

THE IMPORTANCE OF INFORMATION TECHNOLOGY AND ARTIFICIAL INTELLIGENCE IN DEPRESSION

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Abstract

Depression is a mental illness that affects millions of people worldwide, reducing quality of life and negatively impacting a person's social life. Depression is often undiagnosed, patients seek treatment late, mental health professionals are in short supply, and access to treatment services is limited for patients living on difficult roads. New technologies, particularly artificial intelligence (AI), have tremendous potential in the field of mental health to improve the diagnosis and effective treatment of depression. Artificial intelligence is ushering in a new era in the diagnosis, treatment and support of patients with depressive disorders. In this article, we examine the role and potential of artificial intelligence in the treatment of depressive disorders, as well as discuss the threats associated with the use of such technology.

INTRODUCTION

In recent decades, there has been an increase in borderline mental disorders, and the responsibility for their detection, primary diagnosis and prescription of initial therapy lies with general practitioners [6, 8].

In 2000, depression became one of the most common diseases, being the main cause of permanent disability, estimated by the number of years of life with disability, and ranked fourth among all diseases determining the global burden of disease on society in disability-adjusted life years (DALYs) [11].

According to the World Health Organization, by 2030, the number of people diagnosed with depression in the world will be 630 million. Its estimated to each a person. Currently, there are 350 million patients suffering from depression. Depression is a mental illness characterized by prolonged low mood, dullness of thoughts, and loss of motivation to act. It can make a person feel hopeless about life, mistrust people, depression, loneliness, stress, constant worry and similar bad (negative) emotions. Depression is a multi-etiological psychogenic disease. If this disease develops due to external factors -exogenous, if it develops without any reason -it is called endogenous depression. [3,7]

It is important to distinguish depression as a clinically expressed illness from a depressive reaction to a psychologically understandable situation, when each of us experiences a depressed mood for several minutes or hours in connection with a subjectively significant event. About 16% of people have experienced depression at least once in their lives.[5]

The appearance of depression is unique for each patient and is determined by the manifestation of a number of symptoms at different levels. Depressive disorders can be divided into two main types:

- Mild Depressive Disorder: In this type of depression, patients may feel less depressed, have less interest, and less general activity, but are able to continue with their lives and work.

- Moderate and severe depressive disorders: In this type of depression, patients experience distressing symptoms and find it difficult to carry out their daily life and work. They may experience insomnia, loss of appetite, and other functional disturbances in the body.

The appearance of depression can also be related to the patient's age, gender, education and social status. It has been noted that depression is diagnosed in women more often, which is probably due to the fact that women are subject to greater neuroendocrine changes. This is due to a number of physiological characteristics of the female body - the menstrual cycle, the postpartum or climacteric period, during which the psycho-emotional state can fluctuate from normal to clinically defined depression. In addition, depression is more often diagnosed in women due to their gender, social, psychological characteristics - for example, it is easier for women to talk about their emotional state. Men are usually less likely to seek help from a psychiatrist or psychotherapist, as they are hindered by social stereotypes: men should be rational, strong, "real men do not cry", while depressive states in men are directly related to addictive forms of behavior (alcoholism, drug addiction, gambling, extreme sports).

Diagnosing and treating depression is difficult, and patients often delay seeking treatment. Also, the shortage of mental health professionals and limited access to treatment services for patients living in difficult circumstances further complicates the problem. A large proportion of patients with depression, due to fear of the stigma of mental illness[4] and the abundance of physical manifestations (somatic "masks") - headaches, dizziness, chest pain and heaviness, fatigue, indigestion - first of all seek advice from general practitioners in the outpatient clinic network, where they can undergo examination for a long time and ineffective treatment, since they do not receive adequate help. In the United States, where the number of psychiatrists is quite large, 50% of patients with symptoms of depression consult primary care specialists, while only 20% consult psychiatrists [8]. In the United

Kingdom, the majority of patients with depression are treated by general practitioners, and only 10% consult psychiatrists.[2] A timely visit to a psychiatrist and psychotherapist helps to establish the correct diagnosis of depression and select effective treatment. Clinical scales are used in the diagnosis of depression - the Hamilton Depression Scale, the Zung, Beck, and others, [12] determining the presence and severity of depression and its individual manifestations. Unfortunately, there are still no accurate laboratory tests and studies that could show which mediator imbalance led to the development of depression in a particular patient.

Some illnesses and problems may be better suited for virtual therapy than others. Addressing anxiety disorders, body image issues, and guilt issues with online therapy is often appropriate and effective. According to a study in the Journal of Clinical Psychology, people seeking personal growth can also benefit from an online therapy format [1].

Today, Artificial Intelligence (AI) is a rapidly developing part of digital technology. AI is an advanced form of digital technology. It allows computers to imitate human intelligence and perform complex tasks [9, 10].

- AI is software-based: AI works using numerical programs and algorithms. These programs enable computers to analyze data, solve problems, and think like humans.

- AI relies on digital data: AI relies on digital data to analyze collections, learn and generate new data.

- AI works with digital devices: AI usually works on computers, smartphones, servers and other digital devices.

Currently, rapid development in the field of artificial intelligence (AI), in particular, is opening up new opportunities in the field of psychological health care. Medical information systems and applications based on AI can help improve the diagnosis and treatment of neurotic disorders.

Application of artificial intelligence in diagnostics:

- Fast and accurate diagnosis: With AI, patients' medical data, X-rays, tests can be analyzed quickly and accurately, which helps to assess the patient's condition more accurately.

- Early detection of the risk of development of the disease: With the help of AI, it is possible to identify early the risk of the work of patients with a specific disease, which helps to start the treatment regimen in time and prevent the severe course of the disease.

The participation of artificial intelligence in the treatment process:

Results:

1. Automatic screening:

Collection	Method	Result
100 patients	Traditional psychological tests	Number of patients diagnosed with depression: 20
100 patients	Screening system based on IT technologies	Number of patients diagnosed with depression: 25

2. Online Psychological Tests:

Collection	Method	Result
100 patients	Traditional psychological tests	Number of patients diagnosed with depressive symptoms: 15
100 patients	Online psychological tests	Number of patients diagnosed with depressive symptoms: 20

The importance of artificial intelligence in the treatment of depression:

- Personalized treatment: AI helps to personalize the treatment regimen taking into account the individual characteristics of the patient.

- Online treatment and support: AI -based online treatment programs and chatbots help patients provide psychotherapy services.

1. Personalized Treatment:

Collection	Method	Result
50 patients	Traditional method of treatment	Treatment efficiency: 60%
50 patients	Personalized treatment procedures (based on IT technologies)	Treatment efficiency: 75%

- Personalized treatment: AI analyzes a patient's genetic information, medical history and other information to help develop the most effective treatment regimen for him.

- Development of new drugs: AI allows to speed up the process of developing new drugs and increase their effectiveness.

3. Improving the global health system:

- Organization and analysis of medical data: AI has the ability to analyze large data sets, which allows for the organization, analysis and improvement of data in the health care system.

- Planning health services: AI helps plan health services and helps identify areas where more resources are needed.

- Assessing patients' behavior: AI can assess patients' adherence to their treatment regimen and provide them with support to continue their treatment.

Rapid advances in artificial intelligence (AI) are opening up new opportunities in the field of mental health. Medical information systems and applications developed based on AI can help improve the diagnosis and treatment of depressive disorders .

Importance of artificial intelligence in diagnosing depression:

- Automatic screening: AI -based screening systems allow early identification of patients at risk of developing depressive disorders. These systems make it possible to assess the mental state of the patient using questionnaires, questionnaires and other sources of information.

- Data analysis: AI has the ability to analyze large data sets and helps identify patterns that are important in diagnosing depressive disorders.

- Early diagnosis: With the help of AI, it is possible to identify early the risk of developing depressive disorders in patients. This allows for early treatment and prevention of mental deterioration.

This study was conducted based on the following methods:

- Literature analysis: We studied the available scientific literature about psychodiagnostics of depressive disorders and IT technologies.

- Analysis of studies: We analyzed the results of various studies devoted to the study of the use of IT technologies in the diagnosis and treatment of depressive disorders.

- Studying the opinion of experts: We studied the opinion of experts about the use of IT technologies in the treatment of depressive disorders.

- Case analysis: we analyzed the cases of specific patients to show what results can be obtained in specific cases related to the diagnosis and treatment of depressive disorders using IT technologies.

- Evaluating the effectiveness of therapy: AI helps to monitor the progress of treatment and evaluate the effectiveness of therapy. This gives an opportunity to change and improve the treatment regimen.

- Virtual and augmented realities (VR and AR): VR and AR technologies can be used to overcome fear and anxiety in depression.

2. Telemedicine:

Collection	Method	Result
50 patients	Traditional treatment (applying to the doctor personally)	Treatment efficiency: 55%
50 patients	Telemedicine services	Treatment efficiency: 65%

Despite a number of advantages, there are threats and considerations regarding IT and artificial intelligence. They are as follows:

- Privacy and security: As artificial intelligence has the ability to collect and analyze personal data of patients, it is important to ensure their security and privacy.
- Human Factor: Artificial intelligence cannot replace the human factor. Artificial intelligence can only serve as an auxiliary tool in the process of providing medical services.
- Sufficient data and experience: AI models can work effectively with sufficient data and experience.

The role of psychotherapists and artificial intelligence in the psychodiagnosis of depression:

Psychotherapist:

- Exaggeration of the patient's condition: The psychotherapist communicates with the patient and analyzes his mental state, symptoms, personal history and family relationships.
- Implementation of psychodiagnostic tests: The psychotherapist uses various psychodiagnostic tests to more accurately assess the mental state of the patient.
- Development of a treatment regimen: A psychotherapist develops an individualized psychotherapy regimen for the patient. Monitoring the treatment process: The psychotherapist monitors the patient's condition during the treatment process and changes the treatment regimen if necessary.

Artificial Intelligence:

- Automatic screening: with the help of IT technologies, it is possible to identify early the risk of developing depressive disorders.
- Online psychological tests: Online psychological tests allow patients to assess their mental state and help determine whether they need professional help.
- Data analysis: Artificial intelligence has the ability to analyze large data sets and help identify patterns that are important in diagnosing depressive disorders.
- Early diagnosis: With the help of artificial intelligence, it is possible to identify early the risk of developing depressive disorders of patients. This allows for early treatment and prevention of mental deterioration.

Psychotherapist and artificial intelligence collaboration:

When a psychotherapist and artificial intelligence work together, the effectiveness of the process of identifying and treating depressive disorders increases. Artificial intelligence can help automate the psychotherapy process and increase patient access to treatment. However, the role of artificial intelligence should remain only supportive, as a human expert is needed to fully understand the patient's personal and emotional situation and develop a treatment regimen.

CONCLUSION

Artificial intelligence is opening up great opportunities in the diagnosis and treatment of depressive disorders. The development of this technology allows patients to receive early diagnosis, personalized treatment and effective psychotherapy services. It is important that psychotherapy and artificial intelligence work together to identify and treat depressive disorders. Artificial intelligence makes the process of psychotherapy more efficient and convenient, and psychotherapy helps to fully understand the mental state of the patient and develop the most effective treatment regimen for him. The results of this study showed that IT technologies and artificial intelligence play an important role in the diagnosis and treatment of depressive disorders. These technologies can improve efficiency, expand access to treatment services, and positively impact patients' lives. However, it is important to consider the threats associated with the use of IT technologies and act to reduce them.

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