If AI Could be The Future of Detecting Mental Health Issues?

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ABSTRACT

Mental health issues are one of the trending issues nowadays and from the last pandemic, it has been seen in many people that are facing a lot of mental issues not even just the pandemic is the reason for mental issues but the workload or any past incidents or bullying, etc. also could be the reason for mental health problems. Because of this mental health is increasing on a large point but not all people get it treated, some of them are scared to get it and most of them are not aware about this.

Technology offers some ways to improve mental health and in a recent study, it is found that AI(artificial intelligence)can detect anxiety symptoms with over 90% accuracy. In this paper, we look at mental health problems and how AI is been used in detecting these issues.

KEYWORDS: Mental Health, Artificial Intelligence, Healthcare

1. INTRODUCTION

AI (artificial intelligence) has been commonly used in the healthcare industry. In healthcare, industry delays can make a huge difference in which AI helps the care team to react faster with AI-powered healthcare solutions. Some companies provide AI products that can detect issues and notify the care team so then they can discuss options and provide faster treatment, thus saving lives.

Mental health care is that kind of domain where human intervention is inevitable but because of AI, it is slowly changing. Virtual counselors are becoming most popular among individuals from the last pandemic, people who can't afford the services of certified professionals are likely to use this option. In India, the National Mental health survey which was held in 2015-2016 reported that overall, there is an 83% of treatment gap for any mental health problems and only 1 in 10 get the evidence treatment. To overcome this situation AI comes into the picture.

STRUCTURE OF PAPER

The paper is organized as follow in section 1 Introduction of the paper is provided. With the overall description. In section 2 we discussed about what is mental health, in section 3 we have discussed about artificial intelligence used in mental health issues in section 4 we share information about growth of AI in healthcare. In section 5 we discussed about how to prevent mental health issues through AI. In section 6 it

talks about positive and negative impacts followed by research methodology in section 7. In section 8 result of survey is shown and in section 9 we have done descriptive statistics on surveys result. And in section 10 and 11 we have provided findings and conclusion followed by bibliography respectively.

2.WHAT IS MENTAL HEALTH?

Mental health includes our psychological, emotional, and social well-being and also includes issues like depression, panic attacks, trauma, and psychotic disorder(schizophrenia). Mental health is important from childhood and adolescence. Mental health is more than the absence of mental disorders, and every person experiences it differently, the degree of difficulty and distress varies from person to person and every individual faces different issues and different clinical outcomes. Exposure to unfavorable economic social, geopolitical, and environmental incidents including poverty, inequality, violence, and environmental deprivation also increases an individual's mental health conditions. Mental health risks can also be found in society at different scales. Local threats increased risk for individuals, families, and communities. Global threats increased the risk for whole populations and include disease outbreaks, growing climate crisis economic downturns, humanitarian emergencies, and forced displacement also increase mental health conditions. In spite of that, the topic of mental illness remains taboo, the majority of the population faces a lack of awareness or is scared to discuss the issues within their households.

3.WHAT IS AI ON MENTAL HEALTH?

AI(artificial intelligence) and mental health seem opposite from each other. But in past years AI has played an important role in the medical industry. AI focuses on specific behaviors to detect anxiety issues using motion sensors and deep learning techniques which include hand tapping, nail-biting, etc. and the results are almost 92% accurate. In a recent clinical study, which was held in July 2021, scientists at Stanford University discovered a new model of mental health treatment in which AI is implemented significantly reducing symptoms of depression and anxiety, basically, the team analyzed how AI-based telehealth platforms for mental health, Youper affected symptoms of anxiety and depression through AI therapy.

This telehealth in AI is used to deliver interventions to help an individual practice emotion regulation skill anywhere and anytime using their smartphones. e.g., Moodfit.

4.GROWTH OF AI IN HEALTHCARE

The COVID-19 pandemic has positive impact on various healthcare-related markets, one of them being AI. AI tools are rapidly being used to detect and diagnose health-related issues using personal information and learning

The market value of AI in health care in 2020 was $8.23 billion and some predictions say that it can reach up to $194.4 billion. In the healthcare market, AI is segmented on basis of offerings, algorithms, applications, end users, and region. In Offering the market is divided into software, hardware, and services. In algorithms, it is classified into natural language processing, deep learning, query method, and context-aware processing. In application, it is divided into virtual nursing assistant, robot-assisted surgery, fraud detection, preliminary diagnosis, and others. In end-user, it is classified into pharmaceutical, health care providers, payers, patients, and biotechnology companies. In region wise it is categorized across Europe, Asia-Pacific, and North America.

5.HOW TO PREVENT MENTAL ISSUES THROUGH AI

AI provides a telehealth platform for those individuals who are unable to take treatments in person, generally, these telehealth platforms are available freely on the play store or Appstore and one can easily access them. These telehealth apps host a range of mindfulness and meditation exercises, calming techniques, and information on better sleep.

Even though AI can analyze speech data, physical manifestations like "changes in the brain" can be closely studied through AI algorithms. For e.g. Facebook uses AI technology to flag posts that suggest suicidal thoughts or expressions, to be analyzed by individual reviewers. The other advantage of these algorithms is it is convenient. Generally, these chatbot applications are ready to listen and engage in a conversation anywhere and anytime so there will be no complications in appointment times with therapists.

6. IMPACTS

ADVANTAGES OF AI IN MENTAL HEALTH

*Providing high therapy standards through quality control

Because of the high demand for services and heavy workloads, most mental health facilities are looking into automated methods to test quality control among therapists. Technical companies have noticed these issues and are providing the

clinics with tools that can help therapists and clients better understand each other's language.

*Refining Diagnosis and assigning the right therapist

AI helps doctors in detecting mental illness very early and make more accurate treatment decisions. Researchers believe that doctors can utilize data insights to probably match clients with the correct therapists and which therapy style would work the best for an individual. Through AI therapists can filter through an extensive quantity of data to uncover patient's behaviors, family histories, and responses to their earlier treatments this information allows them to establish more proper and specific diagnoses more informed treatments, and therapist selections

*Monitoring Patient progress and altering the treatment

Through AI therapists can track and monitor patient development, AI can also detect when it's time for a therapy change or a new therapist, e.g.,Lysnn's, it analyses utterances between the patient and the therapists to determine how much time is spent on actual treatment vs basic chit chat during sessions.

*Justifying CBT (Cognitive Behavioral Therapy) instead of medicine

To treat mental health conditions such as depression usage of medicines has increased But AI can aid in the acceptance of CBT as a treatment method, CBT tries to identify negative thought patterns and start to develop strategies to break them, which can help the therapists in utilizing statements to explore methods of change and future planning

DISADVANTAGES OF AI IN MENTAL HEALTH

*Risk of data leakage

As AI uses data there is a high risk of data leakage, Companies collect, utilize and control data in many AI services, and similarly, clinics, private entities, and public bodies can also access the data so, there is always a huge risk of data leakage to hackers and third parties and because of this your data can be used for unethical purposes

*Less Responsive

Artificial Intelligence totally relies on data. As much data is provided AI will react to the same in some telehealth apps the responses got by an individual would be the same on any issue, basically, it duplicates the responses. Insufficient and bad-quality databases can also affect the validity of the AI model for mental health. To improve this, we can provide more transparent and clear data using in-depth algorithms.

7.RESEARCH METHODOLOGIES

A model may include both descriptive and analytical components. A descriptive model's logical relationships can be examined, and conclusions can be drawn to reason about the system. Nonetheless, the logical analysis yields quite different conclusions than a quantitative chemical investigation of system properties. We first conducted a poll of people utilizing an online form creator and data collection service to acquire information regarding people's awareness
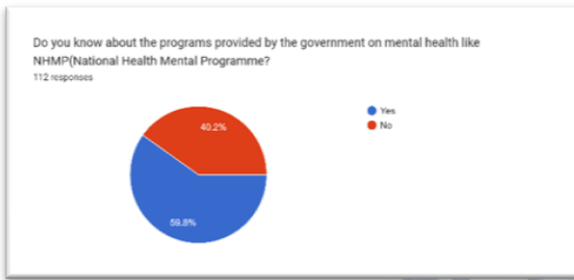
8. SURVEY QUESTIONNAIRE AND RESULTS
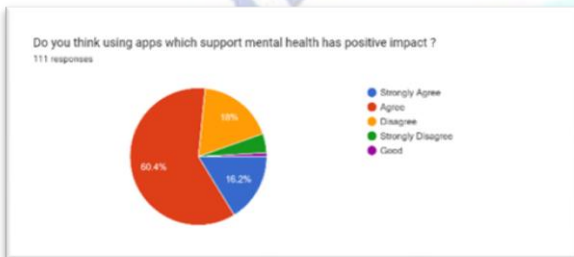
1. Age Group, you belong to
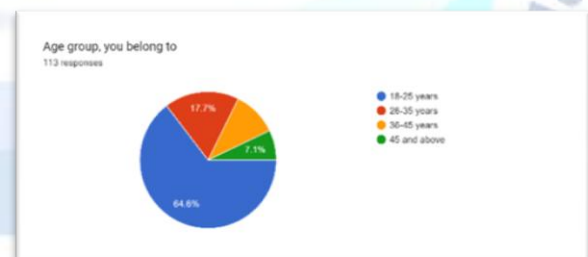
2. Are you aware of the term AI(Artificial Intelligence) being used in detecting mental health issues?
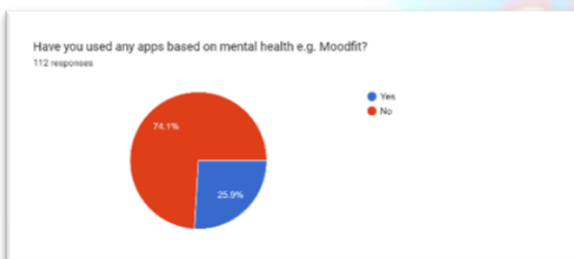
3. Do you know about the programs provided by the government on mental health like NHMP (National Health Mental Programme)?
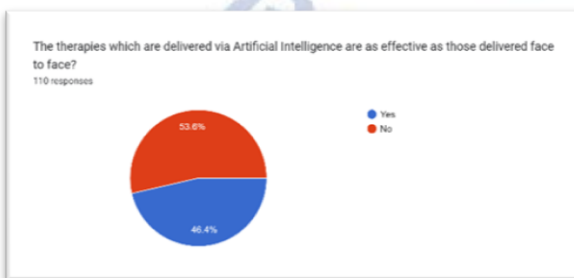

4. Do you think using apps which support mental health has a positive impact?
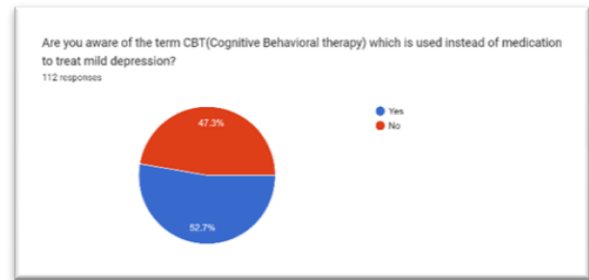

5. Have you used any apps based on mental health e.g., Moodfit?

6. The therapies which are delivered via Artificial Intelligence are as effective as those delivered face to face?
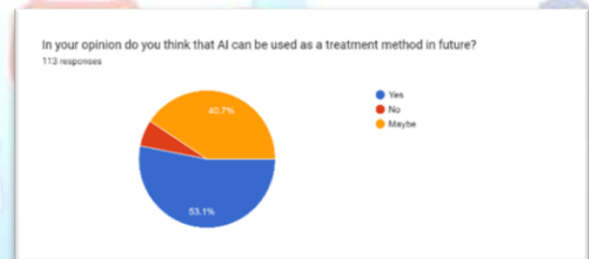

7. Are you aware of the term CBT (cognitive Behavioural therapy) which is used instead of medication to treat mild depression?

8. Are you aware that AI can use your family's medical history to detect your mental health issues?
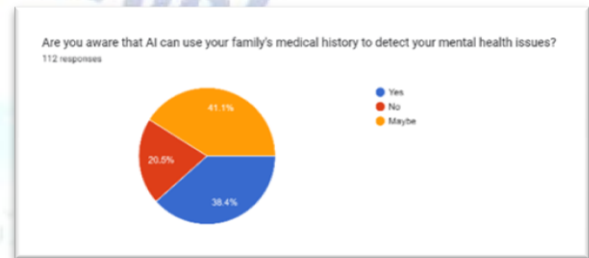
9. In your opinion do you think that AI can be used as a treatment method in the future?

9. TESTING
DESCRIPTIVE STATISTICS
Descriptive statistics are a part of statistics that can be used to summarize and describe data.

Data obtained through Survey:

sr.no	data
1	82.3
2	74.1
3	59.8
4	76.6
5	74.1
6	53.6
7	52.7
8	79.5
9	93.8

Descriptive Analysis	
Mean	71.83333333
Standard Error	4.605552205
Median	74.1
Mode	74.1
Standard Deviation	13.81665661
Sample Variance	190.9
Kurtosis	-0.790730236
Skewness	-0.151116005
Range	41.1
Minimum	52.7
Maximum	93.8
Sum	646.5
Count	9
Confidence Level(95.0%)	10.62042243

10. FINDINGS

1. Most People are aware of the term AI used in mental health or health care industry and even know it is been used to detect the issues

2. People are not that aware of the programs provided by the government. And some individuals just know that these programs just exist but don't have knowledge about the facilities they provide

3. the AI needs to keep the balance between the therapy sessions not all sessions are that effective

4.People should at least give a shot to the apps provided by AI on mental health and also be aware of the term CBT.

5. As AI can detect mental health issues through sensors but is still emerging, the more data is provided, AI can also help in treatment.

6. Telehealth apps which are provided by AI are very much effective but not everyone downloads and uses them.

11. CONCLUSION

According to the survey AI is still emerging in the healthcare industry, not everyone is familiar with this technology, and AI totally relies on data, so there are some limitations to it. AI can only be used as a bridge that can provide minimal support to individuals who need to vent their feelings. There are telehealth platforms that provide help with mental health problems but even if it is freely available individuals are not using them on

that scale. When using AI to mitigate mental health issues, awareness is the most crucial factor. Where individuals can puzzle out the abilities of an application fully before using it and not expect more than what telehealth can offer.AI can be used for detecting, Mental health issues can be reduced if AI-based apps are already installed on smartphones, as this will require a lot of knowledge about algorithms, deep learning. But it will make a drastic change in the healthcare industry.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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