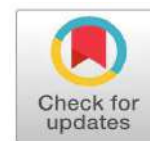


# Self Identifying Mental Health Status and Get Guidance For Support Using AI

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## Publication History

Manuscript Reference No: IRJCS/RS/Vol.11/Issue05/MYCS10093

Research Article | Open Access | Double-Blind Peer-Reviewed | Article ID: IRJCS/RS/Vol.11/Issue05/MYCS10093

Received: 12, April 2024 | Revised: 10, May 2024 | Accepted: 23 May 2024 | Published Online: 30, May 2024

<http://www.irjcs.com/volumes/Vol11/iss-05/07.MYCS10093.pdf>

**Article Citation:** Nishant, Dr. Vikas (2024). Self Identifying Mental Health Status and Get Guidance For Support Using AI. IRJCS: International Research Journal of Computer Science, Volume 11, Issue 05 of 2024 pages 471-476

**doi:** <https://doi.org/10.26562/irjcs.2024.v11i05.07>

**BibTeX** `Vikas@2024Self`



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**Abstract:** In recent years, an awareness has emerged about the importance of the individual in mental health and treatment. Mental health problems are common among college students around the world; Therefore, identifying at-risk groups will help provide services. Self-diagnosis of mental illness is an important step in recognizing and addressing personal health. Our goal is to develop a screening tool to identify students at risk for mental illness. Students are taught to use assessment tools to distinguish between those at reduced and increased risk of mental illness. Psychological services should be provided to students at risk. Despite the prevalence of psychological problems, problems such as fear of decision-making and lack of information often make it difficult for people to define themselves. The person may deny or ignore symptoms, which may delay the person's intervention and make the situation worse. Empowering people with mental health knowledge and resources can enable them to take part in their own health. As well as personal benefits, self-expression can promote understanding and acceptance and contribute to a culture of empathy and support. Artificial Intelligence (AI) technology holds both great promise and potential pitfalls in transforming mental health. This article discusses the current limitations of artificial intelligence, areas where further research is needed, and how it can improve healthcare by considering the ethical fairness of intellectual technology. As AI technology continues to evolve and improve, it may be able to help psychiatrists reclassify mental disorders beyond what is currently specified in the DSM-5, identifying these problems in their early or prodromal stages so that interventions can be implemented. Quality and personalized treatment based on individual characteristics. However, caution must be exercised to avoid overinterpretation of preliminary results, and more studies must be conducted to close the gap in scientific expertise on mental health and treatment.

**Keywords:** Technology, Machine learning, Natural language processing, Deep learning, Schizophrenia, Depression, Suicide, Bioethics, Research ethics,

## INTRODUCTION:

This article provides a comprehensive review of the characteristics of cognitive abilities that influence mental health. A good early example of clinical expertise is MYCIN, developed by Stanford University in the 1970s to diagnose infections and recommend appropriate antibiotics. At the same time, experts have integrated multiple clinical decision support systems (CDSS) to assist physicians in decision making. One example of this collaboration in mental health is the Texas Medication Algorithm Project (TMAP), which focuses on computer-assisted treatment of depression at the University of Texas Southwestern Medical School. Despite the success of AI and CDSS in research fields, they still face significant implementation problems in real situations. Each patient has unique characteristics and symptoms that may affect the effectiveness of treatment [6]. Doctors often have to adjust treatment recommendations that may not be universally applicable. Additionally, treatments validated in clinical trials may not always translate directly into daily clinical practice. Expert systems and CDSS face the challenges of knowledge engineering, which involves managing and updating information systems. For example, IBM's Watson has been applied to complex health problems such as cancer, showing that the modern evolution of AI still includes some basic principles of expertise. But these systems often lack the flexibility and specificity of human intelligence. This article is structured as follows: the use of artificial intelligence in healthcare, specifically mental health. various studies on mental health. The limitations of AI in mental health research. A scenario for AI mental health research and suggests future directions in this field.

**Mental Health:** Mental health is an important part of physical health; It encompasses the way people think, feel, and interact with others. Today, artificial intelligence (AI) is used to diagnose different types of mental disorders and their symptoms. AI-enhanced motion sensors also increase the accuracy of detecting signs of anxiety.

**AI in Healthcare:** To increase to increase to increase to increase to increase to increase to increase to increase to increase to increase to increase to increase artificial intelligence is being used more and more. to increase to increase to increase to increase to increase to increase The main benefit of intelligence is the ability to quickly observe patterns in big data. Medical fields where artificial intelligence is particularly successful include ophthalmology, cancer diagnosis and radiology. In these areas, AI technology can often outperform medical professionals by detecting abnormalities or obscure spots in sales that cannot be seen by humans, such as brain examinations. Although smart machines cannot completely replace doctors, they are used to support medical decisions. AI-based systems can quickly aggregate data from multiple medical data sources. For AI to be realized, big data such as digital medical records are invaluable because they can be computationally analyzed to reveal conditions related to human behavior and other things that are difficult to define.

**Ethics and AI Mental Health Research:** The spread of artificial intelligence into many areas, including mental health, highlights the need for ethical evaluation and regulation of this technology. Artificial intelligence presents its own set of ethical issues, including issues related to justice, participation, transparency, accountability, privacy, trust, and security.

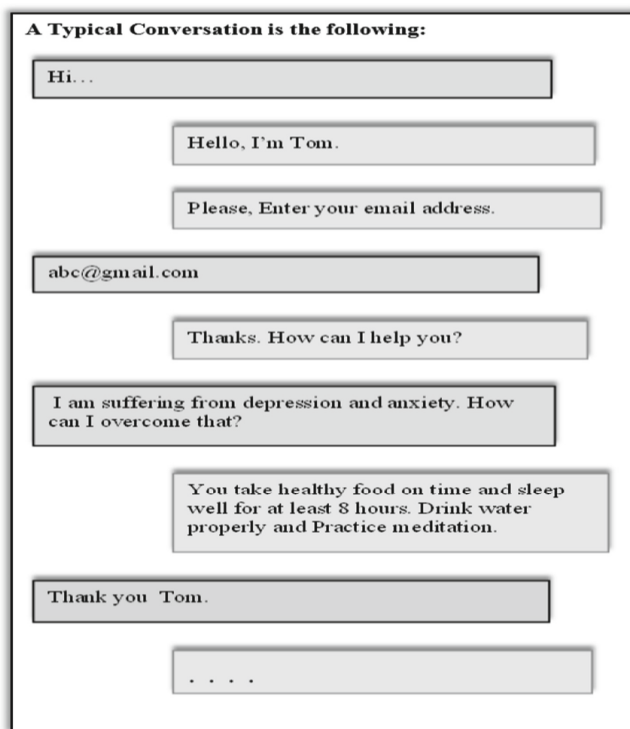
**AI Research on the Involvement of Patient and Public Mental Health:** There are many ways to involve users and patients in the research and development of mental health AI, particularly through public and patient engagement (PPI). Similar studies have been conducted on the effectiveness of digital psychological interventions, including smartphones and web-based therapies. Many universities are working on the development of artificial intelligence for health and mental health, and there is also a lot of research on artificial intelligence in the private sector, including private companies and investment-backed technology startups. Many of these private organizations do not adhere to the same stringent standards for research ethics approval and do not share the PPI culture typical of universities or the NHS. Predictive modeling is a type of machine learning that uses big and precise data to identify patterns in artificial intelligence. In this article, the authors discuss research that can support clinical researchers and members of the data mining community collaborating to develop predictive models for healthcare, treatment options, and self-care.

**Well-Being and Educational Performance:** Mental health problems are quite common among college students. Currently, approximately 70% of high school graduates worldwide attend university. University years often coincide with the emergence of many psychological disorders, especially depression, anxiety and addiction. These problems are often caused by stress, anxiety, and learning disabilities. The stress of learning and performing well in the university environment is associated with increased stress. Procrastination and poor academic performance are also associated with depression and self-esteem. Mental health problems can also affect academic performance. There is a clear link between education and mental health problems. Understanding this relationship is key to finding solutions that don't sacrifice one for the other. Symptoms of mental health problems often arise from negative emotions such as pain, stress, and fatigue. As students move on to college, they transition from early adolescence to early adulthood. This is critical for early adult development and is characterized by independence, social instability, and change in role demands. This explains why this transition, especially in early college, is often associated with academic failure and poor performance.

**Internet-Based Mental Health Care:** Treatment of mental health issues through traditional face-to-face methods is more common than online. However, digital psychology solutions have the advantage of being efficient and effective. Some recent meta-analyses show that online therapy is as effective as face-to-face therapy in treating mental health problems. The main goal is to solve or prevent stress, anxiety, depression and other psychological problems of college freshmen through online dating. This research and discussion is in the field of statistics and psychology. In fact, the transition to college is an important part of the transition to adulthood. Online or virtual therapy provides a more effective, practical and efficient way to solve these problems. One of the benefits of online healthcare is anonymity, which involves the disclosure of more personal information. Another part of this research focuses on improving student learning and overall health through targeted interventions. Goal setting can help students manage their time effectively and increase their academic success. These comprehensive programs encourage students to establish any number of goals, whether academic, social, or mental health-related.

**Mental Healthcare Chatbots:** Software programs that use artificial intelligence and language to understand human needs and help achieve desired results are called chatbots. These are becoming more common across websites and online services, including customer service, marketing, healthcare and more. The chatbot, especially for mental health, provides a supportive environment for people suffering from depression and anxiety problems. These chatbots work like cognitive behavioral therapy, using a variety of techniques to deal with stress. Chatbots are often trained using supervised learning on big data, while unsupervised learning can use Markov chain models or decision tree networks. In education, the application of chatbots is still being explored, with important areas including language learning, emotional intelligence, emotional intelligence, and more. These chatbots have the potential to revolutionize mental health systems because they can identify emotions and connect with users to express emotions like humans. Woebot is a famous example of a doctor chatbot. Originally Joseph Weizenbaum created it to show the interaction between humans and machines. Surprisingly, he discovered that many people, including his secretary, became so body-obsessed that they sometimes forgot they were interacting with the computer. His secretary even asked him to leave the room and have a "real conversation" about the show.

The best game, "Doctors," models doctors by telling customers to support expansion using the Rogers Method, a pattern developed by physician Carl Rogers that involves asking wrong questions and repeating frequently. Chat technology has continued to evolve with the introduction of smart assistants such as Microsoft Cortana, Apple Siri, and Amazon Alexa, as well as many interactive and task-oriented chatbots. Initially, these chatbots rely on answers determined by the rules-based process, which makes them seem not very smart. But using more advanced machine learning techniques allows modern chatbots to deliver better answers and more relevant content.



**Fig 1- Conversation Scenario**

| S.No                                           | PaperTitle                                                                                                                                      | Objectives                                                                                                                                     | Age Range                                                                     |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Research Assessments (Novel monitoring system) |                                                                                                                                                 |                                                                                                                                                |                                                                               |
| 01                                             | For the diagnosis of depression a nuero fuzzy approach is used                                                                                  | As per the representation of Mathematical model psychiatrist perceive various clinical depression symptoms and therefore diagnose these states | 20 to 51 years                                                                |
| 02                                             | ToEvaluate Dosing Compliance in a Phase 2 Clinical Trial in Subjects With Schizophrenia .We use a Novel Artificial Intelligence Platform.       | Using new AI based platform AI Cure, RCT of medical observation is subjected with SZ                                                           | 45 ± 10 years                                                                 |
| 03                                             | A Pilot Trial in the Wild- For MobileSensingandSupport for People with Depression.                                                              | Classify subjects that include clinical depression data that has been collected from smartphone                                                | 21 to 58 years                                                                |
| A. Social Media                                |                                                                                                                                                 |                                                                                                                                                |                                                                               |
| 04                                             | An Analytical Study on Instagram to explore the utility of social media content for detection depression generated by community.                | From community-generated social media content vs. social media content generated by individual.                                                | 26 ± 8 years                                                                  |
| 05                                             | To Predict Suicidal Idea and Psychiatric Symptoms in a Text-Based Mental Health Intervention .Novel use of Natural Language Processing is used. | Highlights psychiatric symptoms and predict suicide ideation from various survey data and other text data                                      | 40.5 years<br>40.0 ±13.8 years<br>never suicidal 41.6 ±13.9 Years<br>Suicidal |
| 06                                             | Using an event-driven depression tendency warning model we can analyse depression tendency of web posts.                                        | From web- related posts predict depression tendency                                                                                            | Notreported                                                                   |

|                                                |                                                                                                                                                                               |                                                                                                                |                                                                                            |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 07                                             | Emotion artificial intelligence can be use for detectiong depression.                                                                                                         | Identify Tweets that illustrate various signals of depression and also emotional health                        | Not reported                                                                               |
| 08                                             | Use of Social Media Posts for predicting depression levels.                                                                                                                   | Basedontheirregularposts identify social network users' depression                                             | Not reported                                                                               |
| <b>Brain imaging</b>                           |                                                                                                                                                                               |                                                                                                                |                                                                                            |
| 09                                             | Brain AGE score indicates that accelerated brainaging in not bipolar disorder, its only aging in schizophrenia.                                                               | Using Brain AGE scores detect accelerated brain agingin analyze.                                               | Sz mean33.7±10.5, (21.4–64.9); Mean 33.8 ± 9.4, (21.7–57.8); BP mean37.7±10.7, (23.8–57.7) |
| 10.                                            | Byimprovingschizophrenia prediction with many brain parcellationgrape learning towards artificial intelligence in mental health.                                              | Using fMRI data classify SZ                                                                                    | Notreported                                                                                |
| 11.                                            | For adding clinical and imagingfeatures in late-life depression classification and response prediction machine learning approach is used.                                     | From multimodal imaging and network-based features predict late-life MDD diagnosis                             | Notreported                                                                                |
| 12.                                            | Neurophysiological subtypes of depression is defined by resting state connectivity biomarkers.                                                                                | From diagnose subtypes of depression with biomarkers                                                           | Mean of training= 41 years<br>Mean of depression = 38.5years                               |
| <b>Clinical assessments Mood rating scales</b> |                                                                                                                                                                               |                                                                                                                |                                                                                            |
| 13                                             | Prediction of Anti depressant Treatments and revaluating the efficiency a Symptom Clustering Approach is used.                                                                | The efficacy of anti depressant treatments on empirically is determined by defined group of symptoms.          | Training 41± 13.4years<br>Testing42.8± 12.3years                                           |
| 14.                                            | To Identify Place bo Responders in Late-Life DepressionTrials Machine learning approach is used.                                                                              | The efficacy of anti depressant treatments on empirically is determined by defined group of symptoms.          | Training 41± 13.4 years<br>Testing 42.8± 12.3 years                                        |
| 15.                                            | A machine learning approach is used in cross trial prediction of treatment.                                                                                                   | Prediction is done whether patients with depression will achieve symptomatic Remission after a 12 week course. | 19 to 76 years                                                                             |
| <b>E. Electronic health record (EHR) data</b>  |                                                                                                                                                                               |                                                                                                                |                                                                                            |
| 16.                                            | Research Database uses Natural LanguagProcessing for identifying suicidal Attempts in a Psychiatric Clinical.                                                                 | From EHRs detect suicidal ideation and attempts using NLP                                                      | Not reported                                                                               |
| 17.                                            | For extraction of symptoms of severe mental illness from clinical text: the Clinical Record Interactive Search Comprehensive Data Extraction (CRIS-CODE) project NLP is used. | Using NLP identify symptoms of SMI from clinical EHR text                                                      | Not reported                                                                               |
| 18.                                            | For Detection o fDepression a Boosted Machine learning approach is used.                                                                                                      | From hospital HER data predict depression (Euro-depression inventory)                                          | 28 to 68 years                                                                             |
| 19.                                            | To Predict Depression among ageing Population at a Slum in Kolkata, India ANN is used.                                                                                        | From socio demographic variables and clinical data predict depression                                          | 66 ± 6 years                                                                               |
| 20.                                            | Cox regression and machine learning is used for ten year production of suicide death in a nationwide retrospective associate studyin South Korea                              | Using health insurance records predict the probabilityofsuicidedeath                                           | 15+ years of age                                                                           |

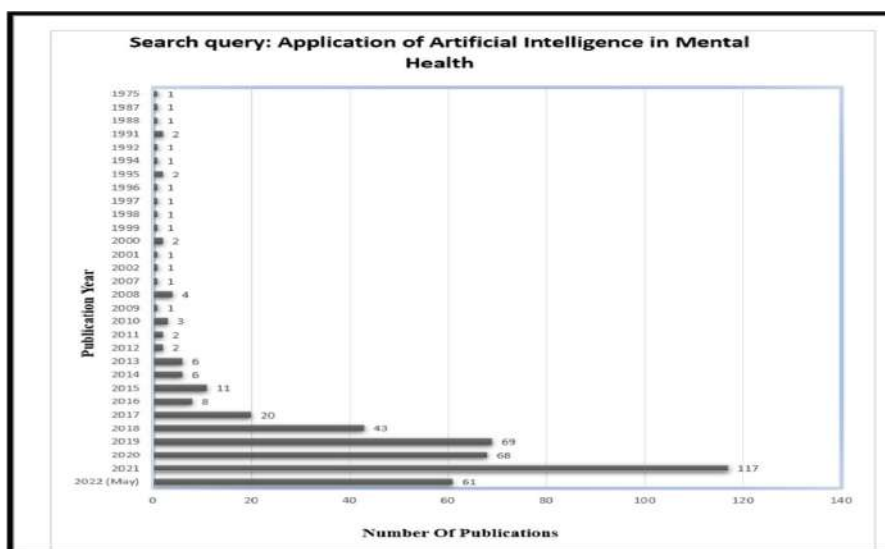
**Table I: Steps Involved**

### Constraints of AI and Mental Health Care Research:

Psychology is both a science and an art that requires knowledge of emotions. The COVID-19 pandemic has highlighted the urgent need to strengthen mental health services, as mental health disorders affect everyone, including young people, men and women. Sentiment analysis in chatbots uses advanced natural language processing (NLP) and machine learning techniques to detect emotions expressed by users. For example, Anna, a digital medical avatar created by the University of Southern California, can interpret nonverbal messages and display dialogue in response, thus demonstrating compliance. Although not yet publicly available, Anna shows the potential of the future of digital therapy. Artificial Intelligence systems in psychiatry should be simplified to psychological models that include thinking and reasoning. AI attempts to capture the diversity of human emotions through input from programmers. However, individual differences, such as differences in voice or facial expressions, cause problems because the mind in the body has difficulty capturing most human emotions. Emotions are caused by changes in the body, but because emotions are so individual, the scientific community does not yet have a consensus on how the connection between the body may indicate change of mind. The development of the use of computerized medicine continues to increase along with many other evaluations. Throughout the pandemic, the government has increased investments in the rapid development of sensors, smartphones and AI-based tools to cleanly manage isolation, contact and health checks. Assessing our needs has become the next step in digital evolution. Rather than solving the problem of lack of mental resources, digital solutions can make a new difference in service delivery. People are thus encouraged to turn to self-help, inexpensive guidance or chatbot-based applications. More importantly, these technologies can operate without medical supervision or other human support. For many psychologists, the cornerstone of effective treatment is the therapeutic partnership between therapist and patient. However, these devices are not subject to medical safety procedures that monitor adverse events. Detecting stress through workplace monitoring software or wearable devices can make a worker less productive or increase insurance premiums. It was revealed that counseling services such as Betterhelp and Talkspace, which connect users with licensed therapists, share sensitive information about users' psychological histories, sexual feelings and suicidal thoughts with third parties. The decline for virtual medical tools is generally high; Only a small percentage of users regularly engage in medical care via mobile applications. Skills-related issues in mental health care, especially for the underserved, are underrepresented in the literature used to train, develop, and implement these tools. Participatory psychological technology is taking a step forward in basic science, with even emotional AI researchers cautioning against the excessive claims made by companies that are not supported by scientific consensus.

### Statistics Scenario in the Area of AI in Mental Health Care Research:

There are privacy concerns and challenges in keeping people safe from surveillance in their daily activities. As artificial intelligence tools are developed, it is important to develop processes that will ensure that they are safe and efficient. Additionally, these tools must be developed and trained using different data to avoid biases towards certain populations, new treatments, the ability to reach communities without services, improved patient response, and patients feeling more comfortable interacting with robots than human doctors. Main reasons To expand the use of artificial intelligence in psychology. The healthcare industry has realized the potential of artificial intelligence as a complementary tool for the future of healthcare. The application of artificial intelligence has the potential to change many medical procedures and operations. For example, the ability to reduce the cost that skills can bring is an important factor in skills development. Particularly in healthcare, the perfect combination of advanced computing power, extensive data storage, and comprehensive AI intelligence has triggered the rapid development of AI technology and tools. As a result of these developments, significant changes are expected in the scope, adoption and impact of artificial intelligence technology in society.



**Fig2-** Publications frequency by different Year in PubMed website using search terms 'Application of Artificial Intelligence in Mental Health'

### **CONCLUSION:**

Research to investigate the relationship between psychological factors and latent variables requires large and comprehensive data. Obtaining deep phenotypes from extensive datasets is challenging for neuroscience research and requires collaboration. Deep learning techniques such as transformational learning are becoming increasingly important for managing these complex data, and the future challenge is the clinical interpretation of these models. Clinical use of this wealth of information should be carefully evaluated, and studies using social media should follow stricter guidelines. Finally, AI can derive insights from data that can help diagnose and treat diseases. However, it is important to evaluate the implications of these insights and their applicability in clinical settings. With the development of technology, it has become an important part of people's lives, from abacus to calculator and computer. The benefit of tools that allow us to transfer information to the environment is that they free us to solve complex problems. AI is much more than creating driverless cars or autonomous "AI doctors"; It is about enhancing human capabilities. By expanding our ability to see more and understand more beyond our natural limitations, we can achieve more and better anticipate future challenges. Mental health services are certainly included.

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