

Conference Proceedings

International Conference on

Navigating Complexity: Harnessing Technology and Innovation for Sustainable Growth

Edited by

Dr. Urvashi Bhamboo

Dr. Monika Khatri

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**Faculty of Management and Commerce
Poornima University, Jaipur**





**5th International Conference
on**

**NAVIGATING COMPLEXITY : HARNESSING
TECHNOLOGY AND INNOVATION FOR
SUSTAINABLE GROWTH**

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Chapter - 12

Bridging The Gap: Enhancing Traditional Mental Healthcare with AI Technology

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ABSTRACT

Mental health has been a key component of human well-being. After the COVID-19 pandemic, it has become a common global disease burden. Almost 14% of the population is facing mental health issues. Traditional treatment for mental health has been a stigma for most individuals. Most of the individuals haven't taken treatment for those stigmas. Artificial intelligence (AI) could be used in mental health to close this gap. People could readily accept treatment. The narrative evaluation provides the sort of brain processor and its function in facing the problems of mental health. The differences between AI testing and regular mental treatment, the possibilities to resolve the conflict, and to create a well-planned mental health model.

Keywords- Mental health, Artificial intelligence, type of AI processor (machine learning, deep learning, computer vision, NLP, generative AI), AI tools, Traditional treatment, AI integrated treatment model.

INTRODUCTION

In 1948, J.C. Flugel, the chairman of the International Congress of Mental Health, suggested that mental health is “a condition which permits the optimal development, physical, intellectual, and emotional, of the individual, so far as this had been compatible with that of other individuals.”(Galderisi, 2024) This had been how mental health was conceived. The World Health Organization (WHO), had been defined that ‘mental health’ is a condition of mental wellbeing that helps people to lead a happy and fruitful life at work, in families, and in the community. It had an integral part in health and the pursuit of prosperity to empower us to make decisions, forge relationships, and had influence in the world we occupy individually and symbiotically.(WHO MENTAL HEALTH, 2022) Both individually as well as collectively, mental health has been essential. It improves relationships, increases productivity, helps people manage stress, and enables us to make contributions to society. In addition to causing unhappiness, low productivity, and a host of physical health issues, poor mental health has an impact on our thoughts, feelings, and behaviors in day-to-day living. A healthy and meaningful existence depends on maintaining mental health. In the past ten years, mental health disorders have increased by 13%, making them a major source of morbidity and mortality globally.(Alangari et al., 2024a)

Mental disorders, which make up over one-third of all mental illnesses worldwide, are a severe public health issue that impacts low, middle, and high-income nations worldwide. Almost 322 million people have been identified and diagnosed for mental illnesses globally.(Bezerra et al., 2021) In addition to non-psychotic symptoms, including irritability, sleeplessness, exhaustion, and recall issues, the primary symptoms of psychological distress associated with Common Mental Disorders or CMD like- anxiety, sadness, and suicidal thoughts. Nevertheless, CMDs don’t always fit the official requirements of the Diagnosis and Statistical Manual of Mental Disorders (DSM-V) or the International Classification of Diseases (ICD-10). (Alangari et al., 2024b) Goldberg and Huxley had described CMDs as a collection of distressing experiences that may or may not coexist and are associated with anxiety, depression, and unexplained physical symptoms. Non-psychotic symptoms,

including sleeplessness, trouble focusing, memory loss, exhaustion, agitation, feelings of inadequacy, and somatic obsession, fall under this category. When these symptoms had struck young adults, they may have indicated socioeconomic vulnerability, impaired their ability to be productive, raised health care utilisation, and enhanced the demand for informal care, social assistance, and justice.(Quadros et al., 2020)

Numerous problems had been defined the state of the world's global mental health, including lack of funding, working in silos, a dearth of mental health caregivers, as well as inadequate accessibility to medical support for mental wellbeing. The use of artificial intelligence (AI) in healthcare could be benefited in improving patient care, mainly in mental health care, shortening medical diagnosis, and easing the numbers of medical workers.(Alhuwaydi, 2024a) The combination of AI and mental health has a tumultuous changes in the healthcare space. However, AI have the capabilities for quickly taking in substantial data sets and recognized even the most complex patterns and relationships. If AI had been used within mental health services, it truly presented a chance to change the way the field of mental health care operates and what it can do to combat this global pandemic. With all these things, the role of mental health AI would change our understanding of it drastically; it would allow for the early detection, the development of individualized treatment plans, and offering support through state-of-the-art platform which would eliminate stigma and increased the accessibility of care.(Olawade et al., 2024)

RESEARCH OBJECTIVES

AI holds enormous promise in the domains of compliance evaluation, tailored treatment regimens, and mental health prediction. The objectives of the study are the following:

- To investigate the current trends in mental health.
- To find AI driven applications to reduce mental health burdens.
- Describe the Gap between traditional treatment & AI integration in mental healthcare.

- Bridging the gap by proposing a framework for effectively supporting mental health.

LITERATURE REVIEW

- AI- “Artificial intelligence”
- MH – “Mental Health”
- MHN – “Mental Health Nurses”
- MHP- “Mental Health Professional”
- CM- “Community Members”

No Of Paper	Authors	Type Of Study	Findings	Limitation	Year Of Publication
1	(Olawade et al., 2024)	Review	The development of technology like AI for mental wellbeing represents the development of various solutions for enhancing mental health treatment with personalized mediation.	Need data on mental health burden and lack of pictorial representation	2024
2	(Thakkar et al., 2024)	Review	Different AI technologies & their work pattern, AI support for positive healthcare interventions with various disorders like autism spectrum disorder, Schizophrenia, etc.	Need long-term research, lack of data sharing.	2024
3	(Graham et al., 2019)	Review	Use of EHR, finding predictors for mental health concerns, increasing the number of research publications regarding AI in mental health problems.	Lack of large, high-quality data, lack of clinical validations, and a very diverse data set.	2019
4	(Milasan & Scott-Purdy, 2025)	Review	Trends of research during & after the COVID-19 pandemic, geographically, rate of research among developed countries, acceptance of AI in MH among MHN.	Need primary data on the acceptance of the use of AI within mental health nurses or professionals.	2025
5	(Cross et al., 2024)	Survey	MHPs use technology like AI for administrative, training & task purposes; CMs use AI in their daily life as well as to support their mental health.	Need a large amount of data; need a diverse professional.	2024
6	(M. Zhang et al., 2023)	qualitative descriptive study	Promote integration practice & self-efficacy with AI into patient care; promote adoption of AI in MH; ensure the knowledge, skills & education to harness AI in enhancing patient care.	Small sample size, limited geographical area, study impacted by COVID-19.	2023

TABLE 1. Panoramic View Of Literature Review

- Bridging the gap by proposing a framework for effectively supporting mental health.

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METHODOLOGY

This has been a qualitative and descriptive study and has presented a narrated evaluation approach to applying artificial intelligence (AI) in mental health care. This research has been based on secondary data sources from literature, scientific books, and reports. The objective of the research has been to find the use of AI to cure mental health, current trends of mental well-being conditions, and the gaps in traditional care with technology and AI-integrated care. Different journals related to AI in healthcare have been explained in a tabular form by discussing their key finding and limitations. All the health-related data have been collected from WHO reports and presented in the form of graphs. Graphs like pie charts, bar graphs, clustered columns, and combination graphs. Different types of AI processors have been discussed in a tabular form and with some examples of AI tool applications. Almost 15 research papers and 15 websites have been chosen to find the gap between traditional treatment and the AI-integrated treatment model, along with the health data and AI-driven applications. Data sources – These data have been collected from reputed online databases, including PubMed, ScienceDirect, the WHO website, SciELO, BJR, WILEY, Statista, reports, and book reviews on mental health; also from the Google website of AI tools applications. Graphic models are used to draw a pictorial form to differentiate the traditional gap from integrated technology.

ANALYSIS AND FINDINGS

One in seven (14%) have suffered from the global health burden of disease from mental, neurological disorders, and disorders for using various drugs, which represented some of the most common of all. Many low-income countries have situations where more than two-thirds of those affected (75%) do not have appropriate treatment. (*Mental Health Gap Action Programme (mhGAP)*, 2023) As per WHO data, the total burden for mental health is 44%, where 15% are adolescents, 15% are the working age group, and 14% are the older population (Fig.1). Mental health issues have been globally prevalent. As reported by the World Health Organisation, the number of individuals suffering from anxiety, depression, bipolar disease, schizophrenia, eating disorders, and

antisocial disorder is nearly 301 million, 280 million, 40 million, 24 million, 14 million, and more than 40 million, respectively (Fig. 2).

Out of the 10 to 19-year-olds in the world, 15 percent have a mental illness, and 1 in 7 suffer from one. These have been the main issues (anxiety, depression, behavioural disorders), and the third most common cause of death among people 15-29 years of age: suicide. If we discount adolescents' mental health, we need not bother caring, as well as leaving them with not-so-good implications later in life.(Mental Health of Adolescents, 2024) WHO data have been summarized to show the prevalence of various mental disorders among adolescents(Fig.3).

By 2030, at least more than one-sixth of the world's population would be at least 60 years of age or older. Loneliness and being alone have a very noteworthy for bearing on both physical as well as mental health problems in later life and will most probably strike this aging population. One in six adults may be affected by maltreatment by a caregiver. Fourteen percent of persons over age 60 will suffer from psychopathy, accounting for 10.6% of all disability-adjusted life years. Additionally, people 60 years of age or older account for 27.2% of suicide deaths.(Mental Health of Older Adults, 2023)

The WHO had been reviewing states that the estimated point prevalence of mental illnesses among populations impacted by conflict is 4% for moderate forms of anxiety, depression, and PTSD and 13% for mild forms of these disorders at any given time. For life-threatening conditions, such as schizophrenia, bipolar disorder, severe depression, intense anxiety, and severe post-traumatic stress disorder, the estimated point prevalence is 5%. One in eleven (9%) people who live in an environment that has experienced conflict in the past ten years are predicted to suffer from a moderate or severe mental illness.(Mental Health in Emergencies, 2022) Trends in mental health had been higher from 2013 to 2021 for females and decreased slightly from 2013 to 2021 for males (Fig. 4).

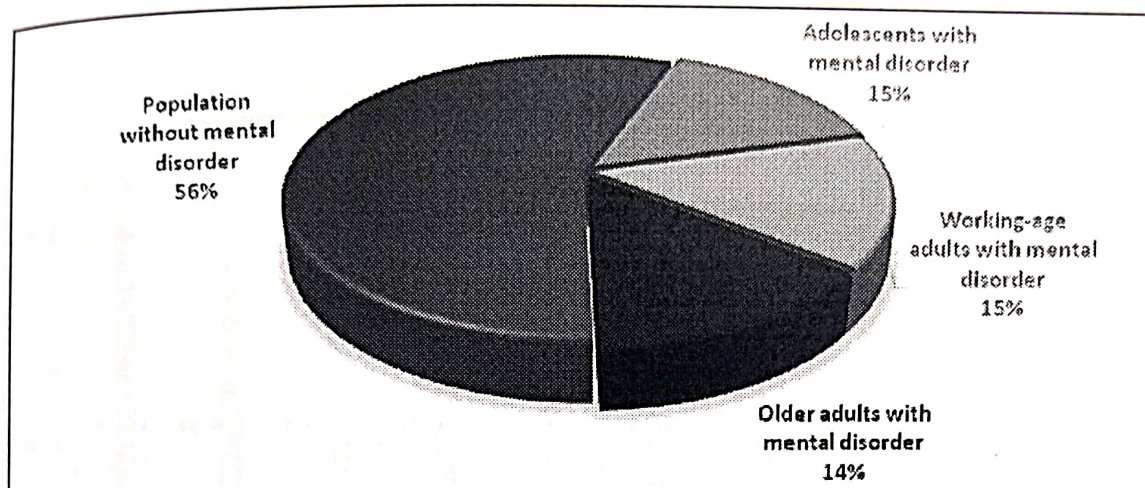


FIGURE 1. Age Dependency In Mental Health

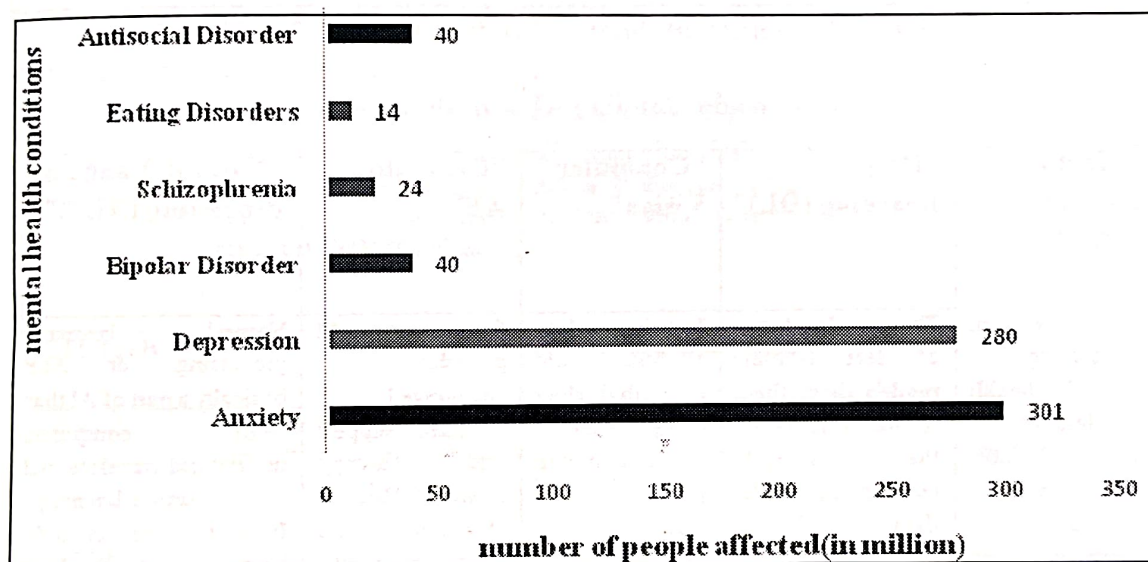


FIGURE 2. Global Prevalence Of Mental Health(In Millions)

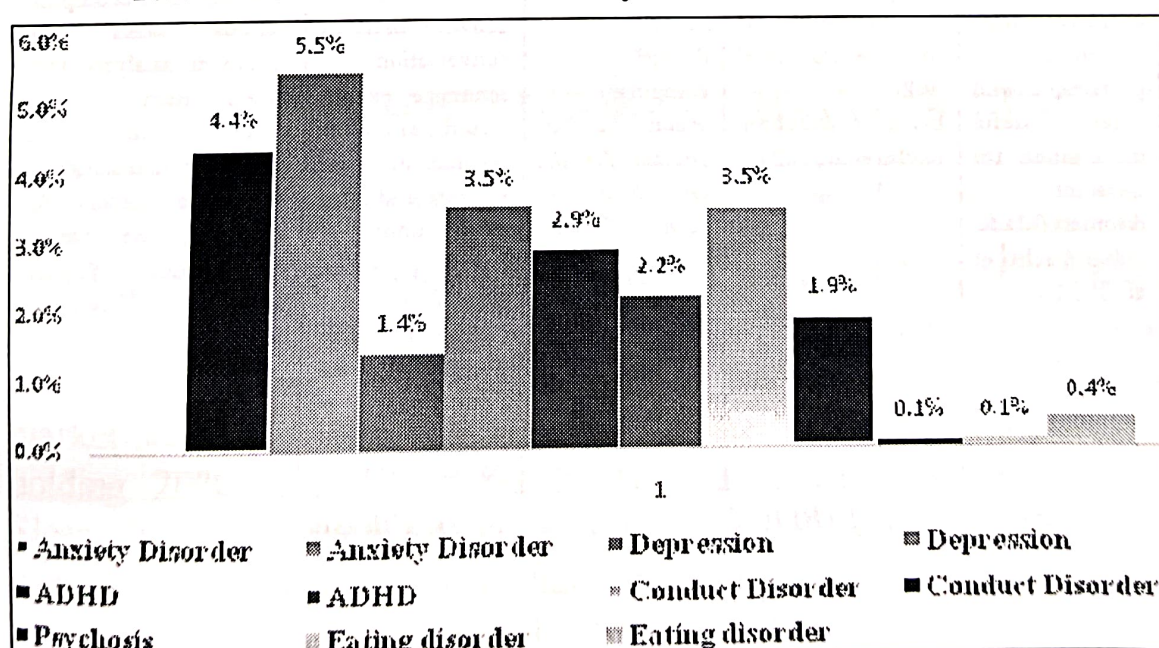


FIGURE 3. Mental Health Distribution

■ Year ■ Total Number — Female — Male

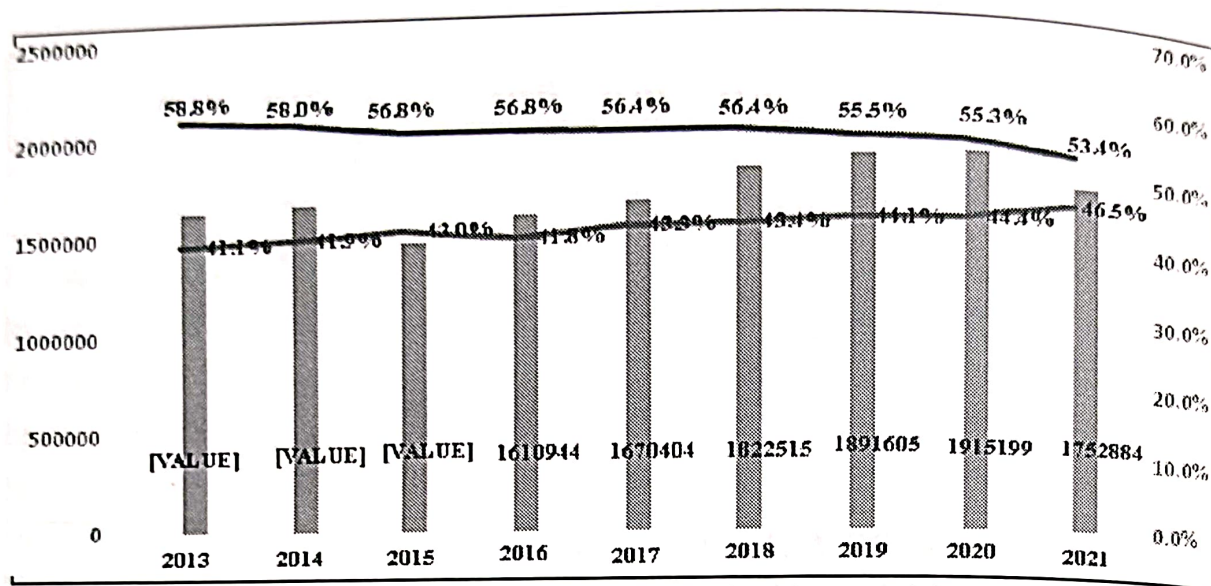


FIGURE 4. Trends in Mental Health Among Adolescents

“Understanding AI in healthcare”

“Machine Learning (ML)”	“Deep Learning (DL)”	“Computer Vision”	“Generative AI”	“Natural Language Processing (NLP)”
Its use in diagnosing mental health conditions shows how algorithmic machine learning can analyze extensive data, recognize patterns, and offer useful information for different disorders.(Madububambachu et al., 2024)	The complex design of deep learning models allows them to better represent the intricate connections in the data, providing a more thorough comprehension of the diverse aspects of psychological well-being.(Madububambachu et al., 2024)	Imaging data analysis and nonverbal clues interpretation based on human postures, eye stares, gestures, and facial expressions are analyzed through computer vision.(The Key Drivers for the Growth of AI in Mental Health, 2024)	Generative AI provides customized, constant support and therapy sessions through chatbots and virtual assistants. These tools can affiance users in conversation, scrutinize patient records, and offer tailored strategies for care and other interventions based on individual needs.(The Key Drivers for the Growth of AI in Mental Health, 2024)	Natural language processing, or NLP basically a part of AI that helps computers understand, translate, and induce human language. It studies the scientific language of machine learning to accomplish various tasks like sentiment analysis, text categorization, translation, and it has been used increasingly in healthcare sectors for analyzing the clinical determinants factors, including detecting mental health conditions.(T. Zhang et al., 2022)

TABLE 2: Types Of AI in Healthcare

AI Tools	Smart Mental Health Tools
1. Cerebral	Cerebral is a telehealth platform that helps to customize messages to patients to reduce anxiety and increase engagement in care by using generative AI. It also provides online therapy, meditation, and counselling sessions by specialists and also proposes insurance for mental care.(<i>CEREBRAL Website</i> , 2023)
2. Kintsugi	It is an AI-based platform that analyzes users' voice samples, detecting the early symptoms of mental health hindrances like depression and anxiety through voice biomarkers. It also helps doctors to detect depression and anxiety in patients by analyzing their expression, tone, and speech.(<i>KINTSUGIHEALTH</i> , 2019)
3. Smartwatch	Smartwatches can detect mental health indicators by analyzing a person's activity level, sleep, and heart rate.(<i>Peake et al.</i> , 2018)
AI Tools	Chatbot-based Therapy
1. BetterHelp	Better Help provides direct online counselling along with therapy services via the web or phone, text by licensed therapists.(<i>BETTERHELP</i> , 2013)
2. Talk space	It's an online therapy platform that analyzes a person's problems by matching some questions and answers, and then provides the therapist with the patient's state.(<i>TALKSPACE</i> , 2013)
3. Woebothealth	Woebot Health is a mental health chatbot that helps manage mental health conditions and emotional agonies by using Artificial Intelligence (AI). It's designed to be a conversational companion that can help users learn about themselves and cope with mental health conditions.(<i>WOEBOTHEALTH</i> , 2017)
AI Tools	Emotional Health Apps
1. Happify	The Happify app proposes various activities, meditations, games, and other techniques to help users reduce stress and anxiety. It uses science-based techniques from positive psychology, mindfulness, and cognitive behavioural therapy.(<i>HAPPIFY</i> , 2022)
2. MoodFit	Moodfit monitors and assesses users' emotions and moods through AI. It helps in determining trends of feelings and gives useful advice on how to control your emotions. (<i>MOODFIT</i> , 2023)
3. Headspace	It offers a personalized guide for meditation and mindful exercise by using AI. (<i>HEADSPACE</i> , 2019)

TABLE 3: Examples Of Some AI Tools Used To Cure

The survey by the United States from 2017 to 2021 has reflected the rising popularity and rivalry among various mental wellness apps over 5 years. The chart highlights that Calm has the highest market share over the year, next Headspace in the second position, holding 20% in 2017 to nearly 18% in 2021. Other apps like Sleep Booster, Sleep Cycle, Relax Melodies, and Breathe have comparatively lower market share, there has been a slight rise in the use of the app from 2017 to 2021. Categories like 'other' have various apps that have a smaller market share. Overall, this

data reflects that there is a demand for mental wellness applications, and people are seeking a cure from those platforms.(US MENTAL WELLNESS APP DOWNLOADS, 2021) (Fig.5)

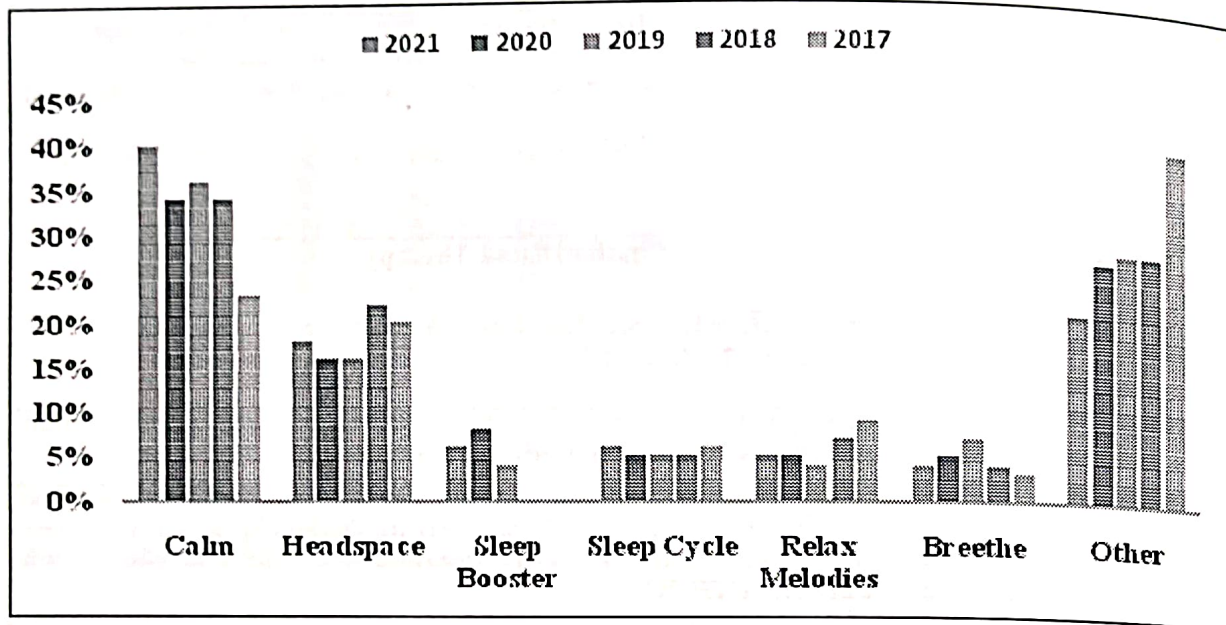
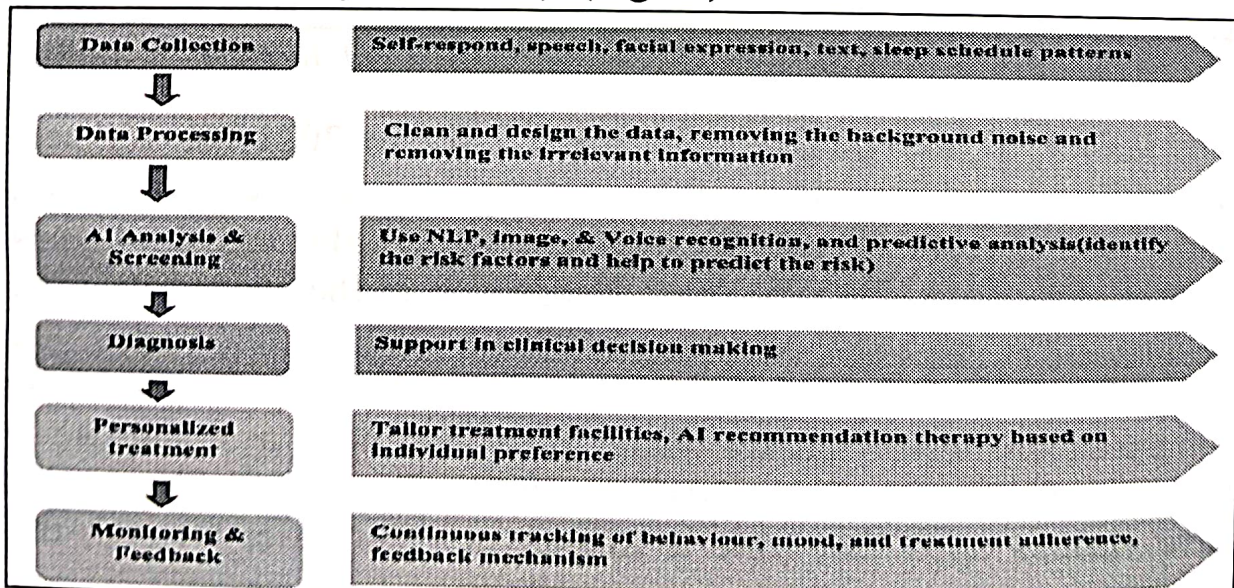
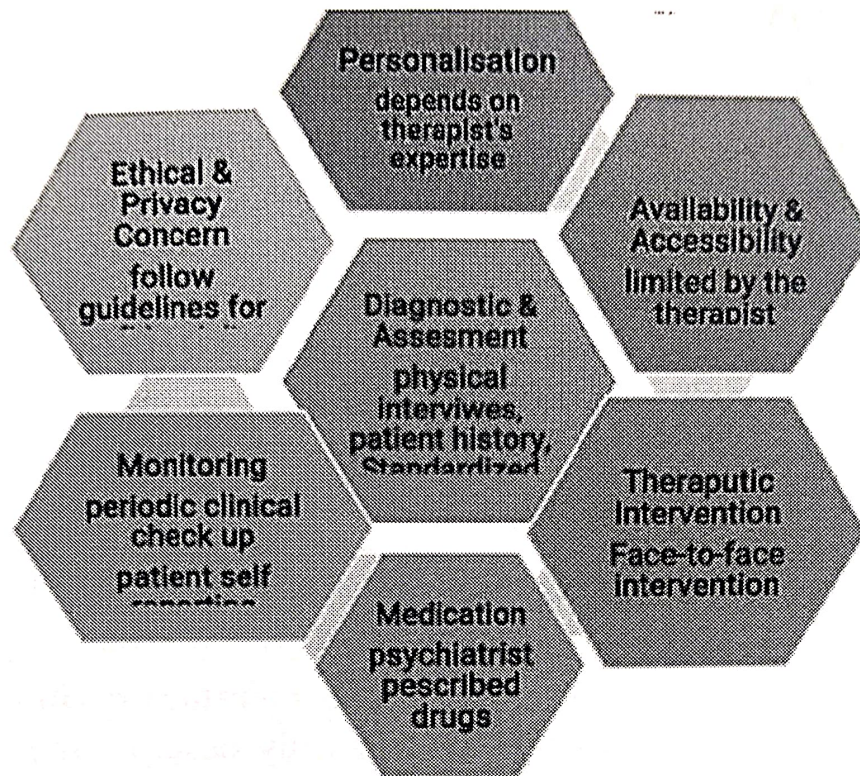


FIGURE 5. Market share of leading meditation and sleep mobile apps in the United States as of January 2021

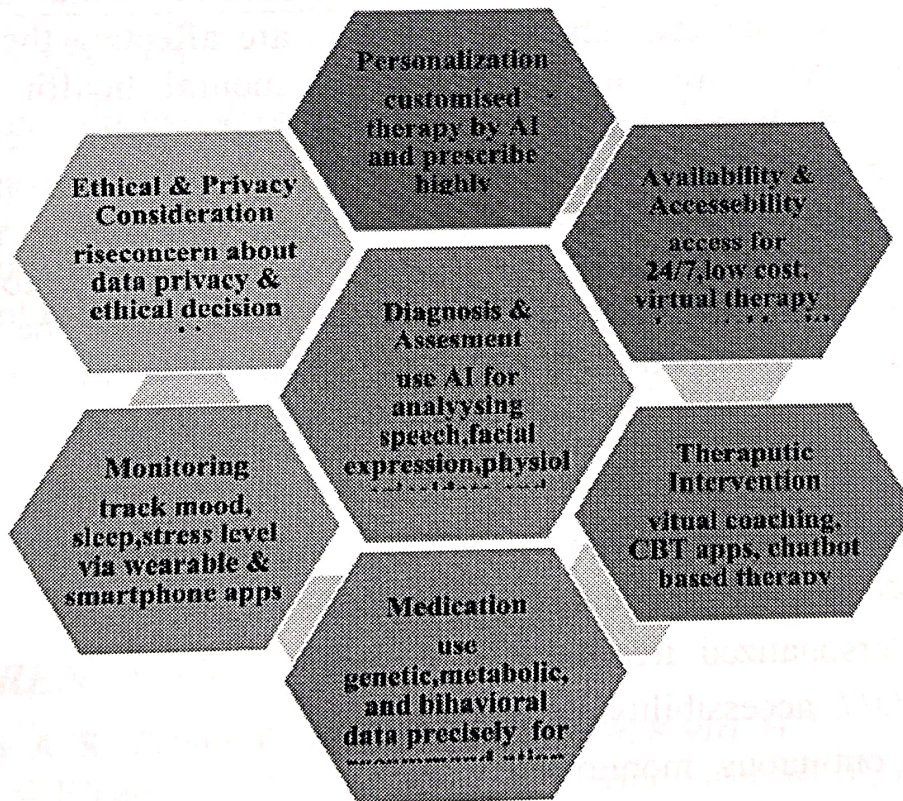
AI-Driven Mental Healthcare Workflow

AI is transforming mental health treatment by accelerating personalised treatment, making the treatment more accurate, and making the treatment more accessible to all levels. AI also helps in early detection, recognises the risk factors, diagnoses, and monitors the treatment by screening, diagnosis, and treatment.(Alhuwaydi, 2024b) (Fig. 5).





(A)



(B)

FIGURE 6. The Gap Between Traditional Treatment And AI-Integrated Treatment (A) Traditional View Of Mental Health Treatment (B) AI-Integrated Mental Health Treatment

DISCUSSION

Mental health disorders have been contained in almost 14% of the global disease burden. There had been some stigma to taking the treatment among individuals. So, the introduction of an AI healthcare model posed a big challenge to reduce the mental health burden. It has been easy to access, has a variety of availability, and is cost-effective, but there are always privacy and Data concerns. This study has described the gaps in numerous literature reviews, trends of mental health conditions, working principles of AI in mental wellbeing issues, available AI online platforms, moreover the download of AI application data, along with the difference between traditional and integrated AI treatment. However, most of the review literature has described the ethical concerns of using AI in mental health support. The literature review has been described as most of the review papers only describe the limitations of using AI and scrupulous for ethical concerns. The trend of mental health disorders around the world, several mental disorders like depression, anxiety, schizophrenia, etc, are affecting the healthy well-being. AI's present application to mental health and its principles, such as generative AI, artificial intelligence, deep learning, natural language processing, and computer vision. There have so many stigma to take care of mental well being, to solve this stigma AI may play a vital role because of its availability and accessibility, a little enforcement by laws can enhance the privacy concerned of using AI can make a big effort in mental health care industry as well as can reduce the global disease burden.

Advantages of AI in Mental Health

- Early Disease detection with prior diagnosis.
- Reduce stigma and improve accessibility.
- Personalized treatment & cost-effectiveness.
- 24/7 accessibility.
- Continuous monitoring.
- Lessen the workload of the therapists.

Challenges

- Ethical & legal considerations.

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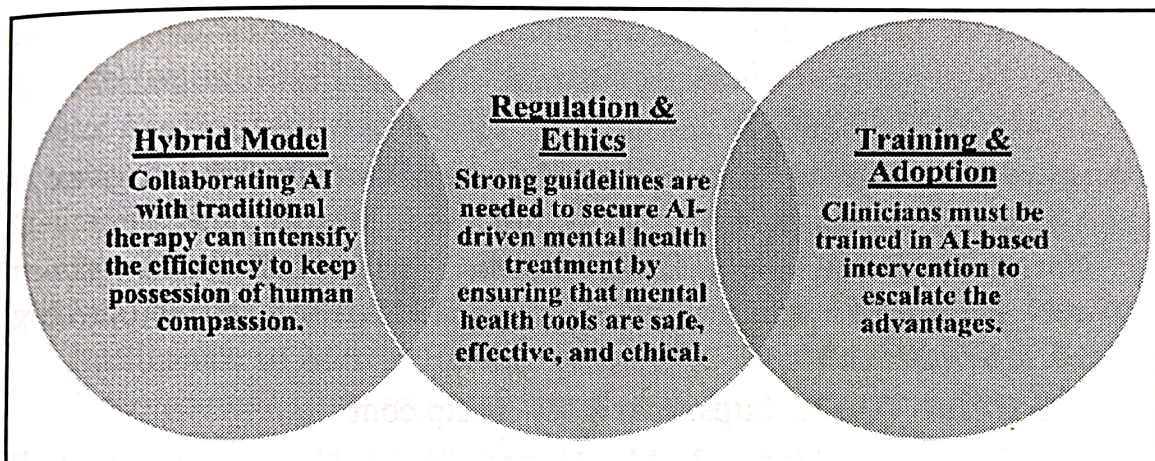
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- Reduce stigma and improve accessibility.
- Personalized treatment & cost-effectiveness.
- 24/7 accessibility.
- Continuous monitoring.
- Lessen the workload of the therapists.

Challenges

- Ethical & legal considerations.

- Privacy & data security.
- Lack of human compassion.
- Accuracy & authenticity issues.
- Integration with traditional mental healthcare.

Framework For Bridging the Gap to Introduce AI in Traditional Mental Health Treatment



CONCLUSION

Mental health disorders have been continuously increasing globally, which affects at least one in four people and increases the economic expenditure, and reduces productivity. The COVID-19 pandemic has increased issues like depression and anxiety, but also gives solutions by accelerating digitalized health models. Spreading awareness and support of government policies helps to improve access to care, with AI-powered tools and teletherapy by intensifying early diagnosis and customized treatment. In contrast, challenges like privacy of data and ethical concerns remain. A balanced approach, combining technology with traditional care, is essential for effectively managing the mental health burden.

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