Concept Article

Chatbot in Mental Health Care

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Abstract

In India, the prevalence of mental disorders is in increasing over the year, at the same time the mental healthcare professionals shortage also in the rising trend. Smart technologies such as Artificial Intelligence (AI) play an important role in filling this Mental Health delivery gap. In this paper let us know about how the chatbot is one such technology used in mental healthcare delivery. Interestingly, chatbots are initially used mainly to deliver the mental health services such as psychotherapy, later is used in other industries also. The reviews show that Chatbots are widely used to manage anxiety, depression, stress and also to provide psychoeducation. However, it has its own limitation such as, it cannot think like a human with wisdom and empathy; and also the confidentiality of the data is very much serious concern. At the same time, these Chatbots will become an integral part of our lives in the coming years. And we need Chatbots that match our culture. In order, to benefit from this technological advancement, we should have a regulatory and assessment process in place.

Keywords: *Chatbot, mental health care, technology*

Introduction

Indians' health is changing due to epidemiological and sociodemographic shift.[1] At all rates, communicable and noncommunicable diseases (NCDs) place a huge burden on the health system.[2] In this new context, mental, neurological, and substance use disorders (MNSUDs), included under wider rubric of NCDs, are well known as major public health issues with a greater proportion of morbidity and disability.[3]

In India, individuals over 18 years of age have mental morbidity of 10.6% with a lifetime prevalence of 13.7%. Around 150 million Indians need effective intervention in mental health care.[3] One of the challenges in delivering critical mental health care to all was the limited availability of qualified mental health human resources.[4] Smart technologies such as artificial intelligence (AI) play an important role in filling this mental health delivery gap.[5] The chatbot is one such technology widely used in many industries including health care.

What is Chatbot?

"A chatbot is a computer program uses AI that simulates human conversation through voice commands or text chats or both". There are a variety of chatbot synonyms, including "talkbot," "bot," "IM bot," "interactive agent" or "artificial conversation entity", "conversational agents", "machine conversation systems", "dialogue systems", "digital assistants," and "virtual agents."[6]

History of Chatbot

Interestingly, the first-ever chatbot was developed in the field of mental health care. Joseph Weizenbaum, a Massachusetts Institute of Technology computer scientist, created "Eliza" in the year 1966, the first conversational computer program (chatbot). It was designed to use neural language processing to imitate Rogerian Psychiatrists speech patterns in psychotherapy.[7]

In the year 1972, the second chatbot, i.e., "Parry" was created at Stanford University. This chatbot was called an attitude-based version of Eliza. In contrast to Eliza, psychiatrists during a Turing test were able to distinguish just 48% of responses from a human and a parry.[8]

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In the year 1988, "Jabberwacky" was introduced as the first chatbot to simulate human voice. This chatbot was created with the aim of allowing the chatbot to pass the Turing test[9] (Turing test is a test proposed (1950) by the English mathematician Alan M. Turing to determine whether a computer can think).[10] Following Jabberwacky's footsteps, another chatbot was developed in 1992 called "Dr. Sbaitso." The chatbot had a user interface were Dr. Sbaitso simulated the responses of a psychologist. Moreover, the first chatbots for MS-DOS-based personal computers.[11]

In the year 1995, Richard Wallace creased the most famous chatbot of the 20th century- artificial linguistic internet computer entity (ALICE). This chatbot was also influenced by Eliza, but it was able to chat with people more effectively with its heuristic features. ALICE's sole purpose was to advance technology to new grounds, not to serve a customer.[12]

Later ALICE was an inspiration for various chatbots includes Apple's Siri, Google Now, Microsoft's Cortana, Facebook Messenger, Amazon's Alexa, Telegram, and many more. Even though Joseph Weizenbaum invented chatbot to deliver health care, now chatbots are being used to support and scale business teams in their relations with customers in various industries.

Application of Chatbots in Mental Health Care

Greer *et al*. identified that "Vivibot chatbots" are helpful in reducing the anxiety of the young adults treated for cancer at the USA.[13]

Jungmann *et al*. found that the "chatbot (Ada)" can be helpful in the diagnosis of Mental Disorders at Germany.[14]

Abd-Alrazaq *et al*. reviewed 1039 citations and identified that chatbots are widely used for therapy, training, screening, and focused on depression and autism.[15]

Perski *et al*. identified that the smoking cessation app users' engagement was more than doubled and also improved self-reported termination of smoking by adding a supportive chatbot to a common smoking cessation app.[16]

Park *et al*. found that the participants had a chance for self-reflection with use of chatbot (Bonobot) which facilitated the conversation for stress management.[17]

Vaidyam *et al*. did a review of chatbots in mental health care and identified that chatbots are very useful in psychoeducation and self-adherence, and the users were very much satisfied with it.[18]

Woebot is a web-based cognitive-behavioral therapeutic chatbot that found to reduce the symptoms of depression.[19] and track the mood changes.[20] It also provides programs of psychoeducation for coping with stress.[19]

Shim chatbot is used to deliver strategies in positive psychology to improve happiness and reduce negative symptoms.[21]

Wysa chatbot is a mental health assistant application which escalates the savior cases for a human assistant based on the need.[20]

Advantages

- Accessible anytime: chatbots are digital robots that never get tired and keep running. Throughout the year, they will continue to operate every day without having to take a break
- Flexible attribute: chatbots have the benefit that it can quite easily be used in any industry
- Communication with the user is easy
- Reduces human effort for reading files
- Easy for maintenance[22]
- Anonymity, privacy, and security could be maintained with a privacy-enhancing approach[20]
- Chatbots are designed to be nonjudgmental and therefore more compassionate toward patient worries. This could reassure individuals to unhesitatingly unwrap.[20]

Limitations

Powell argues that health-care services require wisdom and empathic relationship with the patient than only AI. Therefore, AI needs to be supplemented instead of replaced by health specialists and recognizing an appropriate place for AI in health care is a major challenge for the future.[23]

Many doctors in the US said that chatbots could not efficaciously take care of all the needs of patients, show human emotions, and be responsible for comprehensive diagnosis and management. Several clinicians also said that chatbots for health care might pose a risk to patients if they diagnose themselves too often and fail to understand the diagnoses correctly.[24]

The primary concern is confidentiality. Other concerns include universality of application, lack of standardization and monitoring, overdependence on the chatbots, and lack of serious mental disorders.[25]

Conclusion

These chatbots will become an integral part of our lives in the coming years. These chatbots will be able to analyze

information, make their own decisions, and provide suggestions. The notion of autodecision of chatbots can scare many people. However, we believe this will enable people to solve their issues/problems effectively and efficiently. Moreover, we need chatbots that match our culture. To benefit from this technological advancement, we should have a regulatory and assessment process in place.

The sky is the limit, what the use of these artificially intelligent chatbots will be or can be done.

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Conflicts of interest

There are no conflicts of interest.

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