

A Study on the Ethical and Social Considerations of Chatbot Based Mental Health Support for Adolescents

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Abstract

The last two decades have witnessed an increase in cases of depression and anxiety which are two most prevalent mental health disorders among the youths around the world. In spite of increased awareness, there is stigma, high cost of treatment, geographical limitation and global shortage of competent experts in mental health, which mean that many teenagers do not access medical care. Artificial intelligence (AI)-led chatbots have become the state of the art, scalable applications that are making available on-demand psychological assistance in this respect. These chatbots by AI are appealing to teenagers who are not willing to go on traditional therapy, as they offer an appealing alternative of an attractive anonymous one by imitating human-like interactions and being accessible 24/7. Above all the chatbots are good friends who keep all the secrets and Youngsters are comfortable sharing their problems with them rather than telling to any psychologists. The practicality of AI chatbots to alleviate teen symptoms of anxiety and depression is explored in this study. We evaluate both the qualitative elements of user engagement, emotional expression, and felt support as well as the quantitative reduced psychological distress using a mixed-methods approach. Over the period of a time, a group of teenagers, ages 13 to 19, interacted with an existing AI chatbot for mental health. Symptom severity has been evaluated before and after the intervention using standardized mental health. When we studied the data majority of the respondents reported feeling happier and more emotionally clear, and the results showed a statistically significant decrease in depression as well as anxiety levels. Qualitative results demonstrated that the chatbot stimulated self-reflection, generated a sense of friendship, and provided a judgment-free environment for venting. However, drawbacks were identified, including a lack of crisis management and deep personalization. Overall, findings prove that while AI-powered chatbots can be useful complementary instruments in child mental health treatment, especially in settings with scarce funds, they should be used in addition to human mental health services rather than in replacement of them.

Keywords: AI chatbot, anxiety reduction, digital intervention, Mental Health

Introduction

Adolescent mental health became a global public health priority in recent years. Challenging mental and emotional problems are becoming more prevalent in adolescents throughout this essential advancement period. Teenage anxiety and depression rates have risen significantly over the last 20 years, according to several studies (Twenge et al., 2019; Racine et al., 2021). All four conclude areas revealed notable advantages for participants who used WYSA; effects sizes for anxiety, depression, and positive affect were considerable, while the effect size for

negative affect was medium. (Eltahawy et al., 2024) This enormous rise in mental health problems is a result of a confluence of academic, digital, and socio environmental stresses. In addition to handling relationships with their peers, growth in identity, and academic expectations, adolescents now have to deal with the added stress of an always-connected digital world, which frequently leaves them more vulnerable to stress, The intent of chatbots' fictitious characters or fictional characters, in terms of embodiment and to improve the user experience, frequently involves to create an emotion of virtual friendship and to remove barriers so the user does not feel when they would be talking to a real person.(Ahmed et al., 2021).

Adolescent wellbeing is adversely altered by social media in particular. Whereas it may give people an aura of community and connection, it also exposes them to social comparison, unreachable beauty standards, and cyberbullying—all of which are caused by an increase in anxiety and depressive symptoms. An increasing amount of studies, especially among female adolescents, relates excessive technological time and social media use to poor mood, disrupted sleeping habits, and negative body image (Keles, McCrae, & Grealish, 2020).

A large number of mental health problems start in young adulthood, a time when individual are less likely to seek therapy and have access to support.Holt-Quick and collaborators (2021) Additionally, the COVID-19 pandemic was an important source of worry for young adults everywhere. Increased instances of psychological distress were caused by disruptions in schooling, loss of routine, dropped peer interaction, and stress in the family. The prevalence of clinically enhanced anxiety and depression symptoms in youngsters almost doubled during the pandemic compared to pre-pandemic levels, according to (Racine et al.,(2021)

Depression is one of the leading causes of illness and deterioration among young people worldwide, as stated by the World Health Organization (2021). Stress and depression rank highest among stated worries, with an estimated one in seven teenagers between the ages of 10 and 19 experiencing mental disorders. Relationships, general quality of life, and school functioning are all severely hindered by these emotional disorders. Additionally, there is a substantial association between untreated mental disorders through adolescence and harmful results in adulthood, such as drug dependency,

Accessibility for qualified mental health support is still seriously insufficient in spite of this increasing mental health epidemic. Many chatbots have been made possible by the creation of artificial intelligence, but three popular and frequently employed chatbots for therapeutic mental health are Woebot, Wysa, and Tess. (Devaram ,2020) In numerous regions, behavioral healthcare services are either completely absent or chronically not adequately funded, particularly in low- and middle-income nations. Several obstacles keep youngsters from getting the support that they need, especially at more advanced settings. Financial barriers, long queues, a dearth of programs tailored to adolescents, and an acute shortage of qualified mental health professionals—especially in underserved or rural areas—are some of these obstacles (Grist et al., 2017). The likelihood that adolescents will seek in-person therapy is also reduced by cultural stigma and their fear of being disregarded or experiencing their confidentiality broke.

Digital solutions for psychological health have gained a lot of attention in the hope to close this accessibility gap. Among these, chatbots controlled by AI offer a scalable and promising intervention tool. These chatbots use machine learning and natural language processing methodologies to recreate human-like behavior. Young people of all ages are being misled by an AI chatbot. Many of these ideas are being heard for the very first time by these people especially if they lack in specialization in socializing or conversing in their own educational or professional environments. In 2025, (Rackoff et al.,2025). For mental health issues including depression and anxiety, chatbots can be effective and affordably priced on-demand virtual assistants. We go within the features of chatbots that can help with depression or anxiousness. (Ahmed and others, 2023). Replika, Wysa, and Woebot are notable examples. These chatbots give users real-time emotional support, guided self-reflection, and cognitive restructuring treatments using psychological frameworks like cognitive behavior therapy (CBT), Dialectical Behavior Therapy (DBT), and mindfulness-based treatments. For example, Wysa employs research-proven methods for handling anxiety, such as journaling and grounding exercises, while Woebot performs rapid, conversational cognitive behavioral treatment activities that helps users in reshaping negative ideas. The empirical evidence for chatbot efficacy in adults and young adults is building gradually. (Fitzpatrick, Darcy, and Vierhile

,2017) performed a randomized controlled experiment on Woebot with college students and found that participants using the chatbot experienced a notable reduction in depressive symptoms compared to a control group. There is no longer way to ignore using technology in the classroom. It is assumed that the use of technology will help educators and learners alike by fostering resilience in their engagement with the classroom and, in particular, by reduction in- anxiety related to learning.(Hawanti & Zubaydulloevna, 2023) Similarly, Inkster et al. (2018) evaluated Wysa's use in a real-world setting and experimented that consistent chatbot interaction was linked with improved emotional well-being. However, little has been understood about the efficacy of chatbots designed especially for adolescents. Teenagers and adults have different cognitive and emotional characteristics, and there can be major variances in how they use technology, why they seek help, and how much trust they placed in digital tools. According to developmental psychology, minors can need different strategies than adults for establishing rapport and sustain engagement (Nouri et al., 2022). Working with populations under the age of eighteen provides unique obstacles due to issues with data protection, the ethical use of private information, and digital literacy.

In view of this, research into whether chatbots for mental health can be effective support systems for adolescents suffering from anxiety and depression is of paramount importance. Chatbots may be a useful adjunct to clinical care, especially for mild to moderate symptoms and as an entry point for traditional medication, but they cannot and should not take the role of clinical care.

In my conclusion, chatbots and other technology-based interventions present an appealing future as adolescent mental health problems grow ever complicated and clenching. However, scientific evidence is still in the early stages, especially in regard to adolescent users. By carefully considering whether AI chatbots may significantly reduce teenage anxiety and depression, this study adds to that developing body of knowledge and has the potential to revolutionize the way support is provided in a society that has become more and more digital.

Literature Review

Rapid natural, emotional, and social changes characterize adolescence, a crucial growth stage. People are especially prone to mental health problems around this time, particularly anxiety and depression. The World Health Organization (2021) figures that mental health disorders affect 14% of adolescents worldwide, with anxiety and depression being the most common. through the COVID-19 pandemic, this trend quickened; according to a global meta-analysis by Racine et al. (2021), the prevalence of feelings of depression and anxiety among adolescent almost doubled throughout the pandemic. Around the world, the COVID-19 pandemic has continued to increase the global epidemic of mental disease. There are already AI applications that can help with psychoeducation, disease course prediction, psychiatric treatment, and symptom tracking. Digital gaming, smartphone applications, and the internet constitute some of the ways AI mental health care is presented.(Pham et al., 2022). Increased indications of anxiety, depression, and decreased self-worth have been associated with internet and smartphone use, cyberbullying, and continuous digital connectivity (Keles et al., 2020). Teenagers continue to use mental health services at low rates, despite these alarming figures, demonstrating the huge gap between access and need. Adolescents' access to quick competent mental health care is limited by a number of conditions. These include financial expenses, social stigma, a lack of knowledge about mental health, a shortage of researchers with the necessary skills, and systemic disadvantages in under-resourced or rural areas (Grist et al., 2017). Because of anxiety about their privacy, fear of being judged, or mistrust of adults, adolescents frequently display reluctance to seek therapies through normal avenues. Also school-based mental health services are frequently underfunded or short of personnel, and there are enormous waitlists for therapy or counseling in many areas. The study allowed users to chat with the therapeutic chatbot and feel comfortable and healed by the process, thus achieving the aim of counseling.(Trappey et al., 2022)

Technological innovations for mental health, especially chatbots driven by AI, generated interest given the potential of providing scalable, economical mental health care. Chatbots are computer programs that mimic human speech or text exchanges. Woebot, Wysa, and Replika are examples of modern chatbots for mental health that are based on the processing of natural languages (NLP) and incorporate elements of scientific treatment frameworks,

specifically Cognitive Behavioral Therapy (CBT). After four weeks, AI demonstrated significant declines in anxiety and depression, suggesting that these conversational AI bots can be a useful and accessible mental health support for minor issues with emotions. (Zhao et.al., 2024)

Fitzpatrick et al. (2017) assessed Woebot's effect on unhappy college students with a randomized controlled trial. During two weeks of engaging with the chatbot, participants' depression scores were significantly lesser than those of the control group, according to the study. In a similar vein, (Inkster et al. (2018) witnessed strong user approval and physiological improvement over time after examining the Wysa chatbot in a realistic setting.

Nonetheless, when users started live conversations with a relatable but virtual version of their future selves utilizing an age-progressed portrait and a customized large language model (GPT 3.5), they noticed feeling fewer worried and unmotivated and much more correlated to their future selves. In 2024, Pataranutaporn et al. It is still uncertain how useful chatbots are for adolescents in particular. In order to investigate the viability and acceptability of AI chatbots for youth mental health, (Nouri et al. (2022) carried out a scoping review. The review concluded that although teenagers were generally receptive to implementing chatbots, the tone, responsiveness, and privacy guarantees of the chatbot greatly influenced their willingness to share emotional issues and their level of trust in the chatbot's trustworthiness.

Young people's interactions with a CBT-based chatbot were explored in a study by (Darcy et al. (2021), which revealed that consistent use was linked to moderate declines in stress and hazardous affect. The study did note, however, that the influence of the chatbot varied greatly according to the level of engagement from users and how severe of the initial signs. Teenagers with mild anxiety levels were more likely to gain benefits from chatbot use than those with severe symptoms, in accordance to another exploratory study by (Hossain et al. (2022). This suggests that chatbots could be used as a step-care intervention, which could be suitable for early intervention or as an addition for traditional therapy.

Cognitive behavioral therapy (CBT), a meticulous, goal-oriented form of therapy aimed at discovering and changing harmful thought patterns, is the foundation of the majority of chatbot solutions in mental health. Because CBT is modular, users can perform exercises, measure their mood, and get psychoeducation asynchronously, making it an ideal fit for chatbot delivery.

Adolescent chatbot conversation, however, provides particular difficulties. Adolescents react favorably to personalized, gamified, and interactive content that preserves their agency during their treatment process, according to developmental psychology. They are frequently not engaged in a meaningful way by static, performed talks (Yim & Schmidt, 2019). The chatbot's design, involving its language, tone, avatar, and cultural sensitivity, has an immense effect on achievements.

Furthermore, safety and privacy are important. Adolescents are the most vulnerable, thus chatbot developers need to make sure that data protection regulations (including COPPA and GDPR), explicit parental approval processes and integrated emergency escalation methods for high-risk disclosures like suicide thoughts are strictly followed. Additionally, problem related to data privacy and security are outstanding, as chatbots often collect conscious personal information. (Manole et al., 2025)

Longitudinal studies, larger and more differed size of samples, and compared-effect trials that assess chatbot interventions against alternative treatments or school-based initiatives should all be part of future research. However, research has indicated that chatbots for mental health also carry some risks, which include "misunderstanding," which could result in harmful or ineffective interventions (He et al., 2022).

Chatbots have a lot of possibility as first-line, scalable therapies for mental disorders, especially for early intervention, given how digitally literate teenagers are. Chatbots may serve as a bridge to care, lessen stigma, and offer instant support to youths who are reticent to seek in-person counseling—all without removing human therapists. The literature highlights how vital it is to customize chatbot experiences to meet teens' emotional and developmental needs. Chatbots can help school-based mental health activities, offer after-hours support, and lighten pressure on overwhelmed mental health systems if they are properly developed and proven accurate by thorough research.

Research Methodology

Research Design

In this study we have used the mixed sample both quantitative and qualitative. We have collected the data of 250+ people aging between 13-18 years. We have asked few question from them in the form of questionnaire and collected their data on the usage of AI chatbots. we have analyzed our independent and dependent variables. We have collected the data of age, number of hours one used the Chabot, name of Platform & Change is Behavior. After identifying the data we have identified our target variable which is behavioral change. Our target variable is divided in 3 categories like Improve, Neutral & worsened which we identified after applying statistical formulas.

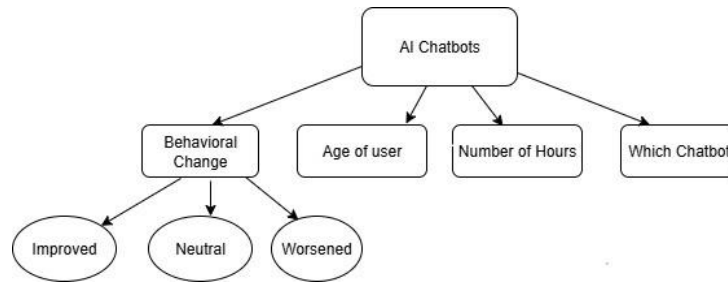


Fig 1

Data Set Description

To conduct the study, we have collected the data of 250 students and both the qualitative and quantitative analysis was conducted. Initially qualitative data was conducted after discussion and through questionnaire and after that the statistical implementation was done in which we have taken use AI chatbot an independent variable and which is dependent. After finding this we have used descriptive statistics and applied the regression correlation method to find the relation between categorical and continuous variables. We have taken variables like Age of user, Number of Hours, Which AI agent and behavioral changes further we studied that upto what extent behavioral changes are taking place are they neutral, improved or Worsened. After the implementation of regression analysis, we have find that behavior of user is improved which is directly correlated with the number of hours means more interaction more satisfaction.

Behavioral Change Avg. Hours per Day

Improved	3.86
No Change	2.47
Worsened	3.21

Fig 2

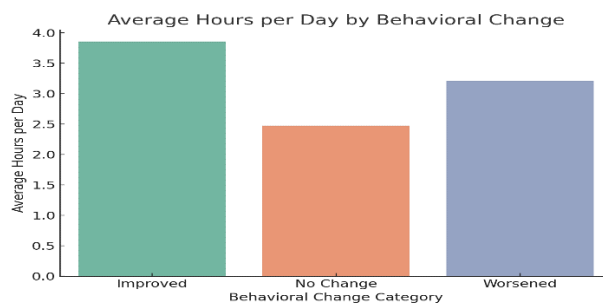


Fig 3

Correlation between the hours per day and behavioral changes

Findings & Conclusion

The results of the given research demonstrate the potential of AI-based chatbots as a convincing, accessible, and scalable intervention that would reduce the symptoms of anxiety and depression in adolescents. Notably, the chatbot had high user interaction and flexibility, particularly with teens who had mild to moderate symptoms. According to the participants, a regular communication with the chatbot helped them feel heard, supported, and more conscious about their patterns in emotions. These results support the applicability of technology in encountering adolescents where they are digitally connected, time-constrained, and unwilling to access face-to-face counseling.

Despite the numerous Chatbot of the internet which we can make use of to communicate with them free of charge. And we have read in the present day that we depend more on AI Chatbot instead of Humans since they can listen to us without casting judgment. This presents another argument that is whether this is good or not good to our generation. Having interacted with 1500 people we have realized that amount of hours people interact with the AI Chatbot has direct influence to their behaviors. Since we have found out that when average individual use chat bot less than 2.47 hours of their time, it has no effect on their behavior and when a person is using average 3.86 hours with a good behavior, then we have seen that it is making an improvement and when the person is using 3.21 hours with a bad behavior, the person is worsening it.

Nevertheless, this paper also admits that chatbots cannot substitute a professional psychologist, especially in the community of children with serious mental health problems. The fact that mental health services are increasing according to the needs of adolescents and that the traditional frameworks fail to do so accordingly presents an ideal match of chatbots to address the gap, lessen the stigma, and allow the youth to take the initial step towards emotional well-being. The next steps in the research are future studies to investigate the long-term effects, personalization method, embedding in school or primary care environments and ethical considerations to make sure that these tools are safe, inclusive, and effective to all their users. The longitudinal research could be done to test the long term implications of the chatbot. Result may alter as in short period analysis. The research we conducted in the other region and the effects of chatbots on the individuals can be done in future provided that some statistical tools are applied.

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