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Leveraging AI Chatbots for Adolescent Mental Health: Opportunities and Challenges

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ABSTRACT: There are increasing concerns about adolescents' mental health worldwide, which is characterized by a high prevalence of mental illnesses like depression and anxiety. The situation is further worsened by the present gap in adequate, affordable mental health care for this vulnerable group. In this context, artificial intelligence (AI), particularly through chatbots, presents a promising avenue to additional support. This paper summarizes the current overview of AI chatbots' role in managing youth mental health, their technology, features, and user experiences, and discusses their advantages and disadvantages. Then the article explores future developments, for example, improving crisis intervention capabilities, and discusses the need for stronger regulatory guidance. The conclusion emphasizes the need for responsible development and human oversight to fully make use of AI chatbots' potential in adolescent mental health.

KEYWORDS: Artificial Intelligence, Psychology, Chatbot, Mental Health, Adolescents/Teenagers.

Introduction

In recent years, mental health has become a significant public health problem, particularly for teenagers, who were especially affected by the COVID-19 pandemic.[1,2] The Substance Abuse and Mental Health Services Administration (SAMHSA) reported in 2021 that approximately 20.1% of 12- to 17-year-olds had experienced some depressive symptoms within the past year, [3] while the anxiety disorders affected 31.9% adolescents.[4] These data demonstrate how common the mental health conditions are among the youth and show that these conditions often first manifest in the teenage years. Given the fact that adolescence is a critical stage for an individual's development both physically and psychologically,[5] there is an urgent need to address this growing mental health crisis.

Teenagers also often face greater challenges than other age groups in accessing mental health support.[6,7] These barriers are the result of several factors, including cultural shame, treatment cost, appointment delays, privacy concerns, and limited access to mental health professionals.[8-10] The fear of privacy violations or being misunderstood is among the primary deterrents to youth who might otherwise seek help, and shortages of funding and mental health staff within schools further reduce the accessibility of care to adolescents.[7,11] Because of all of these, teenagers are hesitant to seek out mental health care.

Artificial Intelligence (AI), as a rapidly advancing technology, can potentially transform various fields. One application is in the Digital Mental Health Interventions (DHMIs), which can provide a scalable, readily accessible, and more affordable form of mental health services.[9,10,12] AI-powered chatbots are an example of a DHMI utilizing AI and are significant due to their potential to reach teenage populations. Younger generations are noted for their high engagement with digital technology and text-based communications.[7,13,14] Coupled with the anonymity that is being offered by chatbots, this digital solution removes several of the barriers faced by youth seeking help.[9,14] An initial interaction with an AI chatbot could serve as a critical first step for teenagers to acknowledge mental health challenges and eventually shift to more formal care.[10,13]

Although promising, chatbots for youth mental health present many challenges, especially to teenagers. For example, they are generally not equipped for crisis detection or intervention, and can delay escalation. They are still in their infancy, with little research focused on their performance and safety in youthful populations.[16,17] To understand the status of chatbots in managing adolescent mental health, selected databases (PubMed, EmBase and Google Scholar) were searched using a combination of keywords, including Artificial Intelligence, chatbot, conversational agents, digital health, mental health, adolescents, and teenagers in July 2025.

This article reviews how AI is being used to support youth mental health, especially for common conditions (e.g., anxiety, depression, and autism-related symptoms). Analyzing insight from psychology, computer science, and ethics, the review provides an overview of mental health chatbots for adolescents, introduces technology and features, considers chatbot pros and cons, and discusses future development opportunities as well as regulatory considerations. It lays the groundwork for future investigation and provides useful advice to youth, professionals, engineers, and policymakers interested in properly incorporating AI chatbots into mental health.

Discussion

Overview of mental health chatbots for adolescents:

Since their conception, chatbots have evolved significantly in terms of technological capabilities. ELISA was one of the most well-known and earliest AI chatbots created by Joseph Weizenbaum in 1966. It used a fairly straightforward rule-based program based on keyword matching and could ask open-ended questions and reflect user input.[18] It had the potential for

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human-computer dialogue and was a significant advancement at the time.

The advent of Natural Language Processing (NLP), Machine Learning (ML), and Large Language Models (LLMs) has since transformed chatbot capabilities. These advancements have made chatbots more capable of understanding, responding, and adapting to user input, making them useful tools in supporting mental health.[19] They became more popular in handling common youth mental health issues like stress, anxiety, depression, or autism-related symptoms.

Wysa is a good example of what contemporary chatbots can do. As a therapeutic equivalent to ChatGPT for mental health support, Wysa provides an anonymous, nonjudgmental space for youth to explore thoughts and emotions, manage stress, and develop mental resilience.[14,20] It currently has more than 6 million users and has already offered over 500 million sessions. The target age group for "Wysa for Children and Young People" is 13+.

The Wysa app uses a free-text conversational interface powered by AI (Figure 1). It deploys evidence-based approaches like cognitive behavioral therapy (CBT), dialectical behavior therapy (DBT), behavioral reinforcement, mindfulness, motivational interviewing, and positive behavior support.[14,20] The primary technology includes both rule-based and more advanced AI-based. In-app activities include journaling, psychoeducational exercises, and methods for managing stress and frustration, and improving sleep (Figure 1). Access to a human coach is a prime function, while the chatbot is free and accessible 24/7. Real-world data have demonstrated Wysa's clinical efficacy. Research showed that people who were more engaged with the software experienced considerably greater changes in depression symptoms, as measured by the Patient Health Questionnaire-9 (PHQ-9), compared to people with lower engagement.[14] Additionally, Wysa has been used in medical settings like the NHS Northeast London Foundation Trust as a complementary mental health service.[21]

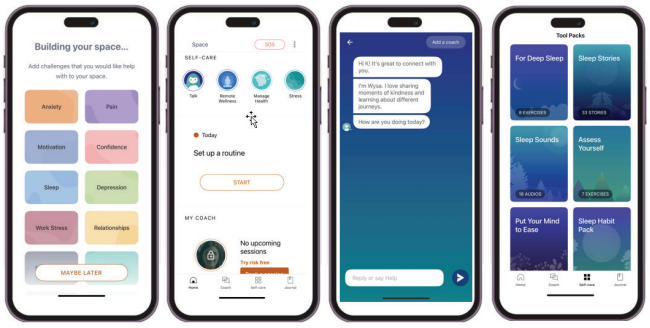

Figure 1: Demo of the Wysa app (screenshots taken by author, used with permission from Wysa). The Wysa app allows users to build their own space, focusing on the challenges they would like help with. Within this space, users can set up routines or receive support from their coaches. They can also have private conversations with the chatbot coach. Additionally, the Wysa app provides users with tool packs, which include exercises, stories, videos, and other resources.

Table 1: Overview of prominent mental health chatbots for teenagers/young adults.

Chatbot Name	Key Mental Health Focus Relevant to Teens	Notable features/ Interaction style	Target Age Group (if specified for teens/youth)	Primary Therapeutic Approach(es)	Primary AI Technology	Developer/ Origin	Platform(s)
TeenChat[13]	Stress	Stress detection, emotional support, guidance	Adolescents	Stress sensing and release, Virtual friend (listening, comforting, encouraging)	Rule-based, NLP for sentence analysis, Linguistic dependency trees	Tsinghua University, China	Browser/ Server
Tess[8,9]	Depression, Anxiety	24/7 emotional support, coping strategies, crisis referral, resilience coaching	College students, teens (via school/institutional partnerships)	Integrative (CBT, Motivational interviewing, Behavioral activation, Emotionally focused therapy, Mindfulness, Self-compassion), Personalized conversations	AI with emotion algorithms, ML, NLP	X2AI Inc./ X2 Foundation, USA	SMS, Facebook Messenger, WhatsApp
Woebot[8,24]	Depression, Anxiety, Substance	Daily check-ins, mood tracking, guided exercises, crisis resources	Young adults and college students [Adolescents (13-17 years) focus]	Primarily CBT, Psychoeducation, Cognitive distortion "word games"	Rule-based, NLP; exploring LLMs (human-written responses as of March 2024)	Woebot Health, USA	Mobile app
Wysa[6,14,20]	Depression, Anxiety, Stress, General well-being	AI coach, 150+ evidence-based exercises, 24/7 support, journaling, anonymous	Users 13+ (or 11+ with provider agreement), specific "Wysa for Children and Young People"	CBT, DBT, Motivational interviewing, Mindfulness, and Positive behavior support	Rule-based, "Emotionally Intelligent" AI, LLMs (OpenAI for Wysa+)	Touchkin, India, UK and USA	Mobile app
MYLO [22]	Problem exploration, Distress reduction, Goal conflict resolution	User-led problem exploration, focusing on goal conflicts	University students, young people (16-24 for PWA co-design)	MOLtherapy, Perceptual control theory, Problem exploration via curious questioning	Rule-based AI	University of Manchester (initial), UK Co-designed with young people	Web application, PWA
Vivibot[23]	Anxiety reduction, Resilience, Coping Skills	Daily emotion ratings, Videos by survivors, Positive psychology exercises; empathetic, warm, humorous	Young adult cancer survivors (18- 29 years)	Positive psychology skills (gratitude, mindfulness, personal strengths, etc.)	Automated, decision-tree structure (stated as non-AI content delivery) and AI (specifics not detailed)	Hopelab, USA	Mobile app Facebook Messenger
Happify/ Anna[12]	Stress reduction, General well-being	Gamified activities, AI coach Anna, teen-specific tracks	"Happify for Teens" (13-17 years)	CBT, Mindfulness, Positive psychology, "Adherence Fidelity" AI algorithm	AI-based chatbot using NLP, ML, "Adherence Fidelity" algorithm	Happify Health (now Twill), USA	Integrated into the Happify platform/app
Replika[6]	Loneliness, Emotional connection, Self-discovery (marketed for depression/ anxiety)	Avatar creation, chat, Coaching programs, Adaptable personality, Relationship statuses; known for fostering strong emotional bonds	General users ("anyone who wants a friend"), including students, lonely individuals	Companionship, Emotional support (not formal therapy)	GPT (LLM)	Luka Inc., USA	Mobile app
LISSA [75]	Autism (Social communication skills)	Simulates face-to-face conversation, Real-time/Post-session feedback on nonverbal behavior, Embodied agent, Written/spoken input, Mixed output	Individuals with autism (including teenagers)	Social skills training	Hidden Markov Model, Rule-based	Rochester Human-Computer Interaction (Univ. of Rochester), USA	Web-based platform

Abbreviations: CBT, Cognitive Behavioral Therapy; DBT, Dialectical Behavior Therapy; LISSA, Live Interactive Social Skills Assistance; LLM, Large Language Model; ML, Machine Learning; MOL, Method of Levels; MYLO, Manage Your Life Online; NLP, Natural Language Processing; PWA, Progressive Web App; SMS, Short Message Service

Wysa is only one of many new chatbots being developed to address the changing needs of younger people and children in terms of mental health. The rapid expansion of digital mental health tools reflects a growing need and awareness of their potential to improve child well-being. However, this expansion also raises important concerns regarding quality, safety, and regulatory oversight, particularly as many of these chatbots are designed for or used by minors.[6,19]

A comparative overview of the most popular mental health chatbots for adolescents and young adults is presented in Table 1 to understand the scenario better. It also includes information on their origins, therapeutic approaches, AI technologies, distribution platforms, and especially appropriate features for teenage users.

Technology, features, user experience:

Mental health AI chatbots for adolescents generally share a common set of features that support their overall objectives of facilitating self-help and creating therapy through a digital channel.

Although Table 1 identifies the AI chatbots' differences, how people use these resources in real life, especially teenagers, is similar. The majority of chatbots enhance user interaction by complementing text with other forms of media, such as videos, emojis, or voice. They have other capacities, such as providing training on coping mechanisms and healing philos-

ophies through educational sessions. Furthermore, interactive tools support patients to manage their mental health by themselves.[19]

Behind these interactions are numerous AI technologies. These comprise rule-based systems, machine learning (ML), and natural language processing (NLP). Predefined codes, decision trees, and keyword matching are the foundation of rule-based systems and are still used in various chatbots, including TeenChat, MYLO, and Vivibot.[13,22,23] These methods are less smart in conversation, despite being simpler to create. On the other hand, as seen in TeenChat, Tess, Anna, Woebot, and Wysa.[9,12-14,24] NLP can be used to assess the user's intent and context information. ML techniques are used to improve personalization further, to strengthen responses over time using previous data.[9,12]

The figure below (Figure 2) illustrates how a chatbot works in general.[78] When a chatbot receives a message, it uses NLP to understand users' intentions and the context of the conversation. Then it uses the Dialog Manager to track the conversation and to request additional information if necessary. It also searches its knowledge database and checks if there are existing appropriate answers. Finally, the chatbot responds by using either a pre-written message or an AI-generated one that sounds natural.

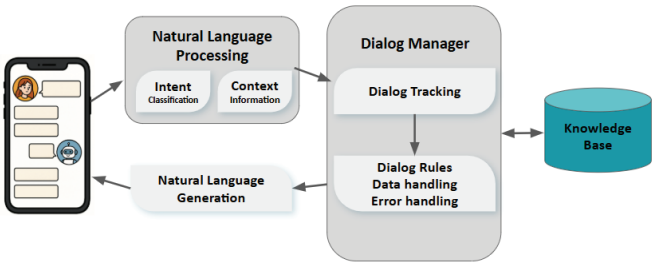

Figure 2: Chatbot's working process (adapted from Dilmegani, 2025,[78] used with permission). A chatbot first uses NLP to detect intent and context, then a dialog manager tracks the dialog flow. It also searches its knowledge base. Finally, the chatbot responds with either a prewritten or AI-generated message.

Large Language Models (LLMs), a type of NLP technology, have been used in chatbots such as Wysa to improve their language capabilities and to make more human-like user interactions.[6] Others like Woebot are working on the integration. However, there are challenges associated with using LLMs, for example, about safety, factual accuracy, and ethical considerations, particularly when minors are targeted users.[6,19] Thus, many chatbots are currently employing a hybrid approach that allows for the predictability of rule-based systems while being able to make use of the advanced understanding and conversational capacity of ML/NLP and LLMs.[6] For instance, Woebot uses human-written content for therapeutic delivery but explores LLMs for greater understanding and personalization.[6]

Not only do mental health AI chatbots use well-established psychological models at the core of their therapeutic approach, including cognitive behavioral therapy (CBT).[25] For example, Woebot uses CBT to guide users to identify and dismantle negative thought patterns.[6,24] Similarly, Wysa, Tess, and Anna also incorporate the CBT rules.[6,9,12,14,20] On the other hand, the Method of Levels (MOL) therapy is used by MYLO to direct users' attention to higher-level targets.[22] Positive Psychology, which emphasizes cultivating love and good emotions, is key to Vivibot and Anna, and is demonstrated by tasks like a gratitude journal.[23] Mindfulness has been incorporated into Wysa, Tess, and Anna to provide immediate coping strategies for anxiety and stress.[6,9,12,14,20] Furthermore, Tess and Wysa draw from multiple therapeutic methods to provide a broader range of support for their diverse user base. These psychological principles are woven into the design of the content, logic for decision-making, and tone of the responses. They guide what the chatbot says, how it guides the conversation, and which tools or exercises it offers based on user input.[6,9,14,20]

Other than technologies and therapeutic models, the next important aspect of a chatbot is how these parts are delivered to users. In other words, the technical advantages of chatbots must be translated into good and safe user experiences. The first step using an AI mental health chatbot is onboarding, which includes setting up, obtaining user and parents' consent, and giving users an introduction to features, functions, and limitations. It is important to clearly state that the chatbot is not intended to replace human therapists at the early stage, to ensure its safe use.[26,27] Chatbots often do regular check-ins, and users can also initiate a conversation whenever they need support. Sessions can be simple conversations or more organized therapy and exercises. For instance, Anna's "Adherence Fidelity" algorithm was developed based on users' feedback and can identify when a user might want to stop engaging in an activity.[12] The output of chatbots is mainly text-based but is often supplemented by emojis and GIFs, as seen in Woebot,[24] videos, as seen in Vivibot, or audio, as seen in Wysa.[14] More output types may increase engagement, specifically for teenagers accustomed to related media interactions.

To make powerful mental health chatbots for teenagers, a simple adaptation of adult versions or general chatbots is not sufficient, and other important changes must be made. These include addressing teenage stressors, such as school pressure, peer relationships, and self-identity issues.[28] Also, age-specific language and teenager-culture should be considered and may include elements like emojis or memes. For example, Happify for Teens ' content targets a fifth-grade reading level. Another consideration is the platform selection for teen users, who strongly prefer apps or progressive web applications (PWAs) that are available on their phones.[12] Engagement strategies usually involve gamification, interactive elements, and additional information that may relate to the youth experiences. The effectiveness of chatbots in treating mental illness depends not solely on AI's capabilities or the therapy's soundness, but also on how well these components are combined, delivered in a user-friendly way that engages teenagers.[19] One way to enable this is to involve teenagers in the design process directly, as seen in MYLO.[22]

Given the large number of chatbots and the diversity in features, therapeutic approaches, and technology (Table 1), it is clear that there is no single, optimal way of delivering AI mental health therapy to the teenage population. A feature critical to this vulnerable population is crisis support, where the chatbot detects severe risk and directs the user to human

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helplines.[29] Finally, AI integration greatly improves the potential to make personalized responses and recommendations.

Analysis of pros and cons:

The incorporation of AI chatbots into youth mental health has great potential, but it also creates key issues and challenges. Therefore, it is important to have a balanced view of the emerging technology.

The most significant benefits of AI chatbots are their increased accessibility and availability, unaffected by geographical locations, and the long waiting list associated with conventional mental health services.[23] For teenagers, this means that support is always accessible regardless of time of the day, the availability of human support, or limitations related to parental schedules and transportation.[6] Regular availability is a significant advantage given the unexpected nature of mental health struggles.

Furthermore, AI chatbots are potentially stigma-free. Teenagers are often reluctant to seek professional help because they are afraid of being judged by peers, families, or the community. Using AI chatbots in a nonjudgmental setting, teens can express their thoughts with more freedom.[6] This is especially important to teenagers who are experiencing challenges like identity development and are at risk of receiving first assistance. Because of their lack of judgment, studies have shown that patients are more likely to give sensitive data to AI than to human therapists.[30,31]

Cost-effectiveness is another advantage of AI chatbots. Mental health chatbots are generally available at a significantly lower cost than standard therapy.[32] For example, Tess claims to be "98% cheaper than face-to-face therapy".[33] The affordability removes the financial barrier for teens who don't have income or whose families cannot afford conventional mental health care.[34]

Another benefit of AI chatbots is their interactive nature and engagement. The texting format is familiar to teens through their use of messaging apps and thus is more attractive than static resources like a self-help book.[28] Gamification can further enhance the motivation of teens. The use of AI may assist in creating a sense of accountability and encourage continued use with features like regular check-ins and personal feedback.[28]

Clinically, AI chatbots can deliver evidence-based interventions such as CBT with fidelity,[15,35] and provide access to a basic level of support based on current therapeutic guidelines for teenagers in areas with few trained mental health professionals.[36] Also, some chatbots were created in collaboration with teenagers, making them more useful and interesting tools.[12]

Despite their potential, AI chatbots pose significant risks and challenges, especially for the adolescent population. First and foremost, chatbots can delay the escalation of severe crises. Access to more intensive treatment may be hampered if using chatbots in place of a human mental health specialist. While anonymity helps reduce stigma, it can be risky. If a teen is in serious distress without anyone being aware or able to intervene, the situation can become dangerous.[41] This threat is increased when a chatbot has insufficient crisis detection or action capabilities for high-risk scenarios, including abuse, self-harm, or suicide. In fact, most chatbots are not designed or equipped to handle serious mental health catastrophes or intervene in suicidal intent effectively.[42] AI typically responds by providing phone information for human-crisis helplines and emergency services, which requires the user to seek immediate assistance. There have been cases reported with tragic outcomes when AI chatbots were used in place of qualified therapists.[43]

Another main concern is the lack of genuine empathy and human connection. While AI can simulate human responses, it still does not provide nuance understanding, shared experience, and personal resonance that constitute the foundation of human interactions.[37,38] Teenagers are in a crucial stage of socio-emotional development. Excessively relying on AI for emotional support may impact how teens form healthy relationships with other people.[39,40] Teens are also prone to engaging in parasocial relationships with chatbots, which have been shown to hinder their development.[39,40]

Chatbots also have limited abilities in problem-solving and in understanding complicated or novel subtleties. It is challenging for the chatbots to understand teen-specific slang, communication style, and social dynamics, which may lead to advice that is not useful.[37] It is especially risky if a chatbot misinterprets or reinforces negative patterns.[77]

Major concerns include the security of data and privacy as well. Providers of mental health chatbots have the responsibility to protect sensitive client information, notably client mental health records.[40] There are strict regulations in place for the collection of such data, as described in the US Children's Online Privacy Protection Act (COPPA). However, there is a requirement for a balance between teens' need for confidentiality and parents' rights to be informed of their children's online activities. It is also important to note that although the Health Insurance Portability and Accountability Act (HIPAA) applies to hospitals, clinics, and doctors, it often does not apply to technology providers and the apps they develop, which leads to privacy protection challenges for the users.[69,79] Chatbot providers may not be liable for privacy breaches because no regulations hold them responsible.[69]

Another issue with chatbots is algorithmic bias. Information used to train AI may already have biases, such as those relating to race, gender, culture, and language, which can lead to dangerous experiences for teenagers from disadvantaged groups. For example, LLMs are often trained on data that represents English-speaking or Western populations.[69,72]

Lastly, AI might unintentionally cause inequities in mental health care. Some teenagers from underserved areas do not have appropriate personal access to smartphones or a reliable internet. They have to rely on devices from the community or schools, which create barriers to using mental health chatbots since these tools are designed to offer immediate support when a crisis happens. As a result of limited access, teenagers may be unable to seek help when they need the support most.[6] Additionally, having to use mental health resources in a shared space reduces privacy and may discourage engagement.[6] However, underserved teenagers with appropriate access to technology

may be more dependent on AI-based tools than those with greater access to conventional mental health services. This could lead to a lower standard of care for those already disadvantaged, considering AI tools are inferior to human therapists. This issue must be considered when developing and deploying these devices for adolescents.[37]

Future developments for teen mental health chatbots:

As AI advances, chatbots must expand their current capabilities, developing a safer and more personalized, engaging, ethical, and effective tool for mental health.

Future chatbots must improve skills to detect and intervene in crises as a top priority, which is critical for the vulnerable population. Alone, they should not manage severe conditions such as self-harm, suicide attempts, or abuse. Strong detection capabilities will enable them to identify crises with more accuracy. Then, the initial intervention by AI chatbots should be followed by connecting users with trusted adults, and then, if necessary, escalating to emergency services. A "panic option" and other features can make immediate support easier. When there isn't immediate assistance from a human, these systems enable fast, life-saving crisis support.[12,61] However, these approaches rely on accurate detection of crisis and may lead to consent complexity.[12,41] In addition, future safety frameworks must strengthen their filters so that disturbing, tempting, or frightening content can be removed more accurately and strictly, especially for teenagers who are more likely to be influenced by the external world.

A key innovation in mental health chatbots could be context-aware and proactive support,[59] where the technology itself starts conversations based on mental health signs rather than waiting for the teenagers to initiate them. It might initiate a conversation if the patient hasn't used the system for some time, is facing stressors from a calendar, or has a daily routine that indicates they are experiencing anxiety. As technology advances, apps may be able to identify individuals at risk and deliver help quickly, thus benefiting those afraid to seek help.[60] This development requires careful design that respects user privacy and autonomy to avoid unnecessary disruption to users' lives.

Hyper-personalization and adaptive learning can be developed in future versions of the chatbots. They can provide users with tailored advice based on a teen's mental health status, previous responses, and upcoming events like a final exam. It could be achieved by detecting keywords that imply that a student is anxious and then adjusting the response accordingly. Personalizing interactions with the teenagers could also be improved by allowing the system to tailor its responses more closely to the flow of each conversation over time, providing the teenagers with information more directly relevant to what they have said, which is important for future engagement.[28,46,47] However, such hyper-personalization would require the collection of sensitive data, which in turn raises issues regarding privacy, security, and ensuring that any data collected is accurately interpreted by clinicians.

Gamification is another appealing method for boosting engagement and motivation, which is a major challenge in digital mental health treatment.[50,51] Chatbots could use unlockable skills or unfold storylines that tie to therapeutic objectives and progress, such as "defeating social anxiety mountain." Chatbots could encourage engagement with evolving characters and unlockable talent trees or provide a story-driven journey that aligns with therapeutic objectives. These factors help lessen therapy fatigue by making therapeutic skill-building more entertaining and rewarding.[52,53] But the key challenge is to avoid trivializing mental health, overusing or making the games excessively competitive, to maintain a balance between fun and clinical value.[52,53]

Integrating wearable physical data into chatbots is another potential future feature. These data may include sleeping patterns, daily exercises, and heart rates. The information may promote personalized support, such as a relaxation session after a night of poor sleep. This connection between physical and mental health could allow for more integrated care.[54,55] Nevertheless, it would risk data rights, privacy, and security, as well as the accurate interpretation of these data.[56]

Recognizing advanced emotions and nuance is also a top focus in future chatbots. AI chatbots must get trained in adolescent language, including slang and irony, and other expressions (e.g., non-verbal cues). Inputs from multiple resources like voice, text, or facial expressions could be analyzed, and a teen's emotional status can be more accurately interpreted. This may increase pertinent responses and foster stronger connections with teens.[46,47] However, even the most sophisticated AI struggles to keep up with teens' rapidly changing culture and communication trends. However, it is important to note that collecting these data from teenagers has significant ethical challenges and computational demands.[57,58]

Creative and expressive tools would give users more ways of expressing themselves non-verbally. These may include a mood-related playlist, a guided journal, or a simple drawing tool. The tools can support self-awareness and boost creativity in teenagers; they are particularly useful for those who are less verbal. Nevertheless, it's still challenging to add these tools into chatbot flows while providing helpful, but not overly interpretive, feedback.[62]

Some chatbots give lessons that teach life skills such as stress management, interpersonal communication, conflict resolution, and digital citizenship, in addition to traditional CBT lessons.[63] These lessons train practical coping skills for teenagers and help them handle real-world challenges.[64] The key issue is that these contents need to be evidence-based, engaging, and relevant to teenagers to achieve goals.[65]

The potential of mental health chatbots amongst youth may be greatest in systems that combine human inputs with AI. AI may provide instant, accessible, and ongoing support, especially where there is a need to address the problem of teenagers who prefer not to communicate with adults. However, there must always be a quick and safe pathway for teens to access human care when they are in need.[66,67]

Regulatory considerations:

As more advanced AI tools become available, the ethical responsibilities of developers increase and require thoughtful

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regulations that can address privacy, security, safety, and legal concerns.[1,6,68]

Regulations for AI, especially in mental health, often lag behind technological advances, raising concerns about how chatbots operate with little or no supervision. Users of these AI mental health tools may not be aware that they are utilizing technology that hasn't been carefully reviewed by any trustworthy authorities, even though some tools, like Woebot, explicitly state that the FDA does not approve them.[10,24,69] To promote public education about the limitations of AI, requirements for crisis responses, and to provide clear guidelines for this rapidly expanding innovation, professional bodies like the American Psychological Association (APA) are actively engaging regulatory agencies like the Federal Trade Commission (FTC).[12,24,69] Additionally, mental health chatbots should comply with data protection laws such as HIPAA, and regulations should mandate that users be informed if an application is not FDA-approved or HIPAA-compliant. Developing regulations indeed requires diverse opinions, from developers, policymakers, mental health professionals, as well as from teens themselves.

Above all, the deployment of AI in mental health requires human involvement and support. Human oversight is critical in every stage of a chatbot, from design and development to deployment and monitoring.[8,9,12,69] Chatbots should be utilized as tools to augment human capabilities and extend the reach of mental health support, not to replace humans.[11,71] Integrated care models, where chatbots strengthen standard therapy by helping users complete homework, offering support between sessions, or performing initial screenings, hold promise for creating a more efficient future for mental health treatment. This solution offers a safety net on which chatbots can rely in challenging situations.[7,12,71] In fact, the state of Utah has proposed legislation requiring licensed mental health professionals to be involved in chatbot development,[70] which is one step towards the goal of strategic human oversight. In addition to getting feedback from mental health professionals, regulatory agencies, and the youth, chatbots must be designed to minimize possible harms, such as an unhealthy reliance on AI and privacy breaches.[12,32]

Strength and limitations:

This article presents a youth perspective on the use of AI to support adolescent mental health and is targeted at other teenagers, which is the strength of the paper. However, it is also important to discuss its limitations. First, current literature did not specify which populations (such as gender or age groups – younger or older teens, or severity of conditions) that can benefit most from the AI mental health chatbots. Although some data suggested that these tools are comparable in their efficacy across both genders, there is a clear bias in chatbots' design, mimicking female stereotypes historically. Additionally, clinical trials on the efficacy of these chatbots had mostly female participants. For instance, the trial for Tess was 70% female,[9] and the Woebot trial was 67% female.[24] Second, technical details regarding specific apps are often unavailable. For example, while "onboarding" is a critical first step, the process was only explicitly described for Wysa and Woebot,[14,24] with other apps missing detailed disclosure about this process. Furthermore, the chatbot's underlying process has not been described specifically for mental health treatment purposes. Also, the literature review in this article was conducted with a narrative, rather than a systematic review approach. However, the paper shares critical insights with peer adolescents, mental health professionals, AI chatbot developers, and regulators about using AI tools in treating mental health conditions in youth.

■ Conclusion

AI-powered chatbots present a new approach to addressing barriers to adolescent mental health services. These technologies have the potential to reduce the stigma associated with limited accessibility of traditional mental health care to the highly vulnerable group and to deliver low-cost and evidence-based therapies to youth in need. This is particularly important in an era when adolescent mental health needs are increasing rapidly. There is a wide range of chatbots, each using distinct features, technology, and approaches, illustrating the diversity of efforts to apply AI to mental health.

The journey to the incorporation of AI chatbots into adolescent mental health still has significant challenges ahead. These chatbots, although advanced, are still not capable of truly replicating the empathy of humans or comprehending the subtleties of human communication, expression, and the social and cultural context that affect adolescents.[6-8,12] Critical issues such as data protection, users' consent, risk of teenagers becoming over-reliant, plus a need for safety protocols, are amplified when AI is targeted at the adolescent group.[10,69,72] Furthermore, the anonymity that makes chatbots so appealing to teenagers could be detrimental in a crisis when human intervention is required.

To progress forward, we need stricter regulations and inputs from a variety of sources, including mental health professionals, educators, governments, regulatory entities like the APA, and youth themselves.[1,12,69,73] Heavy emphasis should be placed on the protection of the privacy and data of minors, and on the level of human intervention required. Additional research should explore methods for improving symptom reduction, user engagement, the therapeutic relationship formed between a chatbot and teen users, and the long-term effects of chatbots on teenagers and their behaviors and development.[7,72-74]

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