



## THE NEW WORLD – HOW TECHNOLOGY IS TACKLING DEPRESSION HEAD-ON

## Introduction

Depression, a pervasive and often misunderstood mental health disorder, affects millions globally, reshaping the landscape of individuals' thoughts, emotions, and daily lives. This complex condition, known by various names such as major depressive disorder or clinical depression, arises from intricate interactions between social, psychological, and biological factors. As the world grapples with the profound impact of the 2020 health crisis on mental well-being, conversations have shifted to prioritize mental health, leading to innovative initiatives and technological interventions. In this exploration, we delve into the dynamic intersection of technology and mental health, navigating the key drivers, underlying obstacles, and the promising role of technology in reshaping the landscape of depression management.



## Key Drivers

World Health Organization (WHO) reported that more than 300 million individuals are presently living with depression, an increase of over 18% between the years 2005 and 2015. Depression affects one in every 15 adults (6.7%) in any given year. Also, one in every six individuals (16.6%) will encounter depression at least once in their life. Some studies show that 33% of women will encounter a significant depressive episode during their life. There is a serious level of heritability (40%) when first-degree family members (parents/kids/siblings) have depression. The below are some Key Drivers :

### Pandemic & Government Interventions

Amidst the tumultuous backdrop of the 2020 global health crisis, conversations ranged from contingency strategies to economic turmoil, scrutiny of the nation's responses, and a myriad of other topics. Foremost among the issues that emerged, widely recognized and discussed, was the profound impact of the pandemic on mental health. Overnight, what was once an underdog concern became the foremost priority.

In December 2020, the recorded symptoms of depressive disorder surged by 30.2%. It necessitated government intervention and several initiatives were taken to address mental health. Among all the campaigns the world witnessed, two standout initiatives were the United Kingdom's "Every Mind Matters" and the USA's "CARES Act." Such initiatives across the globe had a ripple effect, raising awareness among the public and dismantling the stigmas. The conjunction of increased depression cases, heightened awareness and improved accessibility to resources has led to an increase in individuals seeking depression screening and treatment.

### Technological Advancements

Technology has played a significant role in this paradigm shift. A lot of technological advancements have taken place, offering innovative solutions and support for mental health challenges. It has effectively placed mental health management, including depression management, at the individual's fingertips. Regardless of any geographical boundaries or time zones, people can now tap into a wealth of resources and applications to aid their well-being.

With the drastic transformations in health care delivery via big data, analytics, mobile tech, mental health care is experiencing a great transformation focusing on adopting digitally mediated intervention. The impact of technology on human interaction and mental states such as mood, anxiety, point towards the need to a comprehensive approach to mental health disorders.

## Underlying Obstacles

### Stigma

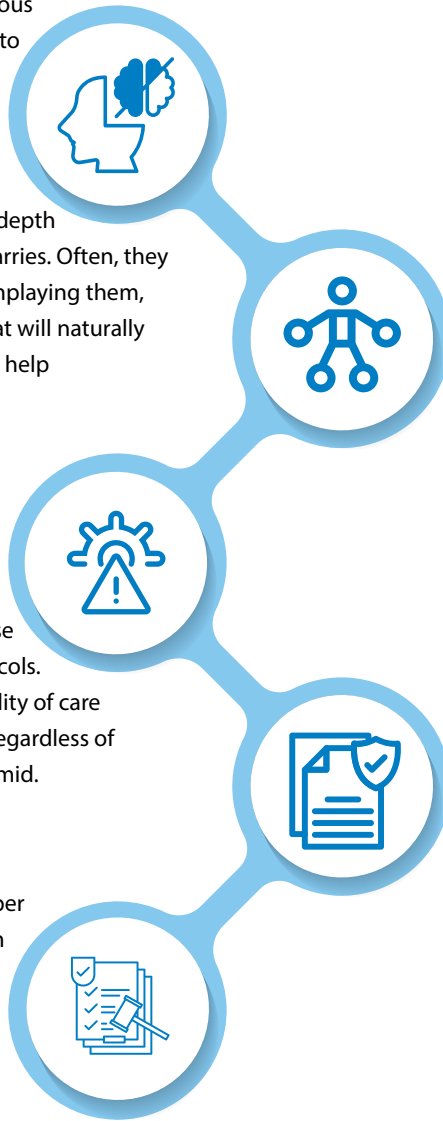
The world is changing. People considering Mental Health as a stigma are altering their mindset, but there still exist some who are ashamed or scared of being tagged with a serious mental illness or being called crazy, causing them to suffer in silence, rather than reaching out for support or help. Irrespective of one's educational qualifications, many still consider depression as a weakness, believing it is something that they can just snap out of without really understanding the depth of the issue and what potential consequences it carries. Often, they keep on snoozing the depressive symptoms, downplaying them, and viewing them as temporary bouts of blues that will naturally pass, neglecting the need for seeking professional help or interventions.

### QA & Standardize Issue

Another significant concern on the provider's side involves the absence of quality assurance and standardization measures. To make the screening tests credible and effective, it is important to devise comprehensive and uniform guidelines and protocols. It is of utmost importance to uplift the overall quality of care provided to individuals dealing with depression, regardless of where they stand in the social and economic pyramid.

### Need for Regulatory Bodies

Furthermore, the AI landscape currently lacks proper regulations and policies that are needed to govern its effectiveness. This regulatory gap becomes an obstacle to ensuring that technologies in health care adhere to ethical standards, prioritize patient interest, and maintain the highest levels of safety, confidentiality, and accountability.



### Accessibility

Accessibility to the general population is a concern especially in the under-developed and developing nations, the vital treatment and support services for depression are still lacking. It is estimated that over 75% of people grappling with mental disorders in these countries do not receive any form of treatment.

### Privacy & Confidentiality

Whenever technology comes into the picture of healthcare and caregiving, we confront a myriad of complex challenges that require our attention. Privacy and confidentiality are the cornerstones for a patient's safety and trust, especially critical in the context of mental healthcare settings within healthcare. One's condition involves feeling vulnerable and insecure, so creating a safe space whether it is by a care provider or technology, is essential.

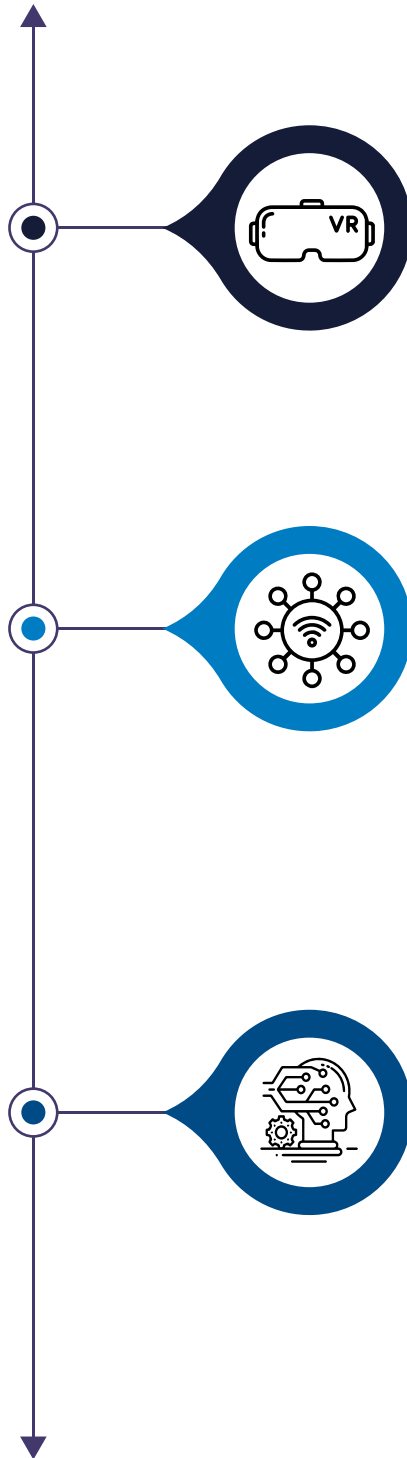
## Industry Trends Around Depression Management

Mental health treatment options changed from hydrotherapy and shock therapies or by drilling a hole in the skull to the modern treatment options like counselling, cognitive and behavioral therapies, medications like antidepressants, anti-anxiety, mood stabilizing, and antipsychotic medications along with brain-stimulation treatments like electroconvulsive therapy, repetitive transcranial magnetic stimulation, deep brain stimulation and vagus nerve stimulation. Now-a-days, technological interventions with immersive experience are slowly taking over to enhance real time experience through virtual treatment options. Efforts are being made to make depression management technology more accessible. Mobile apps, online platforms, and virtual mental health services offer tools such as mood tracking, meditation, & Therapy sessions.



## New World - Technology at Rescue

Even though conventional treatments help alleviate mental illnesses, there is still a void due to several reasons such as the unavailability of qualified mental health experts and counsellors in rural areas, lack of monitoring and behavioral pattern identification for people in remote areas. This is where technology helps in filling the gaps and connects the patient to their counsellor/expert anywhere in the world. Along with providing accessibility, the individual can actively track daily progress, observe behavioral patterns, and allow clinicians to treat and guide without physical visits.



### Virtual Reality

With the increasing accessibility and maturity of VR (Virtual Reality) technology, there is a bright opportunity to leverage it for the treatment of depression. Existing literature suggests that the established treatment cognitive-behavioral therapy (CBT) can be transformed into VR modalities, thus creating a unique treatment modality. One can practice cognitive restructuring, challenging negative thought processes and get used to healthier coping methods in a virtual environment. In addition, VR can be used to calm a person down to reduce stress and anxiety, thus providing users with a soothing and tranquil environment of their liking.

### Internet of Things (IoT)

IoT (Internet of Things) helps by collecting data to identify behavioral patterns of patients, helps to make informed and evidence-based decisions, provides clinicians with accurate diagnoses and aids them in choosing effective treatment options. IoT has catalyzed a transformation within the realm of Mental Health Management. It is a breakthrough that has brought in innovative ways to provide support, track progress and overall mental wellbeing including managing depression disorders. Wearable gadgets like smartwatches and fitness trackers equipped with sensors that can monitor various physiological parameters such as heart rate monitor, sleep tracker and stress levels thus equipping with mood trackers can provide better understanding of the patient's condition. Mental health care services through telehealth is another powerful functionality that promotes a patient-centric approach focusing on convenience.

### Artificial Intelligence

AI particularly machine learning (ML) algorithms are persistently incorporated into depression screening to help with early detection and diagnosis of the condition, allowing for timely intervention and support. It also provides a personalized touch to the treatment by analyzing an individual's specific symptoms, history, and genetic factors. For the providers, AI alleviates the burden on care providers by bridging the gap between available support and the growing demand for mental health services. Also, it helps in monitoring patient's responses to anti-depressants and helps the Doctor to adjust dosages and medications based on real-time data and patient feedback. AI contributes significantly to research and drug delivery. AI-driven research accelerates the discovery of new treatments and drugs by analyzing vast datasets and identifying potential candidates for drug trials. Additionally, chatbots play a pivotal role in becoming the first point of contact (POC) for individuals dealing with depressive symptoms.

## Conclusion

From drilling holes in the skull to now talking to a machine for treating a mental disorder, we have come a long way! While significant strides have been made in the field of depression management, there remain untapped opportunities for technological advancements that hold immense potential to bridge the gaps in the management of mental illnesses and create a profound impact on public mental health. The technological intervention for addressing depression is a promising shift towards improved, more accessible, and reliable mental health support. With innovative solutions and changing healthcare-seeking behavior, we are taking large steps towards a brighter and more emotionally resilient future.



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