

RAZI: AN AUTHENTICATED MENTAL HEALTH CARE DIGITAL ANTIDEPRESSANT FORUM FOR TRUNCATING ANXIETY AND DEPRESSION USING CLOUD FIRESTORE DATABASE AND FIGMA

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ABSTRACT

Mental health problems are becoming frequent nowadays letting people confused, overthink, reducing their ability to concentrate, despondent, excessive fear, and worries which cause them depression and anxiety. Numerous Mental Health apps are lacking in terms of poor GUI that ultimately results in facing usability issues by users, and most of the MHapps are paid thereby, it is hard for a user to afford it in mass. This forum has been developed which has a user-friendly interface and is free to use. People have to search a keyword regarding their mental health problem and it will then compare to Cloud Firestore Database, which in turn will extract relevant data regarding the problem being searched and the most relevant solutions, meditation links, symptoms and questions will display on the site which is verified by Renowned psychologists. It is effective for antidepressants and can be very prospered for mankind.

KEYWORDS

Mental Health, MHapps, Firebase, Firestore, Figma, MHwebsite.

1. INTRODUCTION

Many People experience mild to severe psychological distress, some of the mental illnesses lead people to have suicidal thoughts and unstable minds. In lot of ways, mental health is much like physical fitness: everybody needs to prioritize mental health too, to live a better lifestyle. But in case you undergoing through poor mental fitness you may locate the approaches you are often questioning, feeling, or reacting become difficult. Mental health has a predicament affects roughly two in eight people in any given year. They range from depression and anxiety to rarer troubles which include bipolar disorder and schizophrenia.

Experiencing mental fitness hassle is frequently upsetting, complicated, and horrifying – especially in the beginning. In case you feel unwell and you can sense that, it's a signal of a weak point, or where you are 'dropping your thoughts'.

1.1.Backdrop

Mobile mental health apps have turned out to be a beneficial commercial enterprise, with global expenditure anticipated to be over US Ninety-two billion dollars. Apps are increasing linearly more getting utilized to reveal, examine, and enhance mental fitness. Currently, options are made a use of critiques and scores to be had in-app stores^[1], however, those can produce unreliable outcomes^[2]. Although powerful therapy for depression and anxiety exists, many human beings do no longer approach these for numerous motives^[3]. However, there are right now around 70% Smartphone owners in the world population and still rising^[4], Mental health apps provides as a barrier in services available and attainability.

1.2.Objective and Aim

Our objective is to create awareness among the people regarding the importance of Mental health and have an efficacy in lowering depression and anxiety.

1.2.1. Benefits to society

- The usage of the site will have upgrades in the mental fitness version of psychotherapy consequences
- Provides psychoeducation an intervention with methodical, specified, and moralistic understanding transfer for a mental suffering and its cure.
- Incorporating emotional as well as motivational aspects so that sufferers can counter with the ill suffering and can enhance its cure idiomatic and efficacy.
- The usage of the site will allow patients to take meditations steps in Gaining a new perspective on stressful situations. Improves skills to manage your stress

2. LITERATURE REVIEW

Previous researchers have discovered that mental fitness apps are somewhere powerful in lowering anxieties^[5] and depression^[6] with a universal effect length of small to mild^[7]. Within these analyses, there exist a few fantastic flaws, inclusive of widespread heterogeneity across the analysis.

Some other challenge of recent studies shows that the maximum of it, has been accomplished by individuals who have developed a software. The latest evaluation of app stores observed that most effectively 1.019% of MHapps apps providing curative remedy for anxiety or depression have been evaluated using individualistic studies. furthermore, in an analysis of nine research on anxiety-based apps^[5] and in any further analysis of 18 research on apps talked of depression^[6], none concerned independent research or replication

Many MHapps are developed till now and are now available to every individual's smartphone the number of smartphone users has been increased from 2.5 billion in 2016 to 3.5 billion in 2020^[9]. MHapps and other related technologies have great significance in the future of mental health care^[8]. Nowadays many available MHapps lacking behind some features that might significantly improve their capability^[9].

In overall, about 1501 review Papers and research papers were diagnosed. Of these, 17 publications describing that 16 apps targeting specifically on anxiety/stress, depression, alcohol disorder, suicidal behaviors, sleep disorder, and PTSD met inclusion standards. 5 research randomized individuals to trial situations, and 14 apps have been verified to have clinically confirmed proof in reducing mental health symptoms or sickness. Around 325,000 health-related apps existed in 2017^[10]. There's now a growing evidence base that consists of meta-analyses demonstrating reductions in signs and symptoms of depression and anxiety and reduction in suicidal ideation^[11].

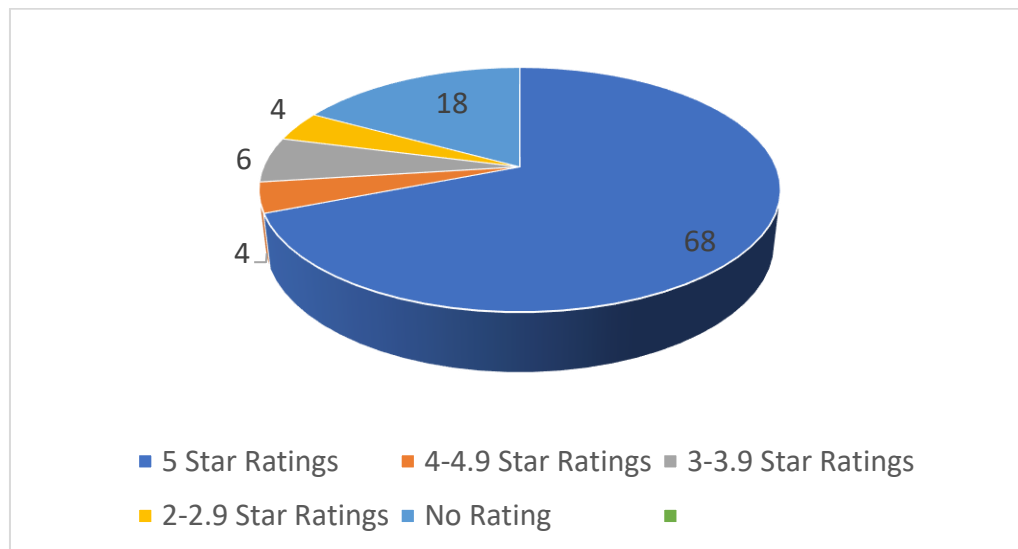


Figure 1. Rating of mental health apps

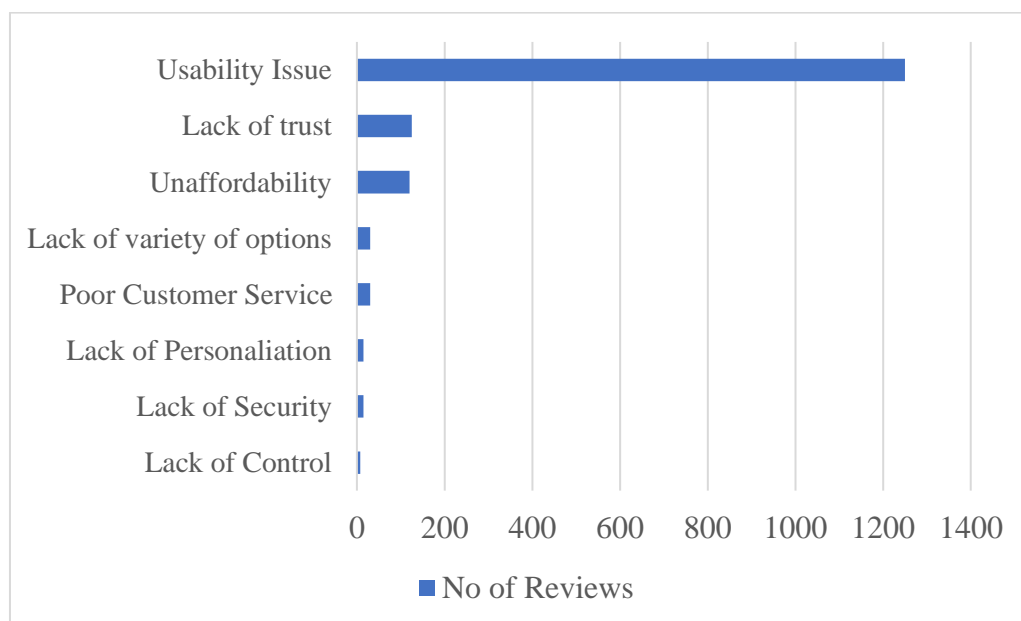


Figure 2. Weak points of Mental Health apps

The above graph shows the weak areas of some of the MHapps. It clearly shows that a large number of users have usability issues because many users have complained about bugs and poor user Interface layout: many users have mentioned about the difficulty of chronic bugs, which include crashing, capability, and syntactic errors; update problems; and download problems. Furthermore, users complained about, UI design which includes layout/clarity problems, and bad navigation. Many apps are not directly helping users to cure their mental health because they don't have user-friendly Interface. Many MHapps have their paid subscriptions by which poor people cannot afford it and have lack of trust and users have complained about low security issues in apps. Some MHapps apps acquire user data do no longer provide passwords/passcodes safety to resist outside access as an example, "No option for the PIN".

3. PROBLEM STATEMENT

An acute situation such as stress, anxiety, insomnia, denial, anger, depressive and fear is causing mental health problems in people. The people should approach in maintaining our minds healthy. Mankind usually is extra centered on maintaining their physical body healthful. Humans have a tendency to disregard the mental state of their minds. One has been competent of managing life because of our exceedingly progressive brain. Thereby, it will become very crucial for a person to maintain each his body as well as mind to be healthy and fit. Both bodily and cognitive fitness is equally crucial for good performance and consequences

3.1.Symptoms

Mental illness symptoms can range, relying at the disorder, instances and other factors. Mental illness signs and symptoms can have an effect on feelings, thoughts and behaviors.

Examples of some symptoms related to mental Health consist of: -

- Feeling unhappy or down
- Stressed wondering or decreased ability to pay attention
- Immoderate fears and intense emotions of guilt
- Sudden mood change
- Withdrawal from buddies and sports
- Substantial tiredness low energy or issues napping
- Lack of ability to deal with every day issues
- Issues with alcohol problem and drug
- Fundamental changes in eating habits
- Immoderate anger
- Suicidal thoughts

4. TECHNOLOGY USED

4.1.Firebase

Firebase is a Backend-as-a-service. It offers developers an expansion of tools and services to aid them to develop fine apps, developing their user base, and earning profit. It constructed on Google's infrastructure.

Firebase uses NOSQL JSON based data for its Realtime database.

Key functions of Firebase-

- Data synchronized throughout all users in Realtime and is available to use even after being offline.
- Firebase web hosting offers speedy hosting for websites; content material is cached into content delivery networks global.

4.2.Figma

Figma is a layout tool, that may be used each in browser and immediately for your platform as stand-on its own app (macOS, home windows).

It is frequently taken into consideration to be an alternative to sketch.

Users individually use it to make creatives, slides for presentations, however, it is also amazing for prototyping, and collaboration on shared tasks

Figma is a virtual product design tool that excels in six regions:

- Accessibility and collaboration
- Flexibility to iterate and convey deliverables
- Capacity to construct prototypes and check
- Organizing a single supply of fact
- Easy handoff to developers
- Room for development with plugins

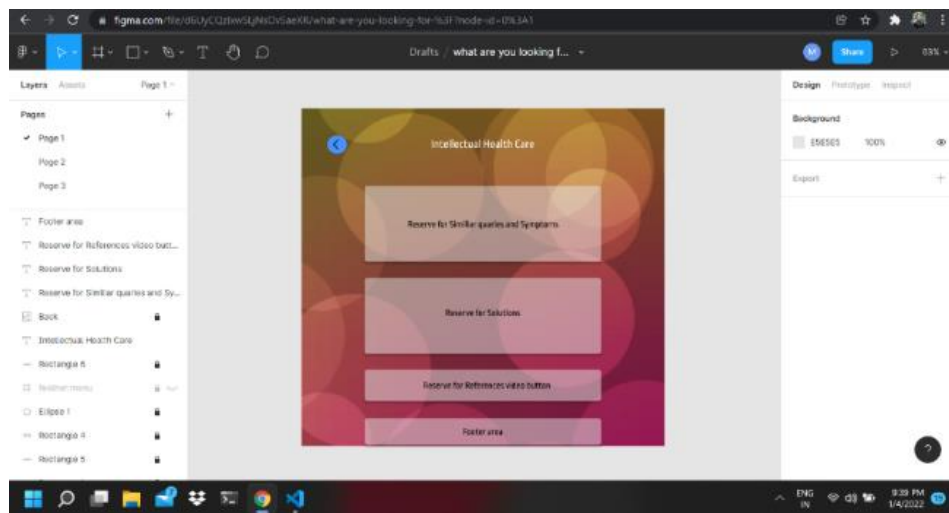


Figure 3. Forum Prototype Design using Figma

5. METHODOLOGY

We have maintained a Firestore Cloud database where many keywords have been stored as well as simultaneous solutions, Relevant questions and Meditation links. When a user searches a keyword regarding its mental health issue and then the keyword will match to our Firestore Cloud database, after finding it in database, it will extract the relevant solutions and displays on the site. It will also show the relevant Questions regarding that searched keyword. The site will also enlist the symptoms regarding that mental health problem and YouTube links of Meditation at the bottom of the page. If the keyword is not found in the Firestore cloud database, Alert will simply pop up with a message “Data Not Found” or “Refresh the site” then the user may have to search with different keyword to get the satisfactory solutions.

5.1. Layout and Description of Cloud Firestore

We have created two collections here in Firestore Database as shown is fig 5. First one is “123” which contains keywords and their corresponding Symptoms, related questions and meditation links which will be beneficial in curing the mental health of the users, the entered keyword by the user is compared with the stored keywords in database then corresponding Solutions will be displayed on the site. The other collection we created is “456” which is storing the feedbacks along with name and email entered by the user as shown in fig 6 which will help us to enhance and upgrade the site.

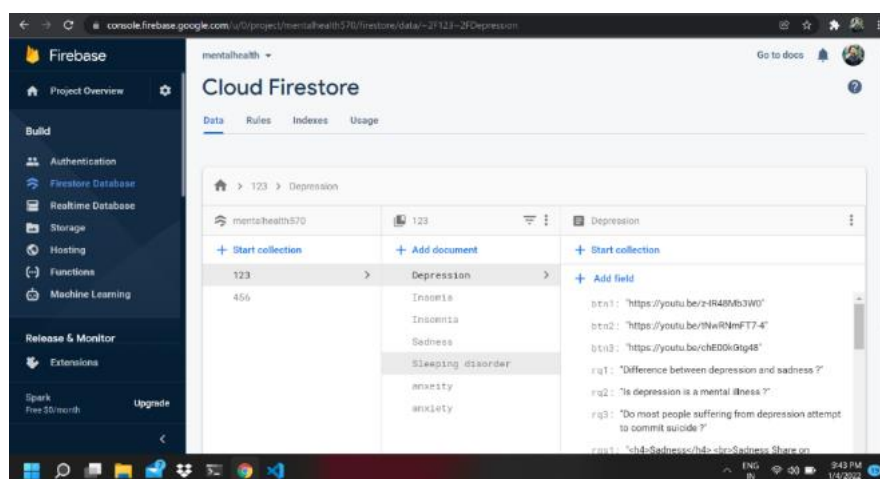


Figure 5. Firebase Cloud Database

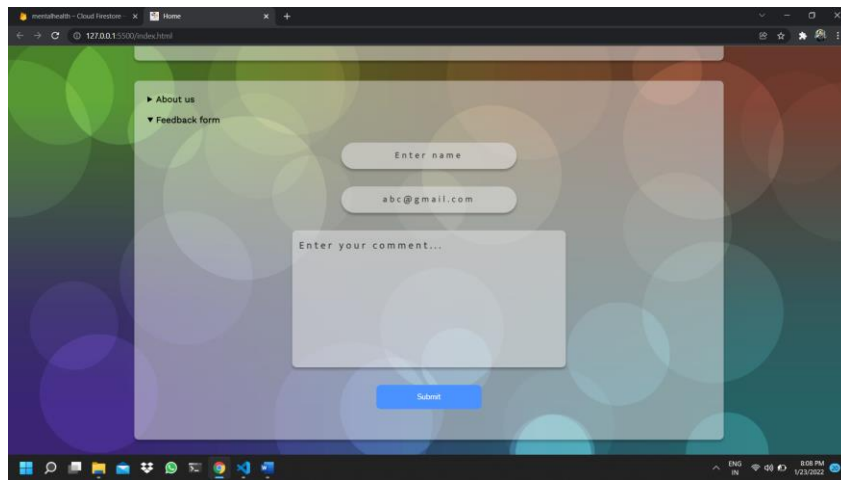


Figure 6. Feedback form of site

5.2. Algorithm

- Step1: Start
- Step2: User search (Keyword) his/her Mental illness related Problem in the search bar.
- Step3: That entered keyword will look for the Keyword one by one that are already stored in our Firebase Cloud Database.
- Step4: Once the keyword is matched in our Firestore Cloud database, it will fetch solutions, Related Questions and Meditation Links from database and displays on site.
- Step5: End

5.3. Data Flow Diagram

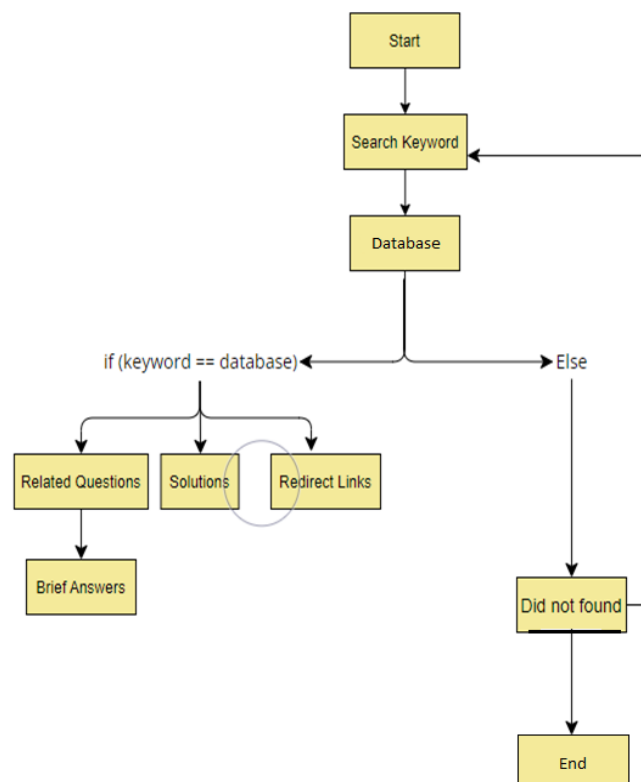


Figure 4. Data Flow Diagram

5.4. Snapshots

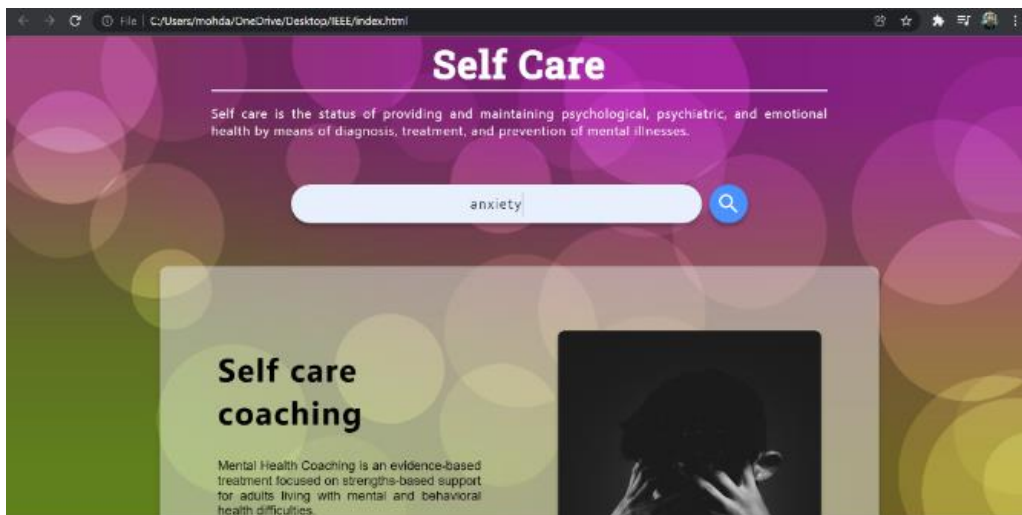


Figure 7. Home Page Self-Care

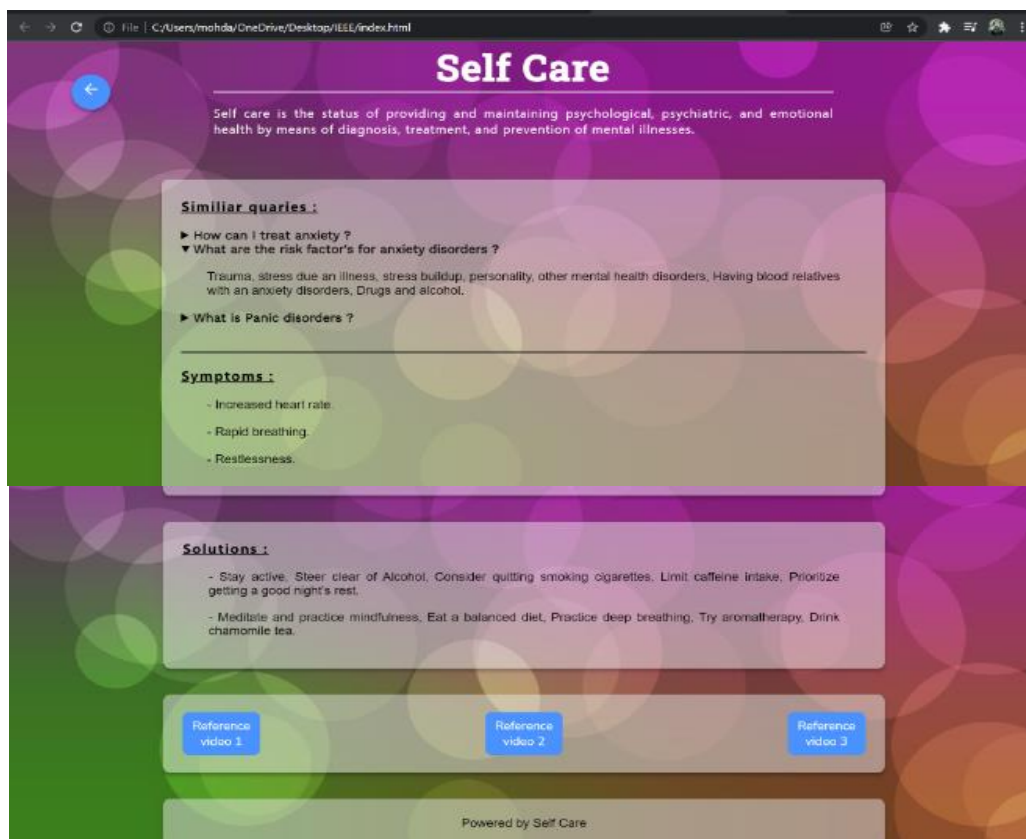


Figure 8. The Solution page Self Care

This is home page of site containing a search bar as shown in fig 7 the user will search keyword regarding their issue. And a solution page reflecting Solutions, Symptoms, Relevant questions and some meditation link buttons at the bottom as shown in fig 8.

6. CONCLUSION

We presented a novel method for digital Antidepressant by developing a Mental Health Forum, mental health problems are very frequent and every person need to give priority to this also. One need to

understand that mental health is as much as important as physical health so, this site is creating awareness about mental health issues. It predominantly focuses upon the information that is needed for a person to acquire proper treatment/solution, who is suffering from any mental illnesses (depression, anxiety, Insomnia, etc.). This provides information, related Questions as well as Meditation video links to all the mental-related problems. The GUI of this forum is easy to understand as a consequence users would not face the usability issue. For information and solutions that is fetched on the site; a database on Cloud Firestore is setup. As shown in the Table 1, we found that 25.4% deal with general mental health, 21.7% with depression, 18.8% anxiety, 25.4% general mental health, 10.0% stress, 2.6% post-traumatic disorder, 3.7% bipolar disorder, 3.6% panic disorder, 7.5% sleep disorder, 1.9% schizophrenia, 4.5% obsessive-compulsive disorder, 0.3% substance abuse, 2.2% addiction. The site offered various approaches to improve the mental health conditions seen in Table 2. The approaches include relaxation (32.4%), stress management (12.5%), symptom tracking (23.6%), calming audio (10.7%), connect with mental health resources (2.1%), interpersonal support (3.7%), meditation (16.6%).

Table 1. Mental Health diagnosis or Symptoms

Symptoms	%
Depression	21.7
Anxiety	18.8
General Mental Health	25.4
Stress	10.0
Post-traumatic stress disorder	2.6
Bipolar disorder	3.7
Panic disorder	3.6
Sleep disorder	7.5
Schizophrenia	1.9
Obsessive compulsive disorder	4.5
Substance abuse (Drug and Alcohol)	0.3
Addiction (Non drug and alcohol related addiction)	2.2
No specific symptom or diagnosis mentioned	1.7
Total	100.0

Table 2. Approaches to improve Mental Health

Approaches to improving mental health	%
Relaxation	32.4
Stress management	12.5
Symptom tracking	23.6
Calming audio	10.7
Connect with mental health resources	2.1
Interpersonal support	3.7
Meditation	16.6
Total	100

7. FUTURE SCOPE

Mental health problem is increasing worldwide due to the demographic changes and almost 13% increase in mental health conditions in the last 10years till 2017 as per released by WHO. thereby, this site also has to be updated time to time so that mental illness can be cured effectively and smoothly. The forum can be enhanced as:

1. Developing a Mobile Software as it is more reliable and easier to use for people. That App can work even in offline mode as data will be synchronized throughout all customers in real-time and is available to use even after being offline.
2. Making Login Page in order to keep records of the user regarding meditation and exercise schedule and diet plan.
3. Providing an opportunity for the psychology Students Worldwide to register and do internships as a psychiatrist, the basic idea here is that many people might not get satisfactory solutions regarding their problem, so for these user's virtual psychiatrists (psychology students) will be there who will do the therapy by listening to them virtually and giving tips and solutions to users. It will also help psychology students to develop themselves by facing Real-time problems of people. Because sometimes it's hard for a patient to trust and sometimes a person dodges to take a proper counseling session with a physical psychiatrist because of their privacy issues. Therefore, this virtual psychiatrist will be more effective to resolve the problem.
4. Implementation of using sensors and Artificial Intelligence to record the vitals data and send it to our website then the site will display the details about what type of mental health a person is suffering and then give the solutions accordingly. Vital data such as blood glucose level; BP; pulse rate; electrocardiograph patterns; respiration rate; respiration effectiveness (e.g., blood oxygen saturation) can be extracted when a person is wearing Smart Watches or any other wearable sensor device.

REFERENCES

- [1] Huang H, Bashir M. "Users' adoption of mental health apps: examining the impact of information cues". *JMIR Mhealth Uhealth*. 2017 Jun 28;5(6):e83. doi: 10.2196/mhealth.6827. <https://mhealth.jmir.org/2017/6/e83/>
- [2] Xie Z, Zhu S. AppWatcher: "Unveiling the Underground Market of Trading Mobile App Reviews. Proceedings of the 8th ACM Conference on Security & Privacy in Wireless and Mobile Networks"; WiSec'15; June 22-26, 2015; New York, USA. 2015.
- [3] Gunter RW, Whittal ML. "Dissemination of cognitive-behavioral treatments for anxiety disorders: overcoming barriers and improving patient access". *Clin Psychol Rev*. 2010 Mar;30(2):194–202. doi: 10.1016/j.cpr.2009.11.001.
- [4] Barboutov K, Furuskar A, Inam R, Ericsson. Stockholm: Niklas Heuvel; 2017. [2020-05-21]. Ericsson Mobility Report <https://www.ericsson.com/assets/local/mobility-report/documents/2017/ericsson-mobility-report-june-2017.pdf>.
- [5] Firth J, Torous J, Nicholas J, Carney R, Rosenbaum S, Sarris J. "Can smartphone mental health interventions reduce symptoms of anxiety? A meta-analysis of randomized controlled trials". *J Affect Disord*. 2017 Aug 15;218:15–22. doi: 10.1016/j.jad.2017.04.046. [https://linkinghub.elsevier.com/retrieve/pii/S0165-0327\(17\)30015-0](https://linkinghub.elsevier.com/retrieve/pii/S0165-0327(17)30015-0).
- [6] Firth J, Torous J, Nicholas J, Carney R, Prata A, Rosenbaum S, Sarris J. "The efficacy of smartphone-based mental health interventions for depressive symptoms: a meta-analysis of randomized controlled trials". *World Psychiatry*. 2017 Oct;16(3):287–98. doi: 10.1002/wps.20472. doi: 10.1002/wps.20472.
- [7] Lai J, Jury A. Te Pou o te Whakaaro Nui. Auckland: Te Pou o te Whakaaro Nui; 2018. [2020-05-21]. "Effectiveness of e-mental health approaches: Rapidreview" <https://www.tepou.co.nz/uploads/files/resource-assets/E-therapy%20report%20FINAL%20July%202018.pdf>.
- [8] Firth J, Torous J, Carney R, Newby J, Cosco TD, Christensen H, Sarris J. "Digital technologies in the treatment of anxiety: recent innovations and future directions". *Curr Psychiatry Rep*. 2018 May 19;20(6):44. doi: 10.1007/s11920-018-0910-2. <http://europepmc.org/abstract/MED/29779065>.
- [9] Statista. Number of smartphone users worldwide from 2016 to 2021 (in billions). [Internet]. Statista. 2020 [cited 2020Mar2]. Available from. <https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/>
- [10] Research2Guidance. 325000 mobile health apps available in 2017– Android now the leading mHealth platform. [Internet]. research2guidance. 2017 [cited 2020Mar17]. Available from.

<https://research2guidance.com/325000-mobile-health-apps-available-in-2017/>

- [11] KitHuckvale, JenniferNicholas, JohnTorous, Mark ELarsen. “Smartphone apps for the treatment of mental health conditions: status and considerations”. <https://doi.org/10.1016/j.copsyc.2020.04.008>

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