

RECENT ADVANCES IN PSYCHIATRY

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Humans have pondered over the mysteries of the human mind since ancient times. How does the mind normally work? Why does it become so deranged in some people as to result in insanity, delusions, suicides and homicides? Despite all the advancements of science and technology, such questions still haven't been fully answered and while modern psychiatry has found ways to treat many mental illnesses, even today there are times when a psychiatrist finds himself as helpless in treating and understanding his patient's disease as an ancient priest in his temple, attempting to cure a person's insanity with charms and amulets.

However, the situation is improving as psychiatric research is throwing new light into the dark depths of human mind. Previously mysterious symptoms are being explained and new more effective treatments are becoming available. Especially in the past few decades, all fields of medicine, including psychiatry, have been revolutionized by technology. In this article, we discuss some of these recent developments in psychiatry and their potential prospects.

DEVELOPMENTS IN PSYCHIATRIC THERAPIES

Psychiatry is viewed with mistrust in many circles of the general public. The reasons for this include limitations in understanding and classification of mental illnesses; lack of tests for confirming diagnoses and numerous short and long-term side effects of psychiatric medicines.¹ However, new treatments and classifications are being brought forth to combat these limitations. Some of the promising, recently introduced psychiatric therapies include:

1. Deep Brain Stimulation (DBS)

Deep brain stimulation (DBS) is a procedure in which electrical devices are placed within the skull to stimulate specific areas of the brain for the treatment of a disease. It has been successfully used in the past for the treatment of movement disorders such as Parkinson's disease and essential tremor. Recently, it has been proposed to be useful in several psychiatric disorders including obsessive compulsive disorder (OCD) and major depression in patients resistant to traditional treatments.² Previously, these patients were treated with surgical removal of specific parts of brain which

produced irreversible damage to the brain and severe side effects. DBS couldn't be used for these patients because the exact neural circuits involved in psychiatric disorders were unknown.

However, with the advent of latest neuroimaging studies (including fMRI), brain areas associated with mental diseases, such as OCD, have been identified and this knowledge is used in DBS. In 2010, Lakhani SE et al. systematically reviewed the studies of DBS in patients of OCD and treatment-resistant depression and found that not only was it an effective treatment modality but it also lacked any severe adverse effects.³ United States Food and Drug Administration (FDA) approved the use of DBS for treatment of OCD in 2009.⁴ As the neuropsychiatric knowledge about various mental disorders is increasing, there is no doubt that DBS will have a major role in the treatment of these disorders in the future.

2. Dialectical Behavioral Therapy (DBT)

Dialectical behavioral therapy (DBT) is a form of cognitive behavioral therapy in which negative thoughts and behaviors are identified and modified without the use of medication. It includes psychotherapy sessions, combined with social support, to modify a patient's attitude. It was developed by a psychologist Marsha M. Linehan in 1980s. However, it didn't get widespread attention until recently when several studies demonstrated its efficacy in personality disorders and people with suicidal ideation. In 2006, Marsha M. Linehan and colleagues compared the effects of DBT with standard psychiatric therapy in reducing suicidal ideation. They found DBT to be significantly better than traditional treatment.⁵ More recently, in 2014, Mehlum L et al. found that DBT is more effective in reducing self-harm and suicidal ideation among adolescents than usual care.⁶ Since psychiatric disorders have a biopsychosocial basis, a holistic approach, as employed by DBT, may be more effective than medication alone in treating mental diseases.

3. Metacognitive training

Metacognitive training is a form of psychotherapy in which a psychotic patient is probed about his false beliefs and thought biases; the therapist then goes on to convince the patient of their fallacy. Thus, seeds of doubt are implanted in the patient's mind enabling him to think critically about his beliefs and correct his delusions. Many psychotic diseases, including schizophrenia, are

characterized by such false beliefs that become so deeply ingrained in a patient's mind that his view of the world is distorted.

Metacognitive training has been found helpful in normalizing thoughts and behaviors in such patients. Last year, a study by Moritz S et al. found that when complemented with antipsychotic drugs, metacognitive therapy was not only beneficial in eliminating false beliefs in schizophrenics, but it also had some unanticipated positive effects such as improvement in self-esteem and quality of life.⁷ Psychotic illnesses form a large part of the clinical practice of psychiatry and current antipsychotic therapies do not provide complete resolution. Metacognitive therapy seems to be a ray of hope for the patients suffering from such disorders.

4. Developments in Insomnia Therapy

Insomnia or sleeplessness is a widespread disorder, affecting a large proportion of the population. Traditionally, psychiatrists have used a class of drugs called benzodiazepines to treat insomnia. However, a study in 2014, by Bilioti de Gage S et al, suggests that long-term use of benzodiazepines (more than 180 days) is associated with increased risk of Alzheimer disease.⁸ This calls into question the long-term use of these drugs in insomniacs. On the other hand, orexin receptor antagonists, a new class of drugs, have been approved by US Food and Drug Administration (FDA) for the treatment of insomnia.⁹ This class modifies the role of endogenous chemicals called orexins which are involved in regulating the normal sleep-wake cycle. Double-blinded studies involving these drugs have demonstrated significant benefit as compared to placebo in treating patients of insomnia.¹⁰ These recent developments in insomnia therapy demonstrate how active research in psychiatry is elucidating previously unrecognized adverse effects of existing therapies and at the same time, developing new more effective therapies.

TECHNOLOGICAL ADVANCES IN PSYCHIATRY

We live in an age of technology. Computers, internet and robots have completely revolutionized every aspect of our lives. While technologies like electronic health records (EHR), mobile health and health information systems (HIS) entered mainstream medical practice about a decade ago, psychiatry has been slow in embracing technology. However, slowly but surely, a paradigm shift is occurring in psychiatry as technology is revolutionizing psychiatric research, practice and education. Today, all major psychiatric journals have an electronic edition and the potential of telepsychiatry for providing psychiatric care to rural areas and developing countries has become clear.¹¹ Let's discuss some of these technological advances:

1. Telepsychiatry

The term "telepsychiatry" refers to the delivery of psychiatric care through telecommunication technologies such as e-mail, video conferencing and telephone. Using it, psychiatrists can overcome the barriers of distance and time and reach out to mentally ill patients in far-flung areas. Since there is a shortage of psychiatrists even in developed countries, such distant communication ensures the best use of available resources, as highlighted by Brian Grady in his article published in *World Psychiatry Journal*.¹²

However, several challenges have limited the widespread use of

telepsychiatry. The most important challenge is that of patient's privacy, as highlighted in Health Insurance Portability and Accountability Act, 1996 (HIPAA) of USA.¹³ This act requires complete confidentiality of patient's information which, unfortunately, is not ensured by modern means of communication. This means that a patient can't simply call or e-mail his psychiatrist since that wouldn't meet HIPAA standards. Several organizations are working to overcome this limitation. For instance, the Psychiatric Associates of Arkansas provides its own secure web portal through which patients can contact their psychiatrists in compliance with HIPAA. Nevertheless, such web portals are rare and telepsychiatry hasn't entered mainstream practice of psychiatry yet. However, given its potential, there is no doubt that psychiatry will have to embrace telepsychiatry sooner rather than later.

2. Functional Magnetic Resonance Imaging (fMRI)

fMRI is a brain imaging technology that allows the visualization of a person's brain as he performs specific tasks, allowing the investigator to pinpoint brain areas associated with particular mental tasks. A major problem that psychiatrists have faced in understanding mental diseases is the lack of detailed information about the normal functions of different parts of the human brain. fMRI addresses this problem and allows not only the determination of normal brain functions but also the comparison of brains of psychiatric patients with normal people, enabling psychiatrists to understand the pathophysiology of mental diseases. It is for this reason that today, fMRI is one of the most widely-used technologies in psychiatric research. In their review article published in December 2014, Zhan X. et al have summarized the advancements in fMRI techniques and their effects on psychiatric research.¹⁴ They assert that fMRI has provided several insights into the pathophysiology of various psychiatric diseases, especially schizophrenia. It has also been used in understanding other psychiatric problems such as attention deficit hyperactivity disorder (ADHD), depression and obsessive compulsive disorder.¹⁵ As brain imaging continues to advance, previously dark corners of human mind are being illuminated and the day is not far when imaging techniques will enable psychiatrists to fully understand mental diseases and devise their perfect treatments.

3. Virtual Reality (VR)

Virtual reality (VR) is a technology in which a person is immersed in a virtual graphic environment through the use of special glasses and headphones; several virtual reality systems also feature tools for olfactory and tactile stimuli. The fact that a person is exposed to an artificial, controlled environment makes it ideal for replacing psychotherapies that require patients to either visualize some place or actually experience the place or situation in real life, such as in the treatment of phobias and anxiety disorders. Barbara Routham, a professor at the Emory University, has pioneered the use of VR for treating anxiety disorders. In 2006, she evaluated the effects of VR stimulation on the treatment of anxiety and post-traumatic stress disorder (PTSD) in Iraq war veterans and found significant reduction of PTSD in soldiers following VR therapy.¹⁶ VR provides unmatched opportunities for patient exposure to particular environments and is less expensive and more comprehensive than real-world exposure. However, it also requires special equipment, specially developed software and extensive technical training of the administering therapist. So, while it hasn't yet achieved widespread acceptance,

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