

# **TECHNICAL REPORT**

VIVEKANAND EDUCATION SOCIETY  
INSTITUTE OF TECHNOLOGY  
CHEMBUR, MUMBAI – 400 074



## **MENTAL WELLNESS - A Mental Health App**

October 20th, 2021

Group No. 9

A report on

## **MENTAL WELLNESS - A Mental Health App**

### **Submitted by**

(D15A INFT - Group No. 9)

Yash Raje - 57

Ninad Rao - 58

Venkatesh Reddy - 59

Ryan Rodricks - 60

Anusha Shetty - 61

Sahana Shetty - 62

Mugdha Sholapure - 63

### **Approved by**

Prof. Dr. Pooja Kundu

October 20th, 2021

Group No. 9

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# **LETTER OF TRANSMITTAL**

October 20, 2021

Respected Madam

This report on Mental Wellness describes the working of our app in a brief manner. It also states the need for our application at this hour. It encompasses everything from our inspiration to do this project till the future scope of our Project.

Our Application is focused to help Therapists not only detect mental ailment of patients in a better manner but also treat it efficiently. Hopefully, we'll be able to make a difference once we roll out our application by helping people maintain a good mental health.

To conclude, it's our little way of helping our society cope with life in a better manner.

Yours sincerely

Ninad Rao  
Project Manager

## **ACKNOWLEDGEMENT**

We would like to acknowledge that our report on Mental Wellness - A Mental Health App has been completed and we are ensuring that this was done by us and not copied.

We would like to express our appreciation to Prof. Pooja Kundu for providing her valuable support and unerring guidance in our project. Her mentorship will surely help us face challenges in various walks of our lives without the fear of quitting.

Finally, as one of the team members, I would like to extend my deep appreciation to all my group members, without their support and coordination we would not have been able to complete this project.

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## **ABSTRACT**

Assessment and outcome monitoring are critical for the effective detection and treatment of mental illness. Traditional methods of capturing social, functional, and behavioral data are limited to the information that patients report back to their health care provider at selected points in time. As a result, these data are not accurate accounts of day-to-day functioning, as they are often influenced by biases in self-report.

Mobile technology (mobile applications on smartphones, activity bracelets) has the potential to overcome such problems with traditional assessment and provide information about patient symptoms, behavior, and functioning in real time. Although the use of sensors and apps are widespread, several questions remain in the field regarding the reliability of off-the-shelf apps and sensors, use of these tools by consumers, and provider use of these data in clinical decision-making.

Current mental health policy emphasises the importance of service user involvement in the delivery of care. Information Technology can have an effect on quality and efficiency of care. This research will assist in the development of an easy-to-use app that could increase access to services, and allow service users to take an active role in their care.



# **INTRODUCTION**

There are thousands of commercially available, mobile applications (apps) for mental health, which are hugely popular with the public. When persons with mental distress seek assistance from health care practitioners, it is likely that many of them will already be using mental health apps.

Mental health apps offer tools for self-diagnosis, monitoring, symptom management, and treatment. A recent meta-analysis of randomized controlled trials of apps for depression found that app users experienced a decrease in their depressive symptoms,<sup>6</sup> although others found that computerized cognitive behavioral therapy offers no additional benefit beyond usual clinician care. Importantly, the few scientifically evaluated apps are often unavailable to the public, and evidence for efficacy other than for depression remains limited. Nevertheless, apps are likely to shape public perceptions about mental illnesses and symptom management.

Many who seek primary health care advice about mental health may be using mobile applications (apps) claiming to improve well-being or relieve symptoms. We aimed to identify how prominent mental health apps frame mental health, including who has problems and how they should be managed. Considering the importance of creating a mental health app in society at this point, we thought it's high time we put on our mental health app developers' hats.

# LITERATURE SURVEY

Studies have examined the effectiveness of task shifting and the use of an electronic decision support system (EDSS) on mental health services delivery and have been implemented earlier at a smaller scale by our group in 30 villages in a tribal area of India.

India's primary health system in rural settings essentially comprises a lay village health worker (Accredited Social Health Activists – ASHAs) who is a local community person and has been educated to about tenth grade. Each ASHA caters to about 1000 individuals and is paid a nominal amount for each performance-based activity. Primary Health Centres (PHC) cater to the 20,000–30,000 population and are managed by a medical doctor, nurse and paramedical staff, and administrative officers.

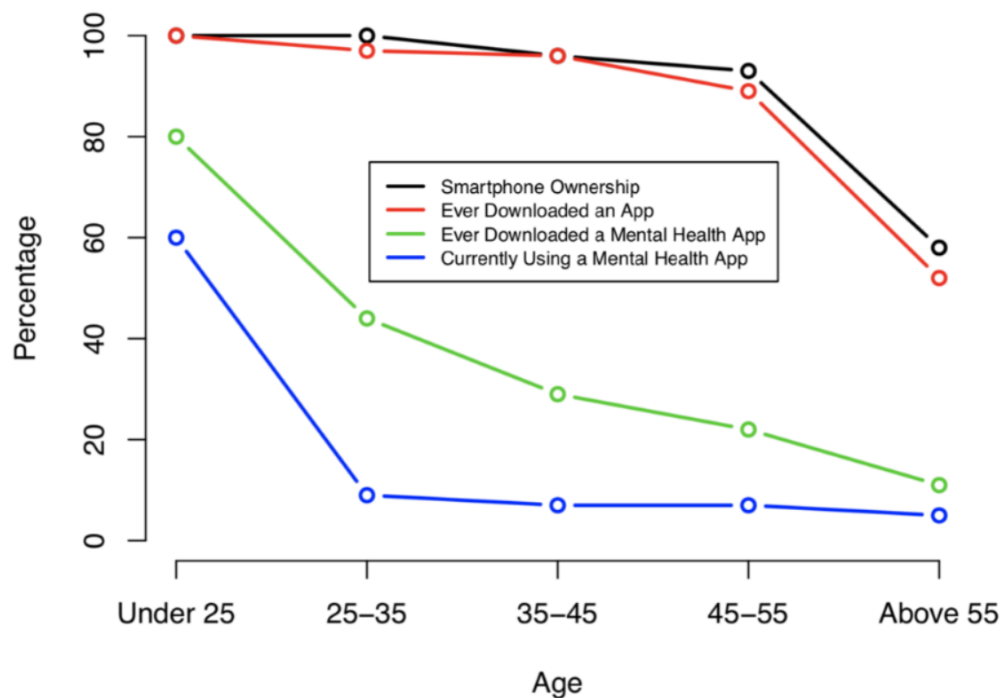
Looking for mental health services can be intimidating, especially in a technology-driven world that offers so many options. Best mental health apps out there are:

- **Moodfit:** We chose Moodfit because it's a free app that helps you track your moods and gives you exercises to help address negative emotions.
- **MoodMission:** We selected MoodMission because it's research-backed and gives you missions to help improve your mood and mental health skills.
- **Talkspace:** Talkspace stood out because it connects you to a wide network of mental health professionals and is well-known across the board.

# CURRENT SITUATION

## Mental health statistics in India

- India is ranked 139 out of 149 countries in the latest happiness index.
- More than 65% of those aged 18-24 years in India suffer from depression.
- 71% of India's population still addresses mental illness with prejudice.
- One estimate suggested India would lose \$1.03 trillion between 2012 and 2030 due to poor mental health; the pandemic is likely to have increased this cost.



**Fig 1** Age wise data for the usage of mental health app

# **METHODOLOGY**

Our study examines multiple dimensions of mental health-related apps available in Google Play Store for three years between 2019 and 2021. We used a set of keywords such as mental health, mental illness, mental disorders, and the cure of mental disorder and the healing of mental illness to search apps available on the play store. We scrapped the data using various software and programming tools.

We started collecting the data for our project on 15th September 2021. We have collected the data for the total span of five days so that we can get the maximum number of responses which helped us to analyze the data more appropriately and get the desired results.

## **Approach**

We have opted for a quantitative methodological approach for collecting and analysing the data. Quantitative analysis (QA) is a technique that seeks to understand behaviour by using mathematical and statistical modelling, measurement, and research.

Quantitative analysts aim to represent a given reality in terms of a numerical value. It is employed for several reasons, including measurement, performance evaluation or valuation of choices by large audiences, and predicting real-world events.

## **Data Collection**

We collected data from apps, advertising materials, including app store descriptors and linked websites. These materials have the same format and content for all prospective users, unlike downloaded app content, which is frequently personalized.

Below is the Mental Health Survey Template consisting of questions and examples that help evaluate a person's overall mental health. Using this sample survey template, we

can collect information from the respondents about any history of mental illness, previous diagnosis, and other important personal details that will help the researcher understand the mental health condition.

### **Analysis Technique**

The respondents involved in this survey were everyone since our survey was open to all. A nonprobability, convenience sampling technique was used to collect primary data. Simple statistical techniques were used to tabulate the results of this study. The primary data were analyzed using a percent of the responses. To compute the percent of the response, the number of responses to each choice was divided by the total number of respondents who answered the question.

### **Justification and Conclusion**

There are many methods of collecting the data like taking personal interviews, offline surveys, online surveys through the google forms. The reason for choosing the google forms for collecting the data are as follows:

- Google forms stores the feedback received so we can analyze it in detail.
- The forms are integrated with Google spreadsheets, therefore, we can access a spreadsheet view of the collected data.
- The general configuration of forms or surveys allows us to collect the recipient's email address and limit the answers.
- We can send the form by email, integrate it into our app or send the link via social networks or any other means.

## **ANALYSIS**

We have conducted a Mental Health Survey Template consisting of questions and examples that help evaluate a person's overall mental health. We collected information from the respondents about any history of mental illness, previous diagnosis, and other important personal details that will help the researcher understand the mental health condition.

The questions in the survey were as follows:

1. During the past 4 weeks, have you had any problems with your work or daily life due to your physical health?
2. During the past 4 weeks, have you had any problems with your work or daily life due to any emotional problems, such as feeling depressed, sad or anxious?
3. Overall how would you rate your mental health?
4. How often do you experience below?
5. When did you last get your mental health examination done?

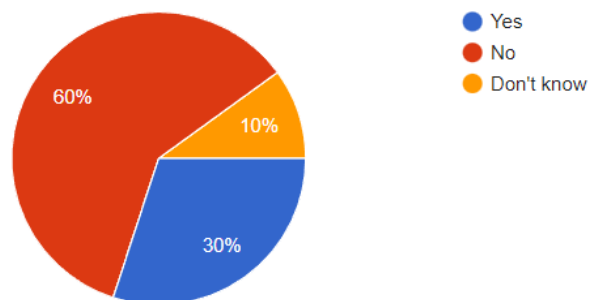
Here, the first two questions are aimed to address any problems faced by the people either due to physical health or mental health. This will analyze the percentage of the problems faced due to mental health is more than the percentage of the problems faced due to physical health. The third question is aimed at rating the person's overall mental health whether their mental health is excellent, somewhat good, average, somewhat poor or poor. This will let us know whether the overall mental health of the people is above average or below average. The fourth question is aimed at the type of experience often felt. The fifth and the final question is aimed at whether people do get their mental health examination done or not. This will let us know whether people actually go to mental health care for diagnosing mental health issues.

# DATA ANALYSIS

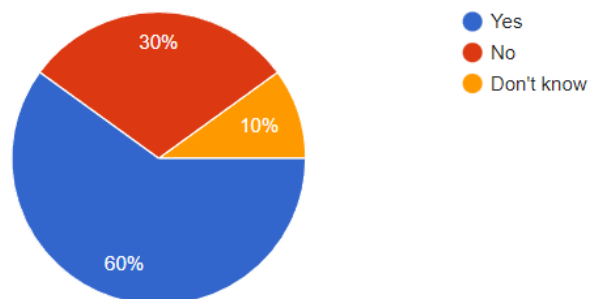
As mentioned before, we conducted a survey asking people about the problems they actually face due to mental health.

Analyzing the responses from the survey conducted:

During the past 4 weeks, have you had any problems with your work or daily life due to your physical health?



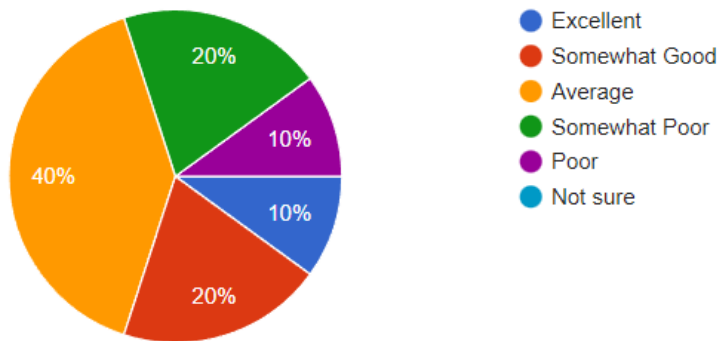
During the past 4 weeks, have you had any problems with your work or daily life due to any emotional problems, such as feeling depressed, sad or anxious?



***Fig 2 and 3***

From the above response, we can conclude that around 60% of the respondents have problems with their mental health and 30% of the respondents have problems with their physical health. This tells us that the majority of the people have mental health issues.

Overall how would you rate your mental health?

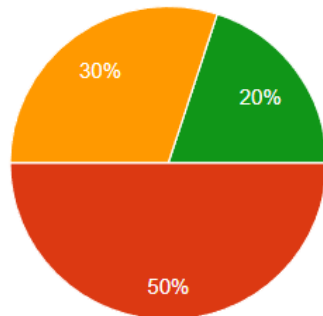


**Fig 4**

From the above response, we can conclude that around 40% of the respondents have their mental health rated as average, 30% of the respondents have their mental health rated above average and the rest 30% of the respondents have their mental health rated below average. This tells us that the majority of the people do not have good and proper mental health.



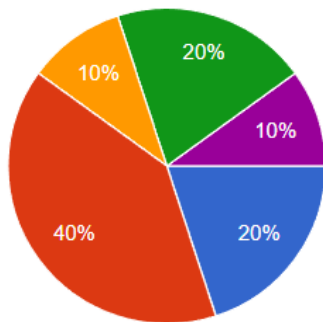
Calm and Peaceful



- Never
- Once in a while
- About half the time
- Most of the time
- Always

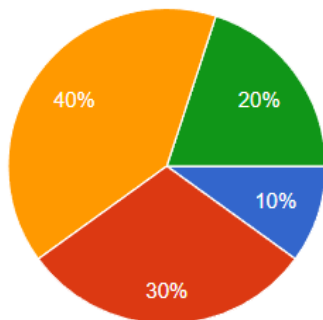
**Fig 5**

Energetic



- Never
- Once in a while
- About half the time
- Most of the time
- Always

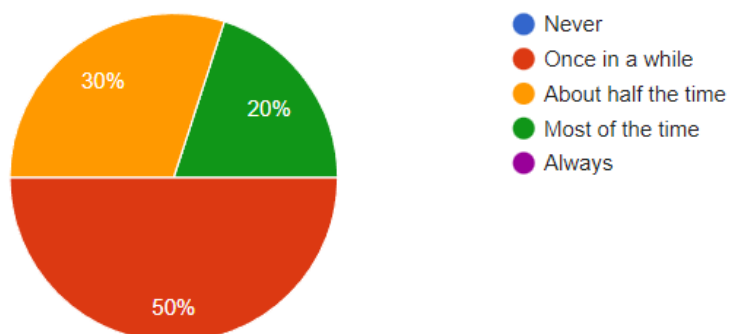
Gloomy



- Never
- Once in a while
- About half the time
- Most of the time
- Always

**Fig 6 and 7**

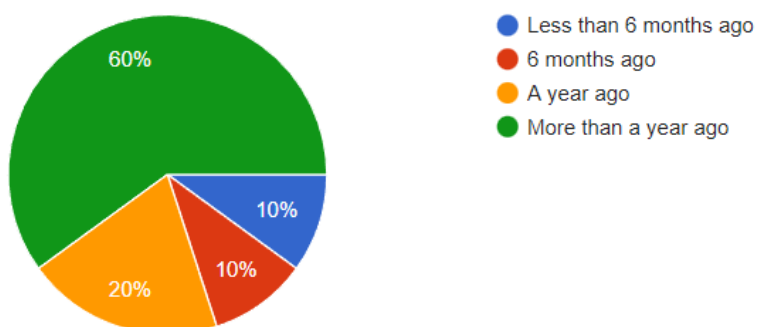
Angry



**Fig 8**

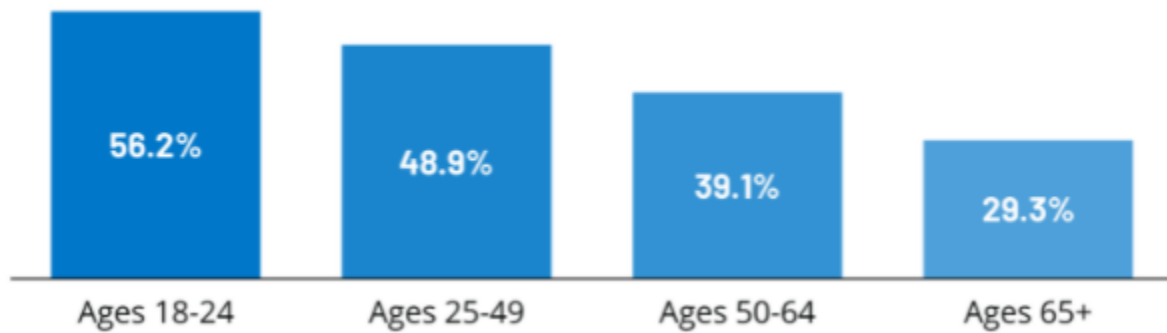
From the above response, we can conclude that around 40% of the respondents are less energetic and 50% of the respondents are less calm and peaceful whereas around 40% of the respondents are more gloomy and 30% of the respondents are more angry. This tells us that the majority of the people do not have a balanced mental health.

When did you last get your mental health examination done?



**Fig 9**

From the above response, we can conclude that around 60% of the respondents had their last mental health examination done more than a year ago and 20% of the respondents had their last mental health examination done less than 6 months ago. This tells us that people do not often check their mental health and just leave it aside.



***Fig 10***

From the above response, we can conclude that around 56.2% of the respondents are the age of 18-24 and 29.3% of the respondents are the age of 65 and above. This tells us that the young people experience mental health issues more than the elder people.

From the above survey, we concluded that coming up with a Mental Health Application will help people to keep a check on their mental health as well as consult psychiatrists during an emergency. This application will help consultations to happen online without any hassles. Just by sitting at home, we can seek help, thus creating a new normal.

# **TECHNICAL ANALYSIS**

Much of the health technology industry focuses on physical maladies, from high blood pressure to diabetes, but technology can also offer new ways to treat mental health disorders. There are several mental health mobile applications out there. Here is a list of things we will consider while creating a mental health app.

## **Consumer-centric Design**

We made sure that it is accessible to everyone including those who aren't a fan of vibrant designs.

## **Security**

Security is an important consideration because people care about their data and are not willing to put that at stake. Being HIPAA compliant is primarily to ensure data security but apart from that, we have a transparent privacy policy along with educating your users about security and best practices.

## **Doctor Centric Back End**

We made sure that the therapists too would be using the same mobile app to interact with users, track and review patient data and progress.

## **Multiplatform Support**

In today's time, users generally use 2 devices. A smartphone and a laptop. With many options available for the users, we made sure that the application is compatible with various devices and that it is always available to use.

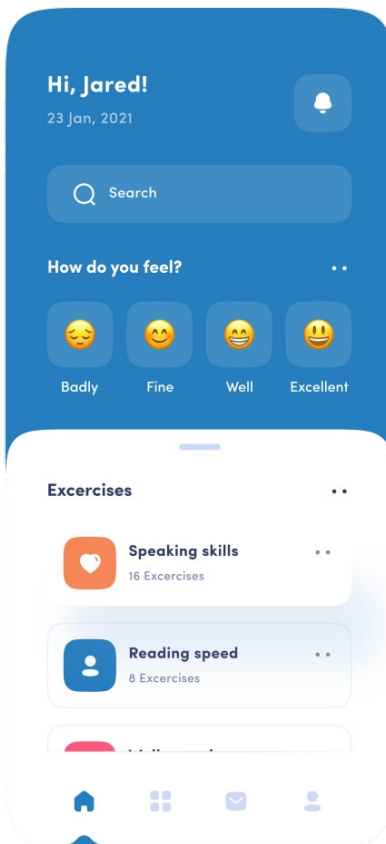
## **Interoperability**

It is important that when you create a mental health app, the mental health data flows freely from a mental wellbeing application to other therapy providers. We kept the patient data readily available for secure and anonymized sharing because you never know when and what opportunity knocks on the door.

## **Psychiatric Emergency**

Last, but not least, always reiterate to the patients that your mental health mobile app is not a solution for an emergency. Therefore we provided appropriate emergency contact numbers in-app for situations like these.

Therefore, we designed a User Interface by taking Inputs from each of our Group Members and tried making it as User-Friendly as we could.



### **Home page**

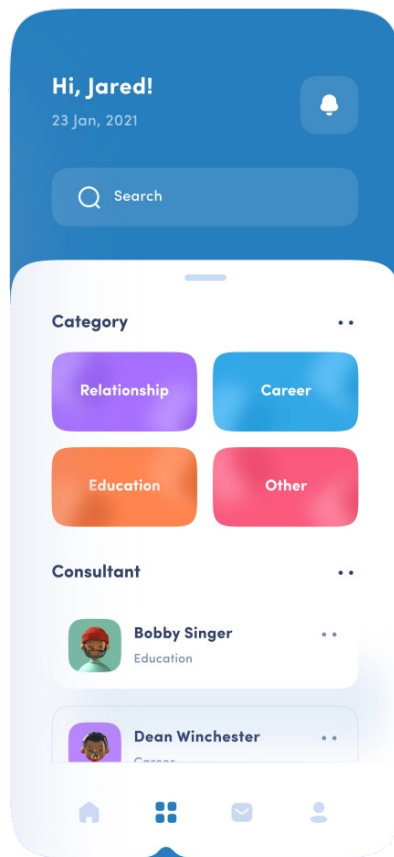
The user has to sign up/log in first.

After successful registration, the user has to fill up a form that will contain some basic questions related to the user's mental health.

Depending on the answers, the user will be notified if he/she requires medical guidance.

There will be exercises like speaking skills and reading speed so that they can improve their mental health and feel better.

***Fig 11***



### Survey and Activities Page

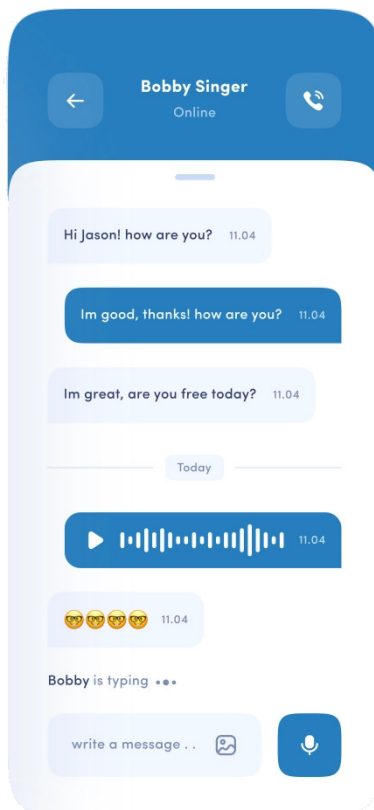
There will be a weekly survey for every patient which will help the users to keep a check on their mental health.

There will be a personalized report generator that will help the users to track the progress of their mental health.

Here there are activities too which will help them to improve their mental health.

The user can also book appointments for future consultations by contacting the consultants.

**Fig 12**



### Contacts Page

There will be doctors available 24x7. If by chance the user suffers a breakdown at midnight then they can easily consult our doctors instead of going to the hospital.

The user can also book appointments for future consultations.

**Fig 13**

The following software technologies are required in the development of the software:

### **Frontend**

React Native is extensively used for iOS and Android as it is a well-known cross-platform development entity. The framework is built on JavaScript and it does well to give a native-like feel for Android and iOS platforms.

### **Backend**

The Firebase Realtime Database is a cloud-hosted NoSQL database that lets you store and sync data between your users in real time. Firebase provides tools for tracking analytics, reporting and fixing app crashes, creating marketing and product experiments.

Therefore, these software technologies can be implemented in making a Mental Health App for people who suffer from mental health illnesses.

## **FUTURE SCOPE**

Virtual reality is one such technology, which completely immerses people into an alternate reality, and has a lot of possibilities that therapists can explore.

Scope of Virtual Reality in Mental healthcare:

1. **Treatment:** Virtual reality can be used to treat different types of mental illnesses including PTSD and phobias. This was first shown by Dr.Rizzo, who is known as the father of the clinical virtual reality industry.
2. **Diagnosis:** By using virtual reality alongside these questionnaires therapists can get much more insight into their patient's illness.
3. **Self-help:** Though it is not a replacement to therapy let alone for treating severe mental health illnesses, self-help, when used wisely, can help people overcome their mental troubles.

VR has the potential to become an integral part of mental health treatment in the future. Its many features can help therapists provide better care to their patients.

Contemporary researchers are now exploring whether a consistent meditation practice yields long-term benefits, and noting positive effects on the brain. After developing an open-source application and at a later time, sell it to the hospital by which it can digitize the whole system and provide their healthcare support.

Future research can be done on a large sample size including by what other means we can increase awareness among people or finding the reason why people are not aware of mental health apps in India irrespective of knowing all the major Apps in their smartphones.



## **CONCLUSION**

The aim of this proposal was to identify and evaluate the types of mental health self-care support used by, and available to the people, and to establish how much support interfaces with statutory and non-statutory service provision. Through our research and our development of the software, we are confident that we can achieve these aims.

Mobile apps have significant potential to deliver high-efficacy mental health interventions. Given the global shortage of psychiatrists and the lack of mental health care access in rural regions, apps have emerged as a viable tool to bridge the mental health treatment gap. Technology is well-poised to transform how mental health treatment is delivered and accessed, but this transformation requires the combined mobilization of science, regulation, and design.

Moreover, in doing so, we will develop an application of self-care support that can help policy-makers and practitioners make decisions about the organization and delivery of mental health self-care support for the people, and help us to identify gaps in the knowledge base that might be resolved with future research in this area.

## **RECOMMENDATIONS**

Most treatment for mental health disorders require face-to-face interaction between an individual and his or her therapist, we believe our Mental health app can be effective in making therapy more accessible, efficient, and portable. The app can and does fill a critical gap by encouraging patients to be more aware of their mood, behavior, and potential trigger points, suggesting healthy options for dealing with stress and depressive episodes, and reinforcing techniques learned in therapy, our mental health app will also provide valuable tools to patients and clinicians.

Our app will be able to coach deep breathing and relaxation techniques which will help manage stress and anxiety. It will keep a track of mood to help those suffering from depression and bipolar disorders. For people that are undergoing dialectical behavioral therapy or cognitive therapy, it will coach self-help skills and support therapeutic goals.

It will also be able to utilise machine learning to help those suffering from major depression or PTSD. The app will be able to track and monitor an individual's behavior and prompt helpful activities such as "positive self-talk" to help defuse a potential crisis situation.

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