

Assessment and Treatments of Schizophrenia and Other Psychotic Disorders

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Abstract: Psychiatrists and psychologists rely on the classification systems for mental disorders, just like a systematic classification of physical illnesses. This article focuses on one of the mental disorders that haunt many people around the world and psychiatrists: schizophrenia. Three explanations of schizophrenia will be discussed: the genetic explanation, biochemical explanation and cognitive explanation. The genetic explanation believes schizophrenia can be inherited; the biochemical explanation indicates that the brains of schizophrenia patients produce more dopamine; the cognitive explanation declares that wrong thinking processes cause mental disorders. Furthermore, this article also provides the according treatments using different measures: biochemical (psychotics and atypical psychotics), electro-convulsive therapy, token economy and cognitive-behavioral therapy. Finally, this article evaluates the involved treatment measures including their respective limitation, and points out the future research direction---find a comprehensive approach that combines the advantages of the available treatments and eliminate limitations of the existing treatments.

Keywords: delusional disorder, schizophrenia, treatment measures

1. Introduction

Mental disorders are not small probability events that just occasionally have relationship with a few people. Many people are directly affected by these issues at some point in their lives, or have good friends or family members who seek the help of a psychiatrist for a mental health diagnosis. Psychologists want to encourage individuals to ask for help for their illnesses while challenging the stigmas surrounding specific disorders. In most cases, psychologists and psychiatrists rely on a classification system for mental disorders, just as doctors have a classification system for physical illnesses. This is determined by considering the unusual symptoms a person may experience.

Schizophrenia is a particularly severe category of psychotic disorder that affect all aspects of people's thinking, affects and behaviors [1,2]. Schizophrenia is described as a severe, chronic, and potentially disabling thought disorder citation in the diagnostic and statistical manual of mental disorders. The symptoms can be divided into two types: positive symptoms and negative symptoms [3]. The positive symptoms include delusions, hallucinations, disorganized thoughts, and catatonic behavior. In contrast, the negative symptoms include lack of normal functioning, for example, lack of typical facial expressions or loss of speech. However, so far, some evaluations and treatment methods for schizophrenia and other mental disorders have not been systematically summarized and sorted out. This paper aims to provide some detailed explanations and corresponding treatments.

2. Three Explanations of Schizophrenia

One can imagine that after someone has undergone one even more very severe traumatic event and developed a mental health disorder unfortunately, and the patient is unable to judge for themselves or even deliberately avoid it, there is absolutely no way to treat the condition without finding the underlying cause of the illness. So accurate determination of the cause of the disease is the first step to successful treatment.

Psychiatrists have tended to look for the causes of schizophrenia for a long time. There is much debate over the reason leads to mental disorders. Every approach is capable of offering a competing and complementary explanation. Biological or biomedical experts focus on the physical cause of the disease, such as a genetic link or a chemical imbalance of the brain. On the contrary, factors studied by cognitive approaches focus on mental processes such as dysfunctional thought patterns, while behaviorists believe that abnormal behavior is caused by learning difficulty.

2.1. Genetic Explanation

In genetic explanation, as the words go, it is believed that there is a genetic relation with schizophrenia, which can be inherited. A series of genetic abnormalities cause symptoms like psychosis, and these have genetic origins called endophenotypes that could be inherited. Researchers conducted a longitudinal study (twin study) to prove this assumption [4]. Their study aims to assess the relative contributions of heredity and environment to some attributes. The sample used was 57 pairs of twins from Maudsley Hospital in London, in which 33 were monozygotic (MZ, with 100% identical DNA) and 24 were dizygotic (DZ, with 50% identical DNA). The researchers interviewed Patients and their twins and used object sorting as a cognitive test. The results showed that more than 50% of MZ twins are on the same schizophrenic status, but the concordance in DZ twins was much lower (only about 9%). In this study, complete support was shown in the nature side that it contributed the cause of schizophrenia was from the inborn gene.

2.2. Biological Explanation

Some other experts insist biological explanation, which is also known as the dopamine hypothesis. Dopamine hypothesis indicates that the brains of schizophrenia patients produce more dopamine than normal people who is not psychiatric disorders [5]. Dopamine actually is a neurotransmitter---a chemical that communicates between two neurons. In order for a nerve impulse to travel between two cells, it crosses a small connection called a “synapse”. There are many ways to prove this hypothesis. The first is by drug trials, which was not an ethical method but was valid enough. The authors inject drugs that increase dopamine levels in the brains, such as amphetamines and cocaine. In those people with schizophrenia, taking these drugs can worsen positive symptoms. The post-mortem study also showed a significantly lower level of enzymes used to resolve dopamine in the brains of people diagnosed with schizophrenia before death. Excessive dopamine activity occurred in brain may have something with positive symptoms. Study [6] suggests that for those prefrontal cortexes of schizophrenic patients, to decrease dopamine activity may correlate with negative symptoms including flattened affect.

2.3. Cognitive Explanation

The cognitive approach to abnormalities means wrong thinking processes cause mental disorders. Schizophrenia is a kind of self-monitoring abnormality [7]. when patients can't recognize their perceived hallucinations, schizophrenia occurs. Researchers test this idea with schizophrenic patients by asking them to read aloud some document which they can choose written by themselves,

by experimenter or by computer. Schizophrenic patients with incoherent speech performed worst at the task, which may be linked to memory and attention difficulties vital for self-monitoring. In addition, they suggest that the other major positive symptom, delusions, may also arise from misinterpretation of perceptions. Self-generated thoughts appear to come from outside sources and become included into the individual's thinking processes. These manipulating failures can lead to delusions of exotic and remote control, auditory hallucinations and thought insertion. On the contrary, the incapability to monitor the intentions of others will lead to paranoia's delusions and in concordance.

3. Treatments

The treatment of schizophrenia and related disorders is particularly complex. For individuals, treatment is needed for acute episodes and efforts to be able to live independently in daily life. In determining the best treatment, all conceivable identifiable causes must be considered, and the patient's own wishes must be given high priority. It's not difficult to imagine that after someone has experienced a very severe traumatic event and developed a mental health disorder, and the patient is unable to judge for themselves or even deliberately avoid it, there is absolutely no way to treat the condition without finding the underlying cause of the illness.

3.1. Biochemical Treatment

With the development of modern medical technology, more and more medications and methods are being used to treat schizophrenia and related disorders. Most medications can be classified as antipsychotics and atypical antipsychotics. The first generation of antipsychotic drugs was created in the 1950s, while the second generation of drugs was developed in the 1990s. Both classes of medications provide varying degrees of palliation of symptoms in patients with schizophrenia. The use of antipsychotic medications has been comprehensively studied experimentally through randomized trials and comparisons of other methods. These trials have largely been double-blind, with placebo control groups, and at least half of those taking antipsychotics show significant improvement after 4 to 6 weeks on the medication.

Electroconvulsive therapy (ECT) is also a kind of biological treatment applied to reduce the symptoms of schizophrenia and related disorders [8,9]. At some periods in the history of psychology, electroconvulsive therapy was once ethically highly controversial. Induction of seizures has been used for centuries to treat psychiatric problems. Doctors Lucio Bini and Ugo Cerletti discovered the potential use of electricity for inducing seizures by observing the effects of electric shocks on cattle. They modified the technique to make it applicable to humans; later, psychiatrists administered electroshock therapy along with anti-anxiety drugs or anaesthetic to avoid physical trauma or fractures that had once previously occurred in patients. Modern ECT involves passing an electric current through the brain to induce seizures. Patients typically take a course of ECT therapy, ranging from six to twelve trials. Although ECT therapy has received humanitarian criticism for causing physical and physiological harm to patients, it is still considered an effective treatment because it is extremely more fast-acting than any other treatments.

3.2. Token Economy

The behavioural approach assumes that the symptoms of the illness happen as an acquired response. The approach does not emphasize much on internal experiences. Behavioural therapies focus on helping patients 'unlearn' individual symptoms in order to get better. It aimed to unlearn maladaptive behaviours that prevent them from functioning properly. The participants in the study conducted by Paul and Lenz were 84 long-term inpatients with psychosis who were divided into

different groups [10]. Over a period nearly five years, Paul and Lentz used an independent measure design to compare the effect of three different treatment. The token economy is based on conditioning: operant conditioning works; by using reinforcements but no punishments, people's desirable behaviour can be increased. In this case, patients receive a 'token' as a reinforcement for ideal behaviour, such as taking care of themselves, active participation in treatment and engagement in socializing with others. The tokens have no monetary value; however, they can be exchanged for luxury goods such as clothes, TVs, candies and cigarettes, which are very attractive to patients. Their behaviour in the eleven groups was monitored via observations, standardised questionnaires and individual interviews. The overall effect was a large reduction in either positive symptoms or negative symptoms. The system was most effective in reducing behavioural manifestations including social withdrawal, catatonic behaviour and so on, but was moderately effective in reducing individual feelings such as hallucinations and delusions. 97% of the token economy group could live independently in the community for 1.5 to 5 years. The researchers conclude that operant conditioning may be a relatively effective way to manage schizophrenia symptoms and ensure patients have a good potential of long-term Independent Living.

3.3. Cognitive-behavioral Therapy

Cognitive behavioural therapy (CBT) is a method to treating mental health disorders that combines the principles of cognitive and behaviourist in psychology. This approach deviates from the behaviourist's full attention on observable behaviour and aims to identify the impact of unseen cognitive processes on learning. CBT is a type of talk therapy to help people change by recognizing the thoughts that underlie their behaviour. It is considered a promising treatment for people with schizophrenia who has no response to antipsychotic medication, reducing their distress and length of hospital stay. Sensky et al. [11] conducted a randomized controlled trial to test the effectiveness of CBT. The process consisted of informal face to face discussions about foods, sports, friends or lifestyles. More than ninety 16-60 years old patients diagnosed with treatment-resistant schizophrenia who are from five clinical services received about 20 sessions during their treatment period. During the nine-month-long treatment period, patients kept a diary of the voices they heard in order to generate coping strategies. The final results were submitted to blinded assessors for evaluation. They used standardized assessment scales such as the Comprehensive Psychiatric Rating Scale (CPRS), as in [12]. The results showed a significant comprehensive reduction in positive and negative symptom, and during the follow-up treatment, the CBT treatment continued to improve in reducing positive symptoms persistently.

4. Application and Limitation

Each of these treatments mentioned above has real-life applications, and all have advantages and disadvantages in certain aspects.

The biochemical treatments are highly effective, but they exert severe side effects. The first-generation antipsychotics, such as *Thorazine* puts a quick end to violent outburst but does not work exclusively with schizophrenia because it is more like a general tranquilizer. And the side effect may last for long periods, such as Extrapyramidal Symptom (EPS) and Tardive Dyskinesia (TD). Followed by second-generation antipsychotics popular in the 1990s. Typical examples include Abilify and Seroquel. The side effects of second-generation antipsychotics were less serious, including dry mouth, blurred vision and weight gain. More than 50% of patients who insisted on taking antipsychotic drugs show significant improvement after 4-6 weeks, 30-40% show partial improvement, and a minority show no improvement (treatment-resistant schizophrenics). On the other hand, non-adherence to medication happens frequently, which makes the result less desirable.

It is believed in reductionism that the body is divided into small parts, and medications are taken to inhibit or enhance the working of those parts. Individual differences are also ignored; for example, one kind of drug may work for some people but not for others. ECT is often used when the patients are treatment-resistant or adopt non-adherence (do not take the pills at the time they should take them). Again, as shown by [13], this treatment is quite effective and can be of great help to those patients who do not respond effectively to antipsychotic medication. On the other hand, based on the ethical and moral considering, this therapy is mostly used in urgent circumstances or those patients who have primarily catatonic symptoms.

The token economy and cognitive-behavioral therapy are both proven validity in the follow-up sessions, which were useful for assessing the long-term effect of such therapy. These two kinds of therapy do not physically harm participants as biochemical treatments do, but there are some other difficulties in promotion and implementation. The treatment process included active interaction among participants, while medications and ECT are more passive in that patients could swallow the pill or lay down and wait for electricity to be applied.

The token economy therapy needs to train staff strictly to ensure all the rewards can be administered correctly and reliably. Staff were supervised and manuals were issued to ensure standardization of procedures. This strict process requirement does not apply to most hospitals, which reduces the effectiveness and feasibility of this therapy. In addition, there are ethical issues with canceling privileges of misbehaving patients. If there is misbehavior, one can become disengaged or even distressed by the treatment.

Cognitive-Behavioral therapy need high level of patient cooperation. If they quit at any intervals, all the past treatments they received would be in vain. In addition, patients diagnosed with schizophrenia are generally less resilient to stress, and any physical and physiological injury can worsen existing positive and negative symptoms. It is the same for Token Economy, in which operant conditioning was used. Participants must follow the principle that only desirable behaviours can be awarded.

In summary, when determining the best treatment option, any identifiable cause must be carefully sought, meanwhile, the patient's wishes must be fully considered. A comprehensive method must be investigated, with compromised medication that causes minimum side effects but lasts for a long period and reduces the relapse rate. Drug-resistant patients might have limited access to cognitive or behavioral therapy due to a large amount of time consumed and money spent.

5. Conclusions

After the global covid 19 virus outbreaks in early 2020, lifestyles have changed, and more and more people are under great mental stress, more attention should be focused on people's mental health.

The causes of schizophrenia are so diverse, resulting the corresponding treatment options are very complex.

This paper has discussed the causes of schizophrenia and summarized them from three perspectives: genetic, biochemical and cognitive views. Moreover, different treatments have been offered in this paper, including biochemical (psychotics and atypical psychotics), electro-convulsive therapy, token economy and cognitive-behavioral therapy. Finally, direct evidence of different views on the etiology of schizophrenia is analyzed, the strengths and weaknesses of each treatment is assessed, which informed the treatment of this person with schizophrenia. This paper provides scientific knowledge for schizophrenia people and their family to understand their problems and learn how to seek help.

Essentially, three explanations offered in this paper are on the side of individual explanations rather than situational ones. For hundreds of years, Psychologists dedicated into looking towards situational factors that may cause disorder such as traumatic events the patients might experience or

any treatments and relationships they receive in early childhood. Regarding individual differences, future studies should focus on a hybrid method that combines the advantages of the three treatments as previously mentioned. The limitations of existing treatments should also be eliminated or evolved as the history of psychology is forged ahead. There is a long way to go.

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