Healing Better Application for Mental Health Assessment

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Abstract – *Over a period of time, psychological health issues have become very frequent in people worldwide. World Health Organization has surveyed that depression is the most common mental disorder affecting more than 300 million people worldwide. The seriousness of the issue has led many health researchers to focus their studies in this subject. It has been observed that individuals nowadays are so busy in their daily life. So, even if they come across some symptoms of these illnesses they avoid them by terming as side effects of work load. Hence, the necessity of such application arises where all three parameters of mental health are identified and even include relief techniques. According to WHO, a healthy person has adequate mental and physical wellness. In this project, assessment of psychological problems such as anxiety, depression and stress will be made by the responses achieved after answering questions of Depression, Anxiety and Stress Scale (DASS21) tool. The assessment of mental illnesses isn't enough. So, we are proposing a system which detects these factors and also provide relief techniques for different severity levels.*

Key Words: **Stress, Anxiety, Depression, Relief Techniques, Assessment, Android Application.**

1. INTRODUCTION

According to the recent trend, humans are more inclined in becoming ambitious seek every next opportunity to grow professionally. But, modern lifestyles are causing a lot of psychological health problems in people. Psychological problems like anxiety, depression and stress have some overlapping features, for example, a person feels low and lonely in all three. Generally, psychiatrists assess anxiety, depression and stress through questionnaires such as DASS21 because people suffering with anxiety, depression and stress are often not open to sharing their feelings with doctors, relatives or friends. Therefore, in this project we will attempt to assess levels of anxiety, depression and stress by using application without the help of any medical experts or face to face interaction. The standard procedure detection of depression is the Patient Health Questionnaire (PHQ), and also the Depression, Anxiety and Stress Scale (DASS 21). These 21 questions are used for knowing the symptoms related to these mental illnesses. Daily, people are suffering from the mental health illness due to factors which include the social factor, environment factors and internal factors.

2. RELATED WORK

- Computer-Assisted Cognitive-Behavior Therapy and Mobile Apps for Depression and Anxiety by Jesse H. Wright, Matthew Mishkind, Tracy D. Eells and Steven R. Chan– Here, they have researched on computer-assisted cognitive-behavior therapy (CCBT) and mobile applications with the goals of assessing the effectiveness of these newer methods of delivering or augmenting treatment. It also includes recommendations on the clinical use of computer tools in therapy of depression and anxiety.

- Assessment of Anxiety, Depression & Stress by Anu Priya, Shruti Garg, Ashwani Garg- In this paper, they proposed a method to predict stress using eight machine learning algorithms along with hybrid techniques to classify data into five different Likert scales. Various Supervised ML algorithms were applied on the respective dataset and are labelled by calculating scores of DASS42. This questionnaire consist of 42 questions in which a set of14 questions relate to each of the factors like anxiety, depression and stress.

- Stress catcher application for mobile stress monitoring using questionnaire-based- In this paper, a mobile application is built using Mobile-D approach. The application allow users to know the levels of stress so that user can monitor it. In this study it was known that female students were more prone to develop stress as compared to male students.

3. PROPOSED APPLICATION FRAMEWORK

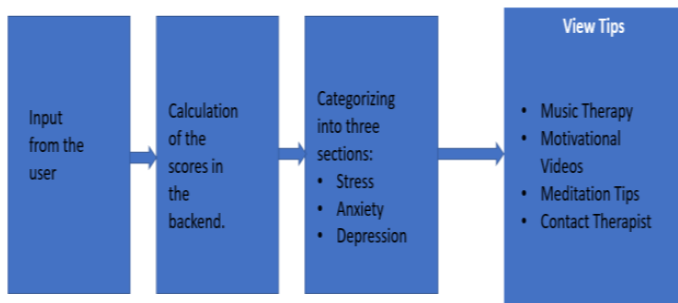Fig 3.Block Diagram

Healing Better applications helps the registered users to answer the questionnaire based on DASS21 tool. As people hesitate to open up these days, the app interface provides the best interface where they can identify and verify their mental health problems.

To begin with, the user will have a login page to enter his/her personal credentials whereas new users will have to create a new account by clicking on the Register button. This process includes a specific authentication system to verify the details as an extension of the login data. Once the login is successful, the next page displays a warm introduction and dive straight in to analyze the person's mental condition. The application then floats a dedicated set of questionnaires of the DASS-21 dataset. It contains 21 extremely sensitive questions regarding the daily routine of the user.

Based on the responses of the user of all the questions which are graded from never to almost always, the system tallies the data and gives the verdict. It may suggest whether the user has severe anxiety, mild depression or no mental illness at all. If the user has some anxiety problems, then a message displayed with the degree of the stress and suggest ways to overcome it. It is done by keeping the user motivated and avoid panicking. Some of the measures will be to listen music, which will help to stop overthinking and feel enlightened. This will help to keep the mood refresh and later suggest some motivational videos too. After analysing the progress over a few days, the application will determine whether the user has had some improvement or not. In extreme cases where the user is still not able overcome stress, the application will recommend visiting a genuine therapist for further improvement.

The application will include YouTube video suggestions according to the levels of stress, depression and anxiety.

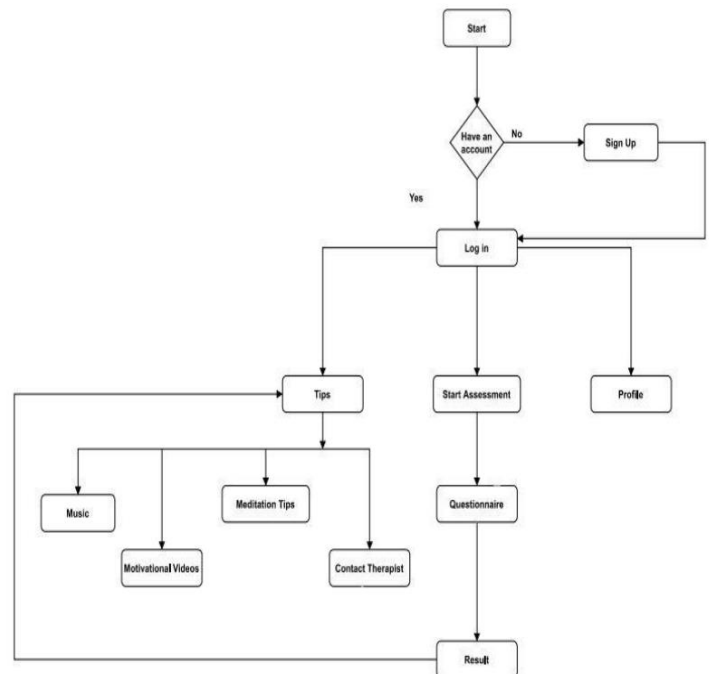## 4. Flow chart and Process Design

4.1 Flow chart:

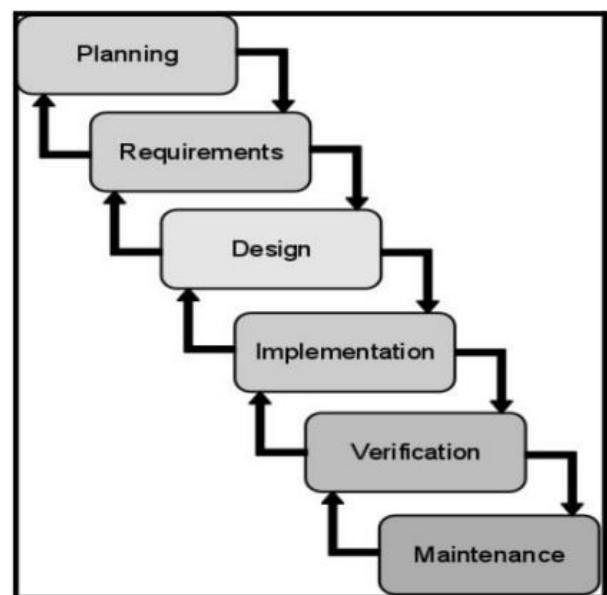Fig 4.1: Flow chart

4.2 Process Design

Fig 4.2 Process design

We have used for waterfall model for our project as follows:

- It allows for departmentalization and control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process model phases one by one.

- All the requirements are documented beforehand.

- The waterfall model progresses through easily understandable and `explainable phases and thus it is easy to use.

- It is easy to manage due to the rigidity of the model – each phase has specific

5. Methodology and Implementation

Implementation generally means carrying out the activities described in one's respective work plan. It gives the opportunity to see the plans turn into reality. This is the logical result, after evaluating, deciding, planning, applying for funds and searching the financial resources of a project. Implementation takes most of the time, usually more than it is planned, and also many external constraints can appear, which should be considered when initiating the implementation step.

After opening the Healing Better application the user gets the option of signup/ login page. For logging in purpose he/she has to enter Name, email id, password and phone number. After authentication of the user is successful, he/ she will be redirected to the login page. The details like email and password will be stored in the database of SQL Server in the backend. After logging in, the dashboard will pop up. In that the user has three options namely: Start Assessment, Tips and Profile. The application will include music recommendation system according to the levels of stress, depression and anxiety.

In Start Assessment, random questions will come up on the screen. The questions used in this project is DASS21 Questionnaire. It comprises 21 questions, with 7 questions allocated to each of the scales of Stress, Anxiety and Depression. The possible answers for each question could be given in text or numeric form as follows:

0- Never • 1- Sometimes • 2- Often • 3- Almost Always

	Anxiety	Depression	Stress
1.	Dryness of Mouth	Couldn't Experience the positive feeling	Found hard to wind down
2.	Difficulty in Breathing	Difficult to work up the initiative to do things	Overreact to situations
3.	Experience Trembling	Nothing to look forward	A lot of nervous energy
4.	Worried about panic and make a fool of themselves	Felt down-hearted and Blue	Getting Agitated
5.	Close to Panic	Unable to become enthusiastic	Difficult to Relax
6.	Aware of the action of the heart in the absence of physical exertion	Felt wasn't worth much as a person	Intolerant to getting what I was doing
7.	Felt scared without any good reason	Felt life was meaningless	Touchy

Fig 5.1 Questionnaire on anxiety, depression and stress

The final scores will be calculated and labelled according to severity: Normal, Mild, Moderate, Severe and extremely severe.

DASS-21 Scoring	Depression	Anxiety	Stress
Normal	0-4	0-3	0-7
Mild	5-6	4-5	8-9
Moderate	7-10	6-7	10-12
Severe	11-13	8-9	13-16
Extremely Severe	14+	10+	17+

Fig 5.2 Severity levels

After assessment of stress, depression and anxiety in users, the users get to see the tips. The relief techniques which we have suggested in our app are • Music Therapy • Motivational Videos • Meditation Tips • Contact Therapist

In Music Therapy section, 10 soothing music tones are added in the database which the user can access. In Motivational Videos section, various YouTube videos are shown to the users where he/she can watch them and relieve their minds. In tips section, meditation tips are given to the users. After following them, it will help the user for his/her mental health betterment. In contact therapist section, the user can get to know the contact details of nearby therapist using Google Maps feature.
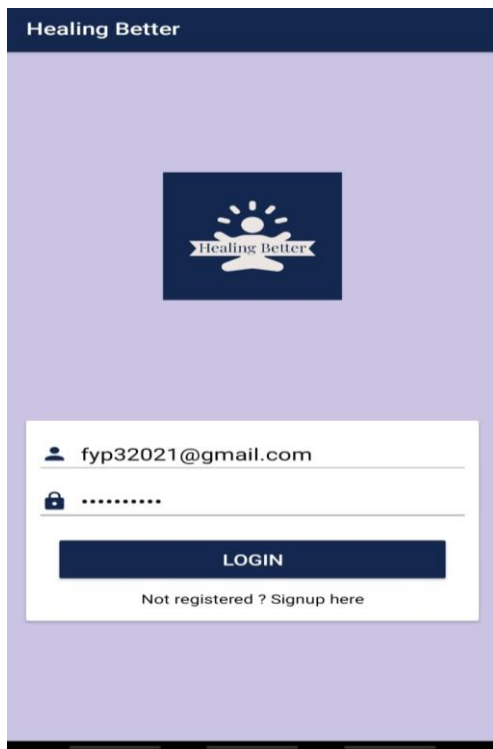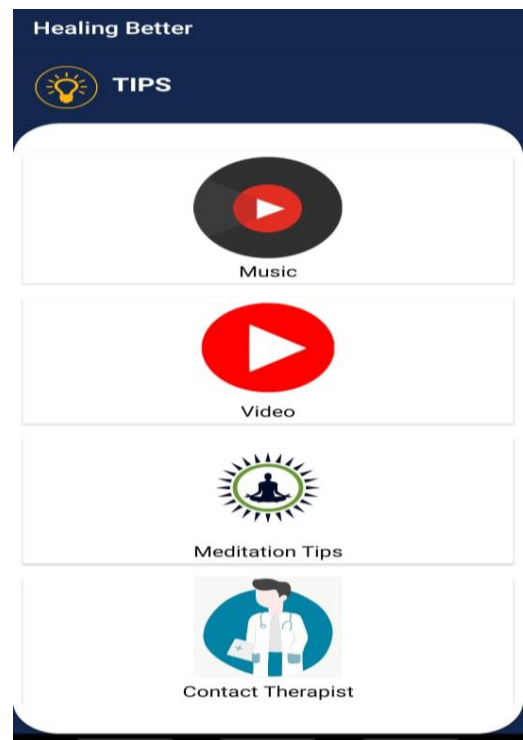
7. OUTPUT

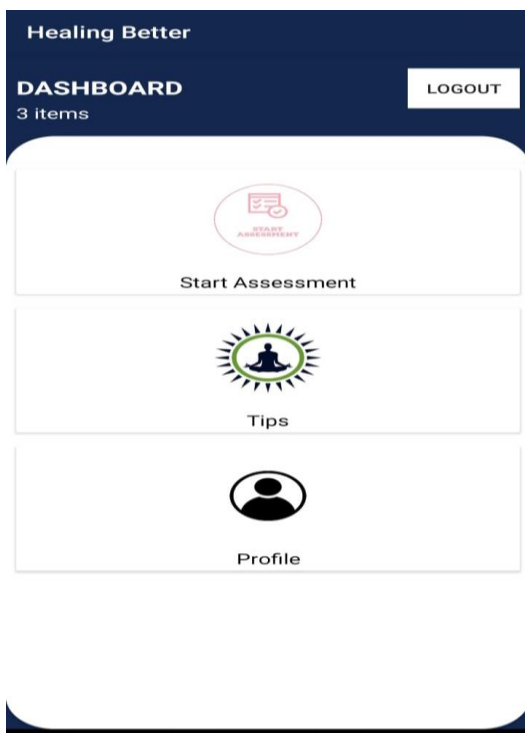Fig 7.1 Login into application

Fig 7.3 Tips page

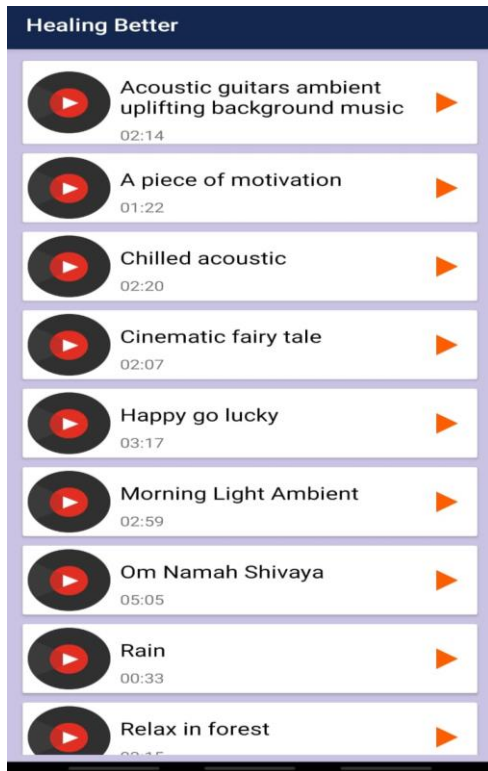Fig 7.4 Questions screen

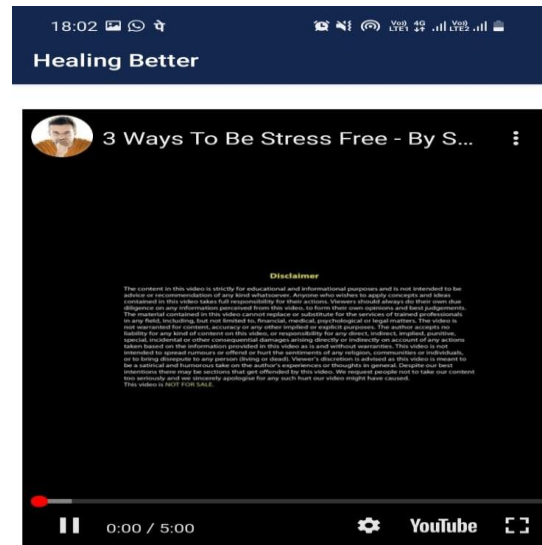Fig 7.2 Dashboard Page

Fig 7.5 Music Therapy
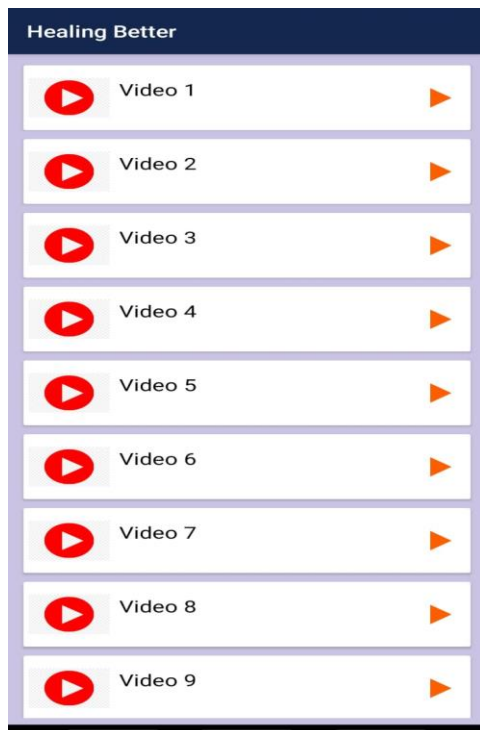

Fig 7.7 Videos screen
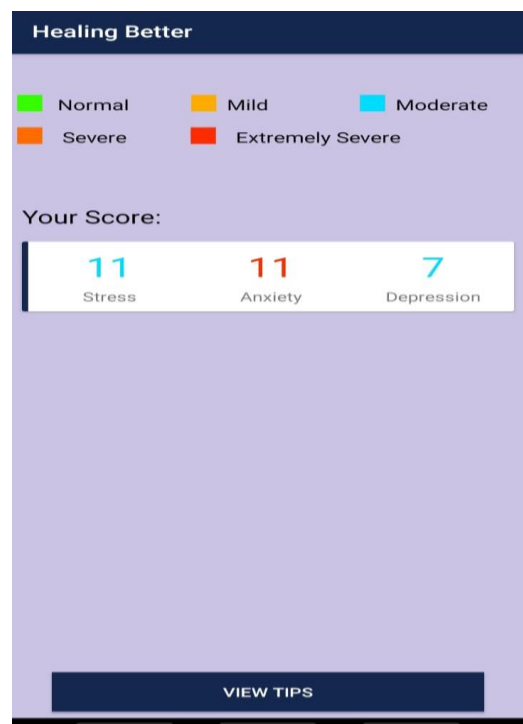

Fig 7.6 Motivational Videos options

Fig 7.8 Results screen

8. CONCLUSION

We have successfully completed of our application named Healing Better. The application gives the proper indication of the stress, anxiety and depression levels. With this result it gives the user an idea about where his/her mental health is heading. The application also provides methods to overcome the stress factor by suggesting effective exercises to practice on a day-to-day basis. The application provides music therapy, motivational videos, meditation tips and suggestion of contact therapist. After following the suggestions, over a period of time it may be possible to encounter that the levels of mental health problems have decreased.

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