

Ethical Perspective on the use of ChatBots in Mental health Support

Summary by : Khushi Tekriwal

Date : August 2021

Professor : Douglas Luman

About the Student: Khushi Tekriwal is a student at La Martinere for Girls, India. This paper was prepared by Khushi as a part of her course work for LS190 - Introduction to College Level Research course at Allegheny College during fall 2021.

Summary: (WHO) states that depression is a common illness which is now worldwide wherein almost 264 million people were diagnosed suffering from Depression out of which around 800,000 people die due to suicide every year. To reduce this continuously increasing void in human beings, the tech world came up with the idea to use chatbots as therapy bots. Artificial Intelligence companies have developed chatbots that can be integrated with mobile applications.

Over the last decade, there has been an explosion of digital interventions that aim to either supplement or replace face-to-face mental health services. More recently, several automated conversational agents have also been made available, which respond to users in ways that mirror a real-life interaction. What are the social and ethical concerns that arise from these advances?

In this article, from the perspective of healthcare professional ethics, we discuss the strengths and limitations of using chatbots in mental health support.

We also outline what we consider to be minimum ethical standards for these platforms, including issues surrounding privacy and confidentiality, and review the ELIZA chatbot, which aimed at tricking its users into believing that they were having a conversation with a real human being.

WHAT ARE CHATBOTS? (SPECIFICALLY THERAPIST BOTS)

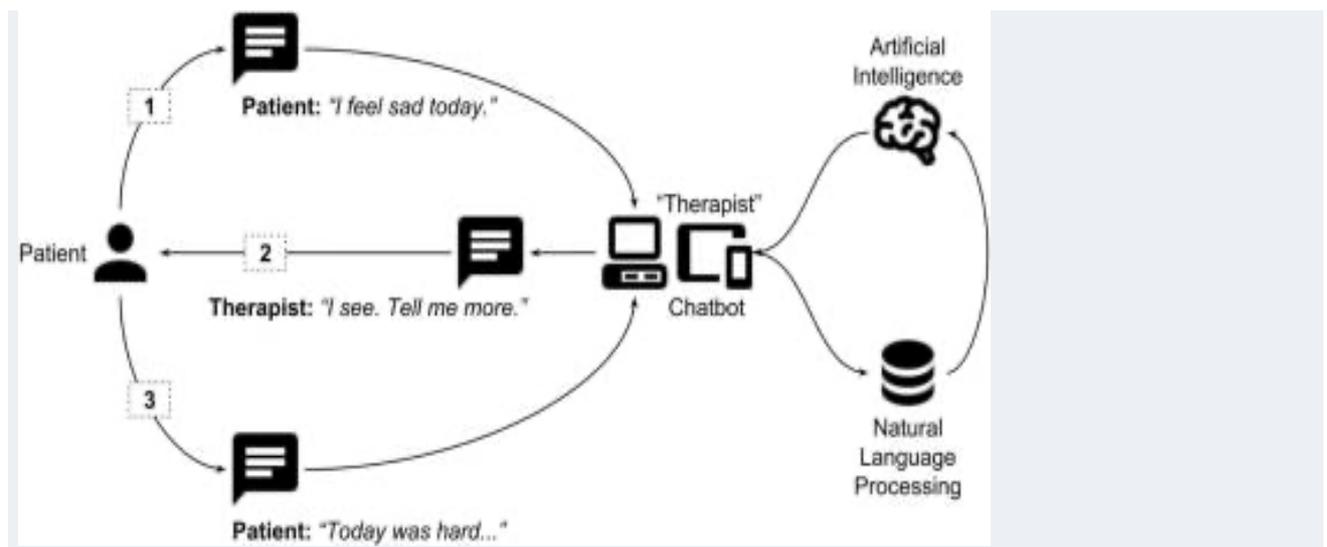
Chatbots are programs that interact with users via two-way conversation. That is, they allow applications and web services to 'chat' to users, through a conversational interface.

Mental health chatbots provide a supportive presence to service users, engaging them with a conversation at times when they feel low. Some chatbots engage passively, replying only when users reach out. Others can actively engage users that are on their site or have downloaded an app. They can use this conversational input to detect the mood of the service user and respond with empathy. Some chatbots can provide guidance or advice to help users challenge their negative thoughts. Modelling tactics from behavioural therapy, they can encourage users to accept their emotions. So, these chatbots offer relevant tools and resources to help users find healthy coping strategies. (Spanning anything from meditation, to mental exercises, to self-help, etc.)

Elsewhere, mental health chatbots are helping users keep track of their moods, progress and thoughts. A bit like a conversational diary. This might later highlight trends or triggers that impact the well-being of the service user.

BRIEF OF THE FIRST-EVER THERAPIST CHATBOT – ELIZA

In 1964, the programmable natural language processing program ELIZA was developed at the MIT Artificial Intelligence Laboratory by Joseph Weizenbaum. Designed to act as a Rogerian psychotherapist, ELIZA could not understand the content of its conversations. However, many who used this chatbot believed it to be intelligent enough to comprehend conversation and even became emotionally attached to it. The program was designed in a way to mimic human conversation. Weizenbaum later remarked that “[he] had not realized...that extremely short exposures to a relatively simple computer program could induce powerful delusional thinking in quite normal people.” In 1972 at Stanford University, psychiatrist Kenneth Colby developed PARRY, a program capable of simulating the behaviour of a human with schizophrenia that was then “counseled” several times by ELIZA.

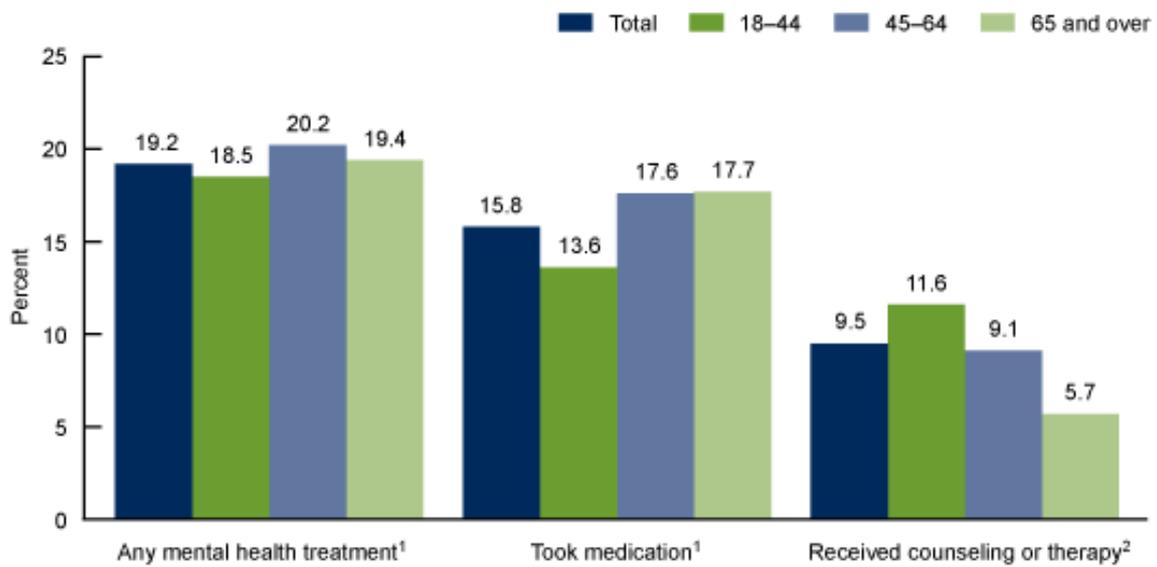


A sample interaction between a patient and a chatbot therapist.

MENTAL HEALTH STATS- THE CRISIS WE ARE IN

Mental health disorders are among the leading causes of morbidity and mortality, expected to cost the world's economy some \$16 trillion by 2030. They affect at least 10% of the population, with up to 20% of children and adolescents suffering from some type of mental disorder and women are more likely than men to be diagnosed with depression. In the US, approximately 90% of the people experienced a mental illness in 2017-18, which was a year-on-year increase of 1.5 million people. The number of the young reporting mental distress is rising more significantly. No one seems to know exactly why depression and anxiety are so common nowadays. Many experts even dismiss any upswing, arguing that what we see is a surge of people actively seeking treatment. Indeed, the number of people applying for help with depression or anxiety in the US has soared, according to the 2021 State of Mental Health in America report. As many as 315,220 people took anxiety tests from January to September 2020, 93% up from the entire of 2019. The number of people taking depression screens increased by 62% to 534,784 people. At the same time, only around 40% of US adults with mental illness received treatment in 2019. One of the reasons is a shortage of mental health providers, which the US National Council for Behavioral Health predicts can reach over 15,000 clinicians in the next couple of years. The need for solutions that can scale access to mental health treatment is desperate, while such solutions are already here, thanks to AI.

Percentage of adults aged 18 and over who had received any mental health treatment, taken medication for their mental health, or received counselling or therapy from a mental health professional in the past 12 months, by age group: United States, 2019.



[Source: <https://www.cdc.gov/nchs/products/databriefs/db380.htm>]

COVID'S MENTAL STRESS

The percentage of people experiencing symptoms of depression and anxiety has surged amid the COVID-19 pandemic, data from nationally representative surveys show.

■ Before pandemic ■ During pandemic

UK adults reporting symptoms of depression



US adults reporting symptoms of anxiety or depression



©nature

[Source: Office for National Statistics (UK data); Centers for Disease Control and Prevention (US data)]

STRENGTHS OF USING MENTAL HEALTH CHATBOTS

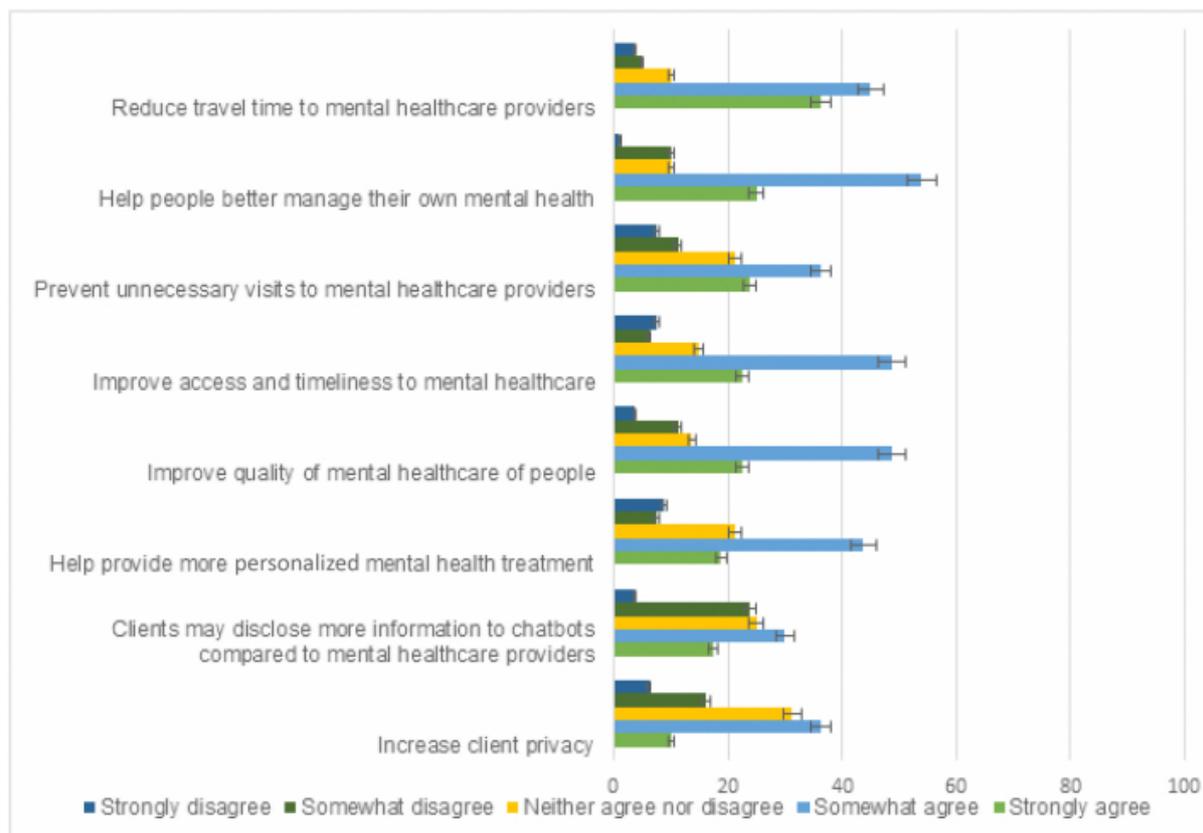
Current literature demonstrates that there are widespread benefits to using chatbots.

Acceptability- Chatbots are also seen to relieve certain barriers in mental health provision, such as stigma around accessing psychological health services and geographical isolation that can hinder attendance at face-to-face counselling. Robotic applications might be preferable for some patients, reducing embarrassment when asking for specific information or services or feelings of shame when admitting non-compliance with a treatment plan.

Accessibility- Mobile mental health interventions are nonintrusive and easily accessible for anyone with a mobile phone. It provides immediate help as these services are 24/7 available in contrast to the traditional way of booking an appointment with a psychologist wherein the appointment might be provided at a later date. As the access to mental health services remains an issue worldwide, with the mental health workforce insufficient to meet the growing demand for mental health services, automated procedures hold great promise for both mental healthcare providers and those in need of mental health services.

Affordability- They will provide cost savings for the users in the form of travel expenses and telephone charges. There are many people, especially the rural population, who cannot afford the professional health care services. So, AI steps in as a free resort to their vulnerability.

In the United Kingdom, Samaritans, the helpline service, recorded that users younger than 25 years were the highest user age group of their text messaging service, and they were more likely to communicate through text than to phone the organization. These young people can also feel uncomfortable disclosing their feelings to a human being. As a recent study shows, in some circumstances, patients are more likely to disclose personal details to artificial intelligence-powered conversational assistants rather than to an actual clinician. Many young people also feel that their problems are too personal, or they fear that this sensitive data could be shared with others.



Perceived logistical benefits of using chatbots for clients
[Source: <https://dl.acm.org/doi/fullHtml/10.1145/3453175>]

LIMITATIONS:

Chatbots also have their limitations.

Placing Artificial Intelligence in the space of mental healthcare is a controversial intersection. AI is only as strong as the data it is trained on. Machines have predefined scripts and not minds of their own, and hence they cannot empathise or rationalise like human beings. They also cannot be creative with their responses, and can only perform the tasks they are designed to do. As a result, people who use Wysa, for instance, often have reviews such as, “You’re not getting me” or “You’re not understanding me”, even though its founders are constantly trying to reduce that number.

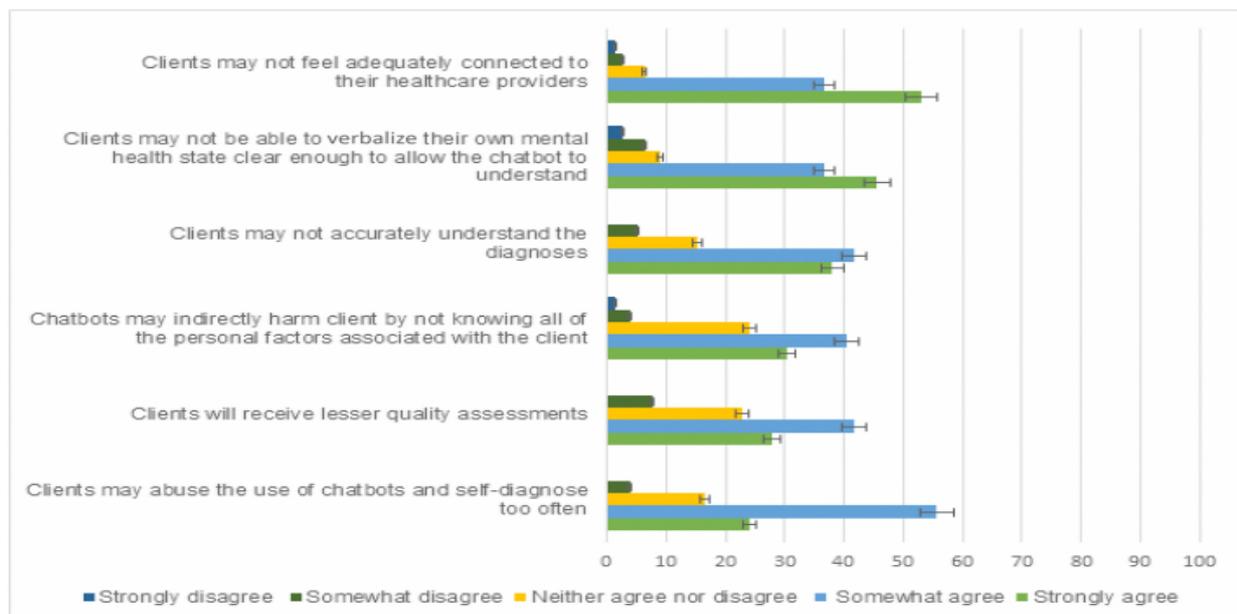
They may not be able to understand the nuances of human language. Artificial intelligence has to understand the complexities at play, to prevent the provision of an unsuitable answer or providing unclear or nonsensical responses, to be able to communicate what is at the core of mental health problems. They only mimic understanding, they don't truly understand. This can, on occasion, cause friction as the chatbot makes mistakes. Further, chatbots have failed to recognise and report instances of users in crisis.

Machine learning-based tools often continuously learn using large volumes of data. While this works well in extremely well-structured data sets with a large volume of unambiguous data (like images or audio), such large volumes of well-codified data don't exist in the domain of mental health. Plus, with a limited ability to understand what a user says and even more limited ability to respond to it, these bots hardly add to their base of data that would enable them to learn more.

Chatbots also fall short in the provision of mental health support for sensitive topics, such as suicide risks and where abuse is being reported. Indeed, there is not enough evidence-based data to support chatbot use in suicide prevention.

A human psychotherapist has a lot more information to base their reactions on. She can see facial expressions, the tone of the voice and body language to detect subtle unsaid cues. What the person receiving therapy thinks may be completely divergent from what she says. Humans are good at understanding intentions, whereas chatbots are no good so far.

There is also the issue of sensitive personal details being shared with these apps, and how secure this information is. Virtual conversational applications record and store information that is divulged with them, with the privacy and confidentiality clauses of these being dubious at best.



Perceived risks associated with using mental healthcare chatbots for clients
[Source: <https://dl.acm.org/doi/fullHtml/10.1145/3453175>]

PRIVACY AND CONFIDENTIALITY

1. Personal information, if collected, should be kept confidential;
2. Content of conversations, if shared, should be de-identified;
3. Privacy arrangements and limitations should be made transparent to users;
4. Users should have the option of being reminded of privacy arrangements and limitations at any stage. Users should be reminded at all times that the therapist it is interacting with is actually a fully automated conversational agent (Chatbot).

CONCLUSION:

Despite these limitations, the results demonstrated that there are overall positive perceptions and opinions of patients about mental health chatbots, although there is some scepticism toward trustworthiness and usefulness.

They simply provide a friendly ear. A place to air concerns, worries, intrusive thoughts or engage in 'therapeutic' small talk. If ethically conceived, CBT chatbots could lessen the long-term harms of pandemic-related isolation, trauma, and depression.

However, Automated chatbots should encourage people to seek human support, they should have systems in place to prevent over-reliance and lastly should have systems in place to deal with emergencies.

REFERENCES:

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8521996/>
- <https://dl.acm.org/doi/fullHtml/10.1145/3453175>
- https://www.researchgate.net/publication/341144569_Effectiveness_and_Safety_of_Using_Chatbots_to_Improve_Mental_Health_Systematic_Review_and_Meta-Analysis
- <https://archive.factorialdaily.com/robot-therapists-mental-health-humans/>
- <https://sprf.in/using-artificial-intelligence-in-mental-healthcare-assessing-the-pros-and-cons/>
- <https://www.cdc.gov/nchs/images/databriefs/351-400/db380-fig1.png>
- <https://media.nature.com/original/magazine-assets/d41586-021-00175-z/d41586-021-00175-z.pdf>
- <https://analyticsindiamag.com/chatbots-in-mental-health-friendly-but-not-too-friendly/>
- <https://www.apaservices.org/practice/business/technology/tech-column/mental-health-chatbots>
- <https://www.whoson.com/chatbots-ai/the-rise-of-mental-health-chatbots/>
- <https://journals.sagepub.com/doi/full/10.1177/0706743719828977>
- <https://www.sciencedirect.com/science/article/abs/pii/S1386505619307166>
- <https://www.jmir.org/2020/7/e16021/>
- <https://link.springer.com/article/10.1007/s11019-021-10049-w>