chi^2 = 13.827$ $p = 0.001$

Table 2

Diagnoses of Participants

Section in ICD-10	Frequency	Percentage
F0 Organic, including symptomatic, mental disorders	3	3.8%
F1 Mental and behavioural disorders due to psychoactive substance use	3	3.8%
F2 Schizophrenia, schizotypal, and delusional disorders	25	31.3%
F3 Mood /affective/ disorders	17	21.3%
F4 Neurotic, stress-related and somatoform disorders	29	36.3%
F5 Behavioural syndromes associated with physiological disturbances and physical factors	1	1.3%
F6 Disorders of adult personality and behaviour	2	2.5%

The reasons for using the internet in our sample are presented in Table 3. Only three female participants claimed they used the internet for psychotherapy (one) and searching for health issues (two participants).

There were no gender differences in reasons for using the Internet.

 Table 3

 Reasons for Using the Internet

Reason	Percentage of the sample
Reading news	43.8%
Social media and contact with people	29.2%
Music	16.9%
e-mails	14.6%
Movies	7.9%
Learning and studying	7.9%
Finding a job	5.6%
Playing games	5.6%
Amusement and fun	5.6%

Almost half of the sample (47.2%) had used ChatGPT prior to this study. The reasons for using ChatGPT are listed in Table 4. When directly asked if they have ever asked ChatGPT about their mental problems, 12.4% answered positively; 10.1% asked for advice about their mental health problem, and 7.9% asked about medications they were taking.

 Table 4

 Reasons for Using ChatGPT

Reason	Percentage of the sample	
Job-related questions	7.9%	
General questions, history	6.7%	
Writing an essay, for university	5.6%	
For fun	3.4%	
Asking about health and physical illnesses	2.2%	

Regarding the advantages and disadvantages of using ChatGPT, over 40% of participants listed availability as the main advantage (for all advantages, see Table 5). The main disadvantage was the lack of personal contact (for all disadvantages [as listed by participants], see Table 6).

Table 5

Advantages of ChatGPT

Advantage	Percentage of the sample
Instantaneous answers, availability	43.8%
Use from home	6.7%
Anonymity	5.6%
Information about medications	3.4%
Direct, precise answers	3.4%
Correct, high quality answers	3.4%
It is fun and interesting	3.4%

Table 6

The Main Disadvantages of ChatGPT

- :	
Disadvantage	Percentage of the sample
It is virtual, no personal contact, it is not alive, and has no emotions	22.5%
General, automated, vague answers	13.5%
It is complicated to log in	12.4%
Wrong answers	5.6%
It is not up-to-date	3.4%
You cannot talk to it	3.4%

Logistic regression analysis revealed no statistically significant associations between age, gender, diagnosis, or previous use of ChatGPT and the likelihood of using ChatGPT for mental health inquiries. The same was the case with the perceived main advantages or disadvantages of ChatGPT.

## Discussion

A 2022 study from Croatia showed that 87% of those suffering from schizophrenia and depression used the internet, and 67% of those with psychosis and 71% of those with depression used the internet to search for information on mental health (Žaja et al., 2022). The participants in our study reported using the internet primarily for reading news and using social media. Only three women said they used it for psychotherapy and searching for health issues. One-third of the participants in our study were diagnosed with a psychotic disorder, and one-fifth with an affective disorder, so it is unclear why our results are so different from those of Žaja et al. (2022).

It is possible that many participants used it for health issues but did not mention it without a prompt (see also later in the text regarding the use of ChatGPT). Furthermore, it is interesting that our participants mainly used the internet for leisure activities and rarely for study or work. This might be due to their age profile. Previous studies have shown that the adult population uses the internet for various purposes, but mainly to stay connected with their families and friends. Moreover, people with mental health issues use it most often for social support (Brunette et al., 2017; Li et al., 2024).

ChatGPT was launched in November 2022; over the following year, it permeated many areas of human life, including medicine. Almost half of our participants, patients with mental disorders, have used ChatGPT before participating in our study. This high percentage of patients using modern technologies is not surprising, as described earlier in the text. As shown in Table 4, people use ChatGPT for very different reasons, none of which is dominant. Only 2% said they used it for health-related issues; however, when asked directly, 12% confirmed they did use it to ask questions about their mental disorder or medication. This discrepancy suggests that more specific inquiry can prompt recollection of otherwise overlooked instances of ChatGPT usage - a phenomenon consistent with research on memory retrieval and cue specificity. In the current study, participants may have underreported health-related internet activity until specifically prompted, underscoring how the phrasing and specificity of questions can influence self-report. Given the abundance of evidence that individuals with mental disorders can experience difficulties with memory, attention, or insight, structured, specific questioning may be especially critical to capture

accurate usage patterns in psychiatric populations. Future studies would benefit from employing multi-stage or more detailed questioning in order to mitigate recall bias, especially among populations that may have cognitive vulnerabilities. Additionally, researchers might consider direct observational or usage-log methods to further clarify the extent to which ChatGPT is sought out for mental health information.

Almost half of the sample (44%) reported that the main positive characteristic of ChatGPT is that it produces immediate answers and is available at any time, from home. Such findings align with earlier research and expert opinions. Singh, in his article on opportunities and challenges of ChatGPT in mental health care, as well as Imran and colleagues (writing about the same topic in child psychiatry), suggest that the main asset of ChatGPT is that it can provide companionship at any time and is available 24/7, including in crises (Caliurt, 2023; Imran et al., 2023). Our patients recognized all-time availability as a valuable characteristic of ChatGPT, noting that "you can talk with ChatGPT at any time, whenever you like," "you do not need to schedule an appointment with it, contrary to making appointments with your doctor," and "you can continue a discussion with it as long as you wish, whereas appointments with psychiatrists are timelimited." In this regard, in the future, ChatGPT or other chatbots might help solve the problem of an insufficient number of mental health professionals, especially in child and adolescent psychiatry, since children and adolescents are even more open to using chatbots, compared to adults (Amram et al., 2023; Singh, 2023; Van Dellen, 2023).

Whereas several authors stated that some patients might be concerned about their therapist judging them and being unwilling to talk to a therapist about sensitive issues or sharing confidential information, patients from our sample did not list this as one of advantages of the ChatGPT (Imran et al., 2023; Van Dellen, 2023; Ventriglio & Ricci, 2023; Wei et al., 2023).

The main disadvantage, according to our patients, was that ChatGPT is not a real human being, has no emotions, and cannot provide contact. Some previous studies (i.e., Skjuve et al., 2021) showed that people can develop a human-chatbot relationship and that, with additional prompts and in a trained version of ChatGPT, ChatGPT can maintain the conversation in a positive way and provide a non-judgmental and supportive presence for the

patient (at least psychiatrists assessed it that way). However, our data seems to suggest that actual patients do not share this optimistic view of the chatbot's abilities (Eshghie & Eshghie, 2023). Although ChatGPT and other chatbots can give precise and accurate responses and follow professional guidelines, patients need something more – support, empathy, and an actual relationship with another human being. Studies on therapeutic factors in psychotherapies have shown that non-specific factors (i.e., factors not related to a specific psychotherapeutic technique), such as therapeutic alliance, therapist's warmth and competence, may have a very important role in predicting therapeutic outcomes (Chatoor & Krupnick, 2001; Seewald & Rief, 2023). It is possible that in the future, by attaching friendly avatars and combining language analysis with physiological measurements achieved by wearable devices, we might produce better results, as Pohl described in his science fiction novel forty years ago (Cheng et al., 2023; Pohl, 2006).

Furthermore, although professionals assessed ChatGPT as a source of accurate information based on professional guidelines with the composite score (of accuracy, completeness and nuance) of 8.0 out of 10, our participants assessed the answers to be general, automated, and vague (Galido et al., 2023; Moise et al., 2023; Prada et al., 2023). Interestingly, although the majority of our patients were familiar with the use of the internet, they found the log-in process to be technically complicated and difficult to solve.

To our knowledge, this is the first study of patients with mental disorders to assess the positive and negative aspects of ChatGPT's replies to their queries about mental disorders. Previous studies assessed the experiences of professionals and the general population, but not patients with diagnosed mental disorders.

The main limitation of the study is its small sample size. A study using a larger sample could examine whether there are any differences in experiences with ChatGPT between people with different mental disorders (especially those that were not represented with a large enough sample here to run statistical analyses). Also, our results cannot be generalized to people with mental disorders in other regions and countries.

#### Conflict of interest

We have no conflicts of interest to disclose.

### Data availability statement

Data used in this paper are available upon a reasonable request.

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