

Leveraging AI and Digital Tools for Mental Health Support

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Abstract

AI tools significantly contribute to revolutionary approach on mental health support through chat bots to offer instant support and response for the victim. They track mood, offers telepathy etc., certain platforms connect user with licenced therapist through video calls and text for better help and talk space. Virtual reality therapy helps with conditions like, anxiety, phobias by creating scenarios that help individual work through their mental health challenges in daily life. This study aims to review most of such existing apps and AI models that provides mental health assessment and support to public through open access. The results shall include both benefits and suggestions for improvement of models to increase positive affectivity in mental health support by critical evaluation of existing features within various apps (John Torous et al., 2020; Alison Darcy et al., 2016; Daniel Freeman et al., 2017).

Keywords: *Artificial Intelligence (AI); Mental Health Support; Digital Therapeutics; mHealth (Mobile Health).*

1. Introduction

AI and digital tools are revolutionizing mental health support in the modern era by various types of technology versions, venues for increased accessibility to power chatbots and virtual therapists providing 24/7 support thereby overcoming geographical limitations and reducing stigma associated with seeking help for mental support in modern era (John Torous et al., 2020; World Health Organization, 2019). AI and digital tools offer personalised advice and detailed information and treatment plans to individual needs. Early detection of mental health issues by AI and digital tools, helps identify the patterns of personal behaviour and predicts potential mental health issues enabling early interventions on individuals' life. AI and digital tools can also enhance the treatment plan according to the individual convenience, if in a remote area, generating personalised exercises for patient suffering from mental health issues. Mental health apps can detect symptoms and progress, offering mindfulness techniques and cognitive behaviour therapy modules (John Torous et al., 2020; Andrew T. Campbell et al., 2017; David C. Mohr et al., 2017). AI can analyse large amounts of data quickly and it can help in diagnosing mental health issues Fastly using machine learning algorithms to detect patterns in someone behaviour or speech that might indicates depression or anxiety in the individual in modern era by apps that track users' inputs or even analysis can understand the patterns of individual behaviour. The accessibility is a big point as they are available 24/7 so people in different time zones, those who cannot afford traditional therapy might also be benefitted, also language barriers could be address with real time translation features in AI apps (Andrew T. Campbell et al., 2017; Munmun De Choudhury et al., 2013; John Torous et al., 2020).

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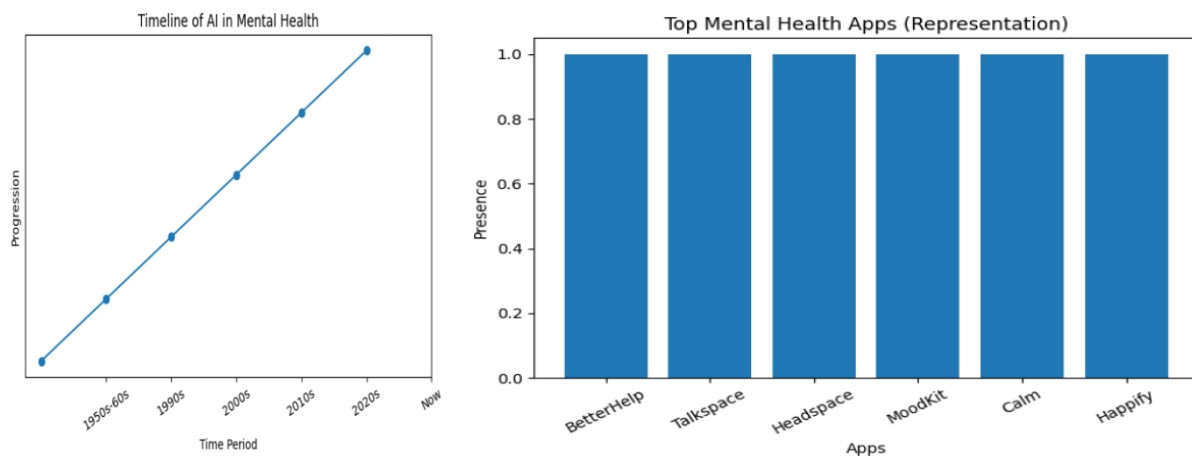
2. Challenges and concerns

Ethical and privacy concerns: sensitive data required robust security measures transparent consent processes are critical in ai and digital tools (World Health Organization, 2021; European Commission, 2019).

Data and cultural sensitivity: It has diverse training data sets and culturally adapted algorithms are needed to avoid inequitable outcomes in digital world (UNESCO, 2021; Joy Buolamwini & Timnit Gebru, 2018).

Human AI balance: AI should not replace human therapists to preserve empathy and balanced care for mental health issues in the digital world (World Health Organization, 2021; John Torous & J. P. Onnela, 2020).

Cost and availability: While lower Cost long term Initial development experience and digital advice must be addressed in the modern era (World Health Organization, 2019; OECD, 2020).



3. Hypothesis

- H0: AI tools and digital practices lead to development of mental health condition and systematic changes in individual
- H1: AI and digital tools can reduce the mental health issues in individuals in the modern era.
- H2: AI digital tool can help individuals to manage mental health issues and lead a normal life in society in the modern era.
- H3: AI and digital tools can change mental issues in transparently.

4. Objectives of AI usage in Mental Health support

Early deduction and diagnosis: Using predictive analytics to identify mental health risk before the facing AI analysis of behaviour data like sleep patterns, voice, texting, and social media activities can predict the early detection of mental and health issues. Device tracking psychological matrix to predict episodes enabling proactive care in individuals (Andrew T. Campbell et al., 2017; John Torous et al., 2020).

24/7 availability and immediate support: Accessibility to mental health resources ensure 24/7 availability of support especially for and dissolved population in society (World Health Organization, 2019; John Torous et al., 2018).

Personalised interventions: Support based individual needs preferences and cultural context machine learning algorithms that adapt therapeutic content (CBT exercise is mindful ness routines) (David C. Mohr et al., 2017; John Torous et al., 2019).

Reducing stigma in individual: Create safe anonymous space for users to see support without fear of judgement in the modern world. (John Torous et al., 2020; Alison Darcy et al., 2016).

Reducing underserved populations: Safeguards user's privacy minimizer bias and maintain transparency in modern world. (World Health Organization, 2021; UNESCO, 2021).

Ensure ethical and responsible use: Address disparities in mental health access across demographics and regions. Localised AI models trend on diverse datasets and partnerships with NGOs governments to deploy tools in low resource settings. (World Health Organization, 2021; UNESCO, 2021; World Bank, 2021).

Promote scalability and cost effectiveness: Make mental health care affordable and scalable global low cost. AI and digital tools for basic support opensource platform for resource limited regions. (World Health Organization, 2019; OECD, 2020).

Foster innovation and integration: Integrated AI with emerging technology to expand treatment options blockchain for ensure decentralised health records. (World Health Organization, 2021; National Institute of Mental Health, 2023).

Monitor outcomes and continuously improve: Use data drives instance to find interventions and measure impact feedbacks loops where AI learns from uses outcome population level analysis to identify trends and gaps. (David C. Mohr et al., 2017; John Torous et al., 2020).

5. Literature review

Artificial Intelligence (Ai) In Mental Health Diagnosis and Treatment This article explores the increased preventions of mental health disorders and the role of artificial intelligence in diagnosis and treatment. Highlights how AI NS diagnosis process continuous monitoring and personalised mental care experiences in modern world like PTSD, ADHD, and autism spectrum disorder additionally many more it discusses AI role in continuous monitoring and prediction of mental health issues in individuals globally Talati, D. (2022).

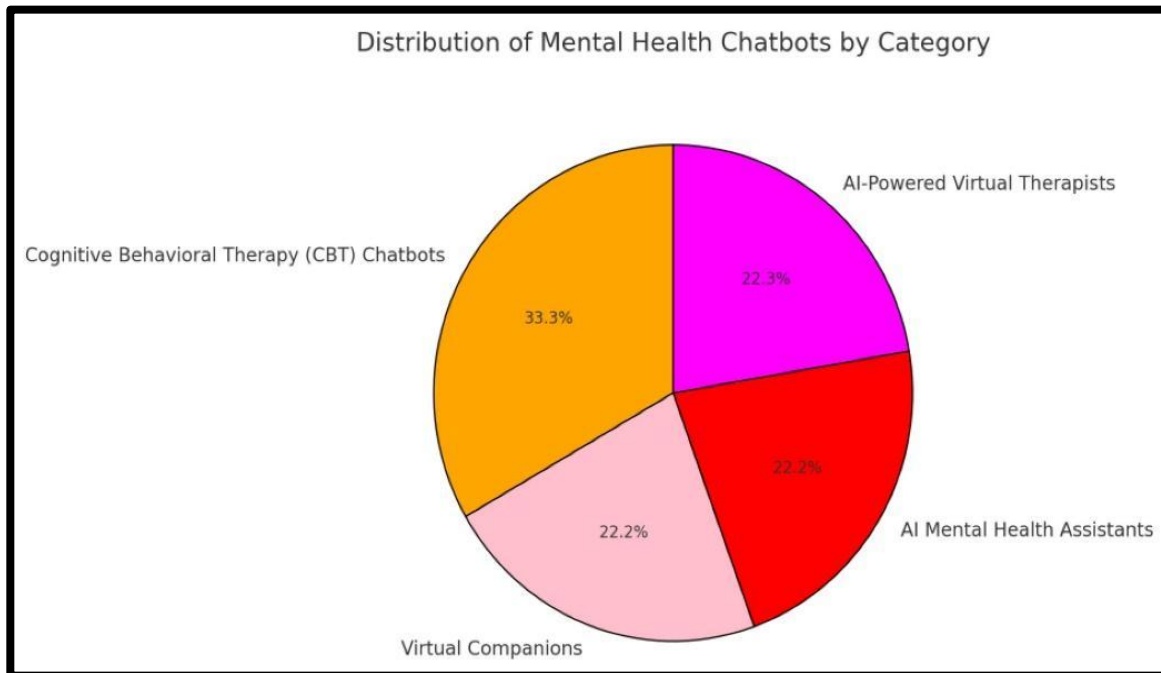
AI-Based and Digital Mental Health Apps: Balancing Need and Risk. Mental health and well-being are increased impact on important topics in discussion on public health These articles explore the pangamic covid -19 the revealed critical gaps in existing mental health services as factor such as jobless and financial issues lead to physical health illness and death and psychological problems in individuals while these dedicated applications where widely for platforms that connect to users with healthcare professionals to diagnostic tools to self-assessment especially in pangamic time (Hamdoun et al., 2023).

A review paper describes the role of artificial intelligence (AI) in mental health and mental disorders research and practice. AI-based tools assist in early detection, diagnosis and treatment of mental disorders through the analysis of large amounts of data on human behaviour and clinical outcomes. Such technologies provide real-time monitoring, prediction and individualised treatment, enhancing patient outcomes. Further, it highlights the use of digital tools, such as mobile apps and wearables, in mental health treatment (Graham et al., 2019).

6. Research methodology

In this study graphs and chart show start a power tools and digital tools are using for mental health support in percentage wise and distribution of mental health chatbot's by category

- Findings



The pie chart below shows the distribution of mental health chatbots by category as cognitive behaviour therapy chatbots being highest percentage which is 33.33 followed by AI powered virtual therapists with 22.3 percent. Virtual companions and AI mental health assistants has an equal share of 22.2 percent of prevalence necessities for mental health support in modern world.

The bar graph below depicts various mental health severity categories and the following can be inferred from it

- Depression is one among the severe mental health conditions with high recognition and comparatively has good empathy leading from no mental health source and equally helpful as. It has very low proportion of unhelpful risky behaviours.
- Suicide has less recognition and Empathy than Depression but has a mental health source with less proportion along with greater proportions of unhelpful and risky behaviour in comparison to helpful solutions.
- Self-injury has almost same proportion of recognition and empathy as that of depression but with a bit of risky behaviour than it.
- Harmig others on the other hand is very Less Recognizable and receives little empathy with no mental health source though it has equal proportions of helpful, unhelpful and risky behaviours involved in it.
- Moving on to Being abused also has been less recognised and empathised with very high unhelpful and not risky behaviour, while unhelpful and risky behaviour has equal proportion to helpful behaviours.
- Finally rape victims' mental health also receives less recognition and Empathy with least helpful sources and High tendency of risky behaviours than that of others mental health categories after suicides.

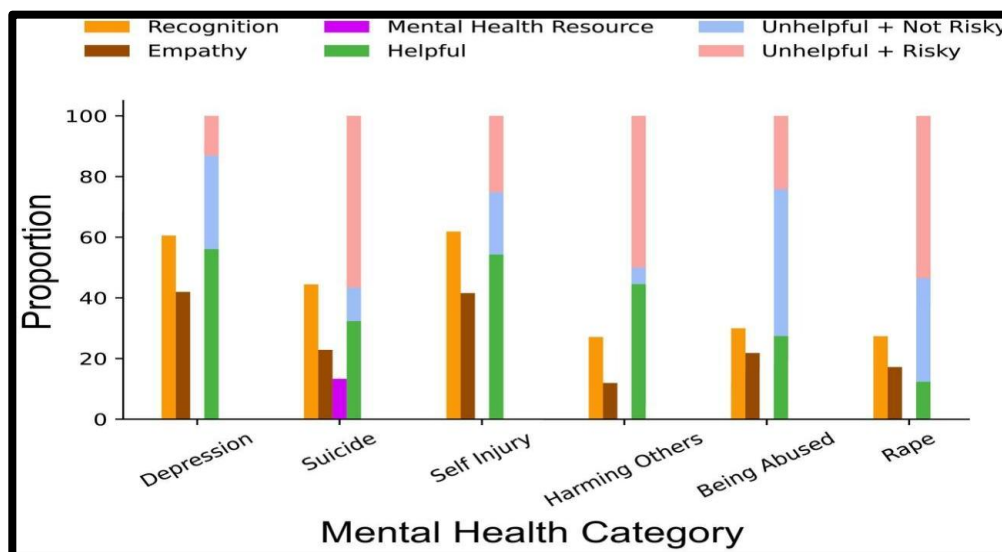
The data displayed below is from one of the leading mental health supporting application in google play store called WYSA. The Data shows the present users are mostly from US, UK and India and 70 percent of users are women with 4 out of 6 are between age group of 13 to 15 years followed by 2 in 3 from 26 to 35 years. The statistics also reveal that around 40 Lakh conversations with 21 average sessions per day and about 9 mins being spent per day and people discuss mostly about depression, Stress, loneliness, anxiety, relationships and anger. Artificial Intelligence (AI) is increasingly pivotal across industries, with mental health emerging as a significant area for AI innovation. Current applications (2023) include personalized voice assistants, generative text/image tools, and web scraping, primarily aiding diagnosis, therapy, monitoring, and personalized care. However, as illustrated in a ChatGPT (2024) figure, the market capitalization for these AI-driven mental health practices remains modest (blue bars). By 2030 (orange bars), projections indicate substantial growth, with market capitalization expected to surge to nearly 50%, driven by advancements in teletherapy, predictive AI, and AI-human collaboration. These future developments highlight AI's potential to transform mental health into a standalone domain, offering scalable, data-driven solutions. The anticipated growth underscores the sector's shift from niche tools to integral, collaborative systems, emphasizing accessibility and precision in mental health care.

7. Conclusion

Null hypothesis of the study is rejected as there is little to no evidence of digital practices leads to development of mental health condition and systematic changes in individual is found in this context and all the alternate hypothesis proposing that AI and digital tools can reduce the mental health issues in individuals in the modern era, AI digital tool can help individuals to manage mental health issues and lead a normal life in society in the modern era with Transparency are accepted with given research Findings.

The findings suggest that the growing availability of artificial intelligence (AI) and digital technologies in mental health care could increase access, reach and personalisation. These digital technologies such as chatbots, apps and virtual reality programs provide 24-hour support, and monitor behaviours for early signs of mental health problems. They can be particularly beneficial for people in rural and remote regions, and can help to destigmatise mental health.

Future research should focus on the creation of large-scale randomised controlled trials, the development of culturally safe artificial intelligence-based tools and long-term outcomes. Finally, the creation of ethical guidelines and implementation strategies for the integration of AI and human care will be important to improve the safety, efficacy and equity of mental health services.



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