Analysis of Tools and Techniques Used to Assess Schizophrenia and Depression

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Abstract: Background – Schizophrenia is an ongoing mind mental turmoil that influences the manner in which an individual think, acts, communicates feelings, sees reality, and identifies with others. In spite of the fact that schizophrenia isn't as normal as other major psychological sicknesses, it tends to be the most ongoing and handicapping [Life in sight, 2019]. Depression is the main cause of disability worldwide, according to the World Health Organization (WHO). It can affect adults, adolescents, and children, Depression is a mood disorder that involves a persistent feeling of sadness and loss of interest [Laura, 2019]. Schizophrenia and Depression are the common diseases which affects nearly 1 million people in a year across the world. There exists no definite medical test with the help of which one can diagnose this disease. Doctors and psychologists can identify this disease only by the symptoms shown by the affected individuals. That is why, conducting this study gets important as it discusses various methods through which the existence of this disease in individuals can be found as these methods mainly focus on symptoms of the disease. More studies like this can help in designing intervention and further prevention of the illness. *Objective*-To study the tools and techniques used to diagnose schizophrenia and Depression. *Methods*-Research papers, journals as well as Medical reports were searched for studies related to Depression and Schizophrenia by using the following terms: "depression," "Schizophrenia", treatment and prevention, Diagnosis, "empirical study," and "peer reviewed journal." Thus, this report is based on secondary Data whose purpose is to analyses the tools and techniques used for diagnosis of schizophrenia and Depression. Initially, no limitation was placed on years included in the search. Five relevant publications were read and analyzed for method and content, with particular focus on inclusion and location criteria of study participants. *Conclusion* -It has been found that PANSS can be used not only to diagnose the various stages of schizophrenia, but also to determine the type of treatment required for a particular patient. It has been found that this tool requires relatively little additional training and is more objective and repeatable. In addition, the items selected for the test are considered suitable for construction and internal consistency, but can also include other clinical variables. SAPS and SANS are widely used to assess the symptoms of schizophrenia, but their positive/negative symptom models for assessing schizophrenia have been criticized. It has been proposed to develop a new model with more dimensions and incorporate various elements of schizophrenia symptoms into its structure. In addition, the functional and structural techniques used in MRI today help explain the characteristics of schizophrenia and help diagnose schizophrenia. In addition, given the limitations and advantages of the projection method, some researchers have also used the Rorschach method to study many personality disorders. Despite the lack of credibility and reliability, the Rorschach test has proven to be a legitimate method of psychological diagnosis of mental disorders such as schizophrenia. Psychiatric sufferers and their fitness care this is extensively used to assess Depression. A correct prognosis is essential, for the reason that 50% or greater of psychiatric sufferers are prescribed a sequence of mixture antidepressants over months or years. Methods imparting greater correct diagnoses might make good relationship believe among sufferers and their caregivers, thereby strengthening this relationship.

Keywords: Depression, schizophrenia, SAPS, PANSS, rorschach test, MRI, FMRI, PET scan.

1. Introduction

Schizophrenia is an ongoing mind mental turmoil that influences the manner in which an individual think, acts, communicates feelings, sees reality, and identifies with others. In spite of the fact that schizophrenia isn't as normal as other major psychological sicknesses, it tends to be the most ongoing and handicapping [Life insight, 2019] at the point when schizophrenia is dynamic, side effects can incorporate fancies, mental trips, disordered discourse, issue with deduction and absence of inspiration. In any case, with treatment, most indications of schizophrenia will significantly improve and the probability of a repeat can be decreased. Individuals with schizophrenia regularly have issues doing admirably in the public eye, at work, at school, and in relationship. They can feel scared and removed, and could seem losing contact with the real world. This deep rooted illness can't be relieved however can be controlled with appropriate treatment.

Schizophrenia includes a psychosis, a kind of dysfunctional behavior wherein an individual can't tell what's genuine based on what's envisioned. Now and again, individuals with crazy issue put some distance between realities. The world may appear to be a tangle of befuddling considerations, pictures, and sounds. Their conduct might be extremely odd and surprisingly stunning. An abrupt change in character and conduct, which happens when individuals who have it put some distance between the truths, is known as a maniacal scene. How serious schizophrenia is shifts from one individual to another. A few group have just one insane scene, while others have numerous scenes during a lifetime however lead generally ordinary lives

in the middle. Still others may experience more difficulty working over the long run, with little improvement between all out insane scenes. Schizophrenia equivalent words appear to deteriorate and improve in cycles known as backslides and abatements. [Wilda, 2019]

The intricacy of schizophrenia may help clarify why there are confusions about the Such Disease. Schizophrenia doesn't mean split character or multiple character. A great many people with schizophrenia are not risky or fierce than individuals in the general populace. While restricted psychological well-being assets locally may prompt vagrancy and incessant hospitalizations, it's anything but a misguided judgment that individuals with schizophrenia end up destitute or living in clinics. A great many people with schizophrenia live with their family, in bunch homes or all alone. Schizophrenia influences people decently similarly yet may have a previous beginning in boys. Rates are comparative all throughout the world. Individuals with schizophrenia die more youthful than everyone, to a great extent due to high paces of co-happening ailments, like coronary illness and diabetes. Schizophrenia can be of various types such as - paranoid, Disorganized, Catatonic, undifferentiated and Residual. The symptoms of schizophrenia generally include positive symptoms such as Hallucinations and Delusions and Negative Symptoms such as Anhedonia, Alogia, Flattening and Avolition.

Depression is the main cause of disability worldwide, according to the World Health Organization (WHO). It can affect adults, adolescents, and children. Depression is a mood disorder that involves a persistent feeling of sadness and loss of interest. [Laura, 2019]. It is unique in relation to the temperament vacillations that individuals routinely experience as a piece of life. Significant life occasions, like loss of source of living such as job, can lead to Trusted Source Depression. Be that as it may, specialists just believe sensations of grief to be essential for depression in the event that they continue. Depression is a continuous issue, not a passing one. It comprises of episodes during which the indications keep going for fourteen days. Depression can keep going for a little while, months, or years [Laura, 2019] The types of Depression Include Major Depression, Persistent depressive disorder, Bipolar Disorder, Psychotic Depression, Postpartum Depression and Major Depressive Disorder with Seasonal pattern. The symptoms of Depression Includes - Sad, empty, anxious, less energetic, Changes in the way you sleep, Trouble concentrating, Changes in appetite and Aches and pains. The possible causes of Depression Includes - genetic features, changes in the brain's neurotransmitter levels, some environmental, psychological and social factors as well as additional conditions, such as Bipolar disorder.

2. Review of Literature

A. *Schizophrenia*

A study (Juneja, Rana & Agrawal, 2017) concerning computer aided diagnosis (CAD) of schizophrenia using auditory oddball task Functional Magnetic Resonance Imaging (fMRI) was conducted. Performance of two datasets D1 and D2 comprising mixed subjects each of schizophrenia patients and healthy ones acquired on 1.5 T and 3 T scanners respectively were observed. A classification accuracy of 95.6% for D1 and 96.0% for D2 as well as an enhanced performance in comparison to state-of-the-art methods was obtained. These results together proved the effectiveness of CAD of schizophrenia using fMRI as a diagnosis tool. Another Electroencephalography (EEG) study (Peled, Geva, Kremen, Blankfeld, Esfandiarfard & Nordahl, 2001) found that schizophrenics were probably unable to use the front-temporal regions of their brains which are involved in performing working memory tasks. Kay, Fiszbein & Opler (1987) verified the drug sensitivity, reliability, validity etc. of the Positive and Negative Syndrome Scale (PANSS), in their study. Also, out of the few shorter versions of the scale, the PANSS-6 was found to be the most effective for schizophrenia diagnosis in a study (Østergaard, Lemming, Mors, Correll&Bech, 2015).

Another study (Wolthaus, Dingemans, Schene, Linszen, Knegtering, Holthausen, Cahn&Hijman, 2000) did a component analysis of the PANSS for recent-onset schizophrenia patients and discovered its five-component structure. These show the effective use of some diagnostic techniques for Schizophrenia, namely the fMRI, the EEG and the PANSS. Another Electroencephalography (EEG) study (Peled, Geva, Kremen, Blankfeld, Esfandiarfard & Nordahl, 2001) found that schizophrenics were probably unable to use the front-temporal regions of their brains which are involved in performing working memory tasks. Kay, Fiszbein & Opler (1987) verified the drug sensitivity, reliability, validity etc. of the Positive and Negative Syndrome Scale (PANSS), in their study. Also out of the few shorter versions of the scale, the PANSS-6 was found to be the most effective for schizophrenia diagnosis in a study (ostergaard, Lemming, Mors, Correll&Bech, 2015).

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Electroconvulsive therapy (ECT) is considered a last resort for treatment- resistant psychosis. Although several studies showed clinical improvement, a specific reduction in hallucination severity has never been demonstrated (Sommer, I. E. C., Slotema, C.W., Daskalakis, Z. J., 2012.) Cognitive remediation is a type of treatment added recently to the range of tools available to therapists. The effects on psychosocial functioning are significantly stronger with cognitive remediation programs that combine cognitive remediation and psychiatric rehabilitation or social skill trainings than with cognitive remediation alone. One can therefore recommend its use on a

more widespread basis (Demily & Franck, 2008). There were no significant differences between males and females, nor between urban, rural, and mixed sites, although migrants and homeless people had higher rates of schizophrenia and, not surprisingly, developing countries had lower prevalence rates (the lower prevalence of schizophrenia in developing countries has been previously documented). It is well known from other studies that migrants have higher than expected rates of schizophrenia. Although definitions of migrants in these studies have been variable and the studies have suffered from a series of other methodological problems. [Bhugra, 2005]

Several important findings emerge from Saha and colleagues' analysis. For clinicians, the analysis indicates clearly that lifetime prevalence is 4.0/1,000 and not 1%, as reported in the Diagnostic and Statistical Manual of Mental Disorders, fourth edition and other textbooks. The study also challenges the widely held view that schizophrenia is much more common in men. Saha et al.'s finding that schizophrenia was just as common in women has clear implications for developing services, since it means that not only must we develop and provide culturally appropriate services but also services that are gender sensitive (as the number of cases in women are higher than expected, gender becomes a more important factor). Furthermore, if the prodrome of the illness is long, this will affect the number of new cases appearing in the population, and longer delays in treatment will also affect the rates [Bhugra, 2005].

B. Depression

Figures in the fourth edition of the American Psychiatric Association's (1994) Diagnostic and Statistical Manual of Mental Disorders (DSMIV) estimate that between 10% and 25% of women and between 5% and 10% of men will experience major depressive disorder (MDD) during their lifetime. The Office of National Statistics (2000) in the United Kingdom reported that 9.2% of the general population experienced mixed anxiety and depression in the year 2000, with 2.8% of the British population experiencing a depressive episode (without anxiety symptoms). They estimate that one in ten adults in Britain experience depression at some point during their life, with one in six experiencing mental health problems at any one time. Epidemiological studies in the United States suggest that 9% of all adults will experience major depressive disorder in any given year, and approximately 16% will experience MDD during their lifetime (Kessler et al., 2003). Depression accounted for 4.46% of total worldwide disability adjusted life years (DALYs) in the year 2000, and globally depression accounted for 12% of the total number of years lived with disability (YLD). It is estimated that globally, depression is the fourth most common cause of disease burden in women and the seventh most common cause in men (Moussavi et al., 2007; Ustun et al., 2004) Although there are mixed findings regarding the prevalence of depression, according to demographic factors such as class and race, there is some research suggesting that people with lower socioeconomic status are more likely to be depressed and more persistently depressed than people with higher socioeconomic status

(Lorant et al., 2003) [widdowson,2011]. In addition to its prevalence and general impact on health, major depressive disorder has a high mortality rate, with up to 15% of people with MDD committing suicide (American Psychiatric Association, 1994). When we consider that depression is such a widespread condition, the figures relating to suicide risk for those with depression become even more alarming. Anecdotal evidence from informal conversations the author has had with psychotherapist Colleagues suggests that depression is the single most common disorder for which people seek therapy. Clearly, depression is a significant mental health problem and given its prevalence is likely to be one that all psychotherapists encounter regularly in clinical practice. Despite this prevalence, depression has had little specific coverage in the TA literature.

3. Research Methodology

Rationale - Schizophrenia and Depression are the common diseases which affects nearly 1 million people in a year across the world. There exists no definite medical test with the help of which one can diagnose this disease. Doctors and psychologists can identify this disease only by the symptoms shown by the affected individuals. That is why, conducting this study gets important as it discusses various methods through which the existence of this disease in individuals can be found as these methods mainly focus on symptoms of the disease. More studies like this can help in designing intervention and further prevention of the illness.

A. Objective

To study the tools and techniques used to diagnose schizophrenia and Depression.
1) *Variables*
    a) Depression
    b) Schizophrenia
    c) Tools and techniques used for Diagnosis of Depression
    d) Tools and techniques used for Diagnosis of Schizophrenia.
2) *Sample*
On the basis of the researches done in the past of about 10 years, medical reports and the journal's we will be analyzing the tools and techniques which are used for diagnosing Depression and Schizophrenia.
3) *Tools and Techniques*
    1. Scale for the Assessment of Positive Symptoms (SAPS)
    2. Positive and Negative Syndrome Scale (PANSS)
    3. Rorschach Test
    4. MRI Scan
    5. FMRI
    6. PET
4) *Data Collection*
Research papers, journals as well as medical reports were searched for studies related to Depression and Schizophrenia by using the following terms: "depression," "Schizophrenia", "treatment" and prevention, Diagnosis, "empirical study," and "peer reviewed journal." Thus, this report will be based on

secondary Data whose purpose is to analyses the tools and techniques used for diagnosis of schizophrenia and Depression. Initially, no limitation was placed on years included in the search. Five relevant publications were read and analyzed for method and content, with particular focus on location and inclusion criteria of study participants.

4. Results and Discussion

The Scale for the Assessment of Positive Symptoms (SAPS) is a rating scale to measure positive symptoms in schizophrenia. The scale was developed by Nancy Andreasen and was first published in 1984. The scale is closely linked to the Scale for the Assessment of Negative Symptoms (SANS) which was published a few years earlier. The SANS and SAPS together contain 50 items reflecting individual positive and negative symptoms and nine global ratings summarizing symptom areas. [Andreasen1984]. SANS and SAPS are widely used for clinical and research purposes. The question of reliability and validity has been raised from the beginning, and there have been some studies on the validity of the scale. Previous research mainly focused on reliability among experts, which has been proven to be consistent in different cross-cultural contexts. Other studies have focused on the stability of the two scales over time, especially in terms of treatment. A study by Malia et al. It shows that SAPS and SANS showed moderate temporal stability over a 12-month period, but the subscale values were indifferent and bizarre behaviors were not very stable.

The Positive and Negative Syndrome Scale (PANSS) is a medical scale used for measuring symptom severity of patients with schizophrenia. It was published in 1987 by Stanley Kay, Lewis Opler, and Abraham Fiszbein. [Opler, Yavorsky, Daniel, 2017] The Positive and Negative Syndrome Scale (PANSS) is a medical scale used for measuring symptom severity of patients with schizophrenia. It was published in 1987 by Stanley Kay, Lewis Opler, and Abraham Fiszbein. [Opler, Yavorsky, Daniel, 2017] The PANSS is currently the most established scale in patients with schizophrenia. Fiszbein & Opler (1987) validated the drug sensitivity, reliability, validity etc. of the Positive and Negative Syndrome Scale (PANSS), of their study. Also, out of the few shorter variations of the scale, the PANSS-6 become discovered to be the best for schizophrenia prognosis in a study (Østergaard, Lemming, Mors, Correll & Bech, 2015). Another study (Wolthaus, Dingemans, Schene, Linszen, Knegtering, Holthausen, Cahn & Hijman, 2000) did an aspect evaluation of the PANSS for recent-onset schizophrenia sufferers and found its five-aspect structure. Despite its not unusual place use there still appears to be profound uncertainty in the psychiatric network concerning its mathematical properties. The pitfall pertains to the calculation of proportions (which include percentage changes), which can be utilized in not unusual place final results standards like response. Although to start with supposed to perceive positive, negative, and popular elements of psychopathology in schizophrenia, the Positive and Negative Syndrome Scale can also additionally show to be appropriate for this purpose. Indeed, similarly to assessing psychosis-associated symptoms, the PANSS captures popular psychopathology (which include

despair and anxiety) and cognitively-associated features which include "negative attention" and "problem in abstract thinking. In addition, unlike many other psychopathological assessment tools, PANSS is based on observation and evaluation, so it is suitable for people with limited knowledge and may not be able to provide reliable self-reports. Its psychometric properties are still a source of serious confusion. Many studies have overlooked an important fact about the PANSS scale: it is an interval scale, so simple ratio calculations are not appropriate. In other words, the calculation of simple percentage change is wrong, and the ratio needs to be adjusted in advance. This type of assessment is usually associated with the analysis of the respondent, because the definition of the answer is mainly based on a given cut-off point related to the percentage change of the scale. The article in this paper addresses this pressing problem: Using real data and simulated data sets, it can be shown that in many cases ignoring the PANS Scan level can even lead to wrong test decisions about the effects of the treatments investigated. Analyze the relevance of issues related to scientific discussions through systematic literature searches in journals Studies with schizophrenia have shown that there are widespread misjudgments in the literature, and clarification is very much needed.

Obviously, using Rorschach technology to measure various inner experiences has both supporters and opponents. It is undoubtedly one of the most difficult methods in clinical diagnosis, and its application requires extensive clinical psychology knowledge and rich experience in applying this method. Finally, considering the limitations of the projection method and the advantages of the ink test (the technology can obtain information about the structure and dynamics of a person's personality that cannot be obtained by psychological tests), some researchers answered a substantive question. And decided to use the Rorschach method in personal research. However, the application of this technique requires cooperation between experienced clinical psychologists, psychotherapists, and test-trained psychologists familiar with complex scoring system. The Rorschach test has been recognized by the American Psychological Association (APA) as a scientifically validated psychometric tool and is recommended for clinical practice. Appropriateness and reliability, as has been shown in this work, the Rorschach test is proven to be a legal method for psychological diagnosis of various types of mental disorders, which is confirmed by the research results described in modern literature. Exner (1974, 1978, and 1986) and other studies aimed at measuring the incidence of mental disorders in different populations are worth mentioning. As we all know, modern researchers not only use Rorschach's technique when trying to measure personality traits and investigate mental disorders (usually personality disorders), but also Other psychological tests. MRI is a good tool for detecting schizophrenia. According to research, harmful chemical imbalances in the brain can lead to schizophrenia. This is a new type of MRI measurement method. Compared with healthy people and patients with bipolar disorder. Deep learning algorithms perform well in detecting schizophrenia and reveal corresponding structural features based on the structure of the

brain MRI data. He has an acceptable classifier in another group of patients in the early stages of the disease. within schizophrenia, MRI shows a decrease in total brain volume and enlarged ventricles; certain subcortical areas are affected by a decrease in hippocampus and thalamus and an increase in globus pallidus; changes in the folding structure, as well as cortical volume and thickness can be seen in the cerebral cortex The decrease in serotonin is more pronounced in the frontal and temporal lobes. MRI is increasingly suitable for diagnosing mental illness. Today, MRI can play an important role in conjunction with observing doctors and other mental health professionals. The usual approach is to combine fMRI signal acquisition with tracking the participant's reaction and reaction time. Physiological measurements, such as heart rate, respiration, skin conductivity (perspiration rate), and sometimes eye movements are recorded simultaneously with fMRI. This method can also be combined with other methods. Brain imaging, such as transcranial stimulation, direct cortical stimulation, especially EEG. Functional magnetic resonance imaging can also be used in conjunction with near infrared spectroscopy (NIRS) to obtain more information about oxyhemoglobin and deoxyhemoglobin. Functional MRI techniques can complement or complement other techniques because they have unique advantages and disadvantages. It can record brain signals non-invasively without the ionizing radiation risks inherent in other scanning methods (such as computed tomography or PET). It can also record signals from various areas of the brain. It is different from EEG/MEG that moves to the cortical surface. However, the time resolution of functional magnetic resonance imaging is worse than that of EEG because it takes tens of seconds to reach the peak HDR.Because these two factors have complementary effects: EEG has a higher temporal resolution, and fMRI has a higher spatial resolution. However, synchronous data acquisition must consider the EEG signal of the blood flow change caused by the fMRI gradient field and the EEG signal of the static field. For more information, see EEG and fMRI. However, FMRI has some disadvantages and issues such as :-Design, Block versus event related design, Baseline Versus activity conditions, Reverse Interference, Forward Interference etc. Thus, it has been severely criticized by scholars for low power, problematic analyses and small sample studies.

PET is a medical and research tool used in preclinical and clinical settings. It is widely used in tumor imaging and metastasis search in the field of clinical oncology, as well as some clinical diagnosis of diffuse brain diseases, such as different types of dementia. PET is a valuable research tool that can be used to study and improve our understanding of normal human brain and heart functions, as well as to help drug development. PET is also used in preclinical animal research. Over time, research on the same subjects, using subjects as their own controls, greatly reduces the number of animals required for a given study. Anatomical changes of the body. Because PET can detect biochemical processes and the expression of certain proteins, PET can provide molecular-level information long before anatomical changes become visible. This is achieved through the use of radiolabeled molecular probes,

which have different absorption rates depending on the type and function of the affected tissue. From the perspective of a positron emitter inserted into a positron emission tomography (PET), it is possible to relatively visualize and quantify the absorption of regional markers in different anatomical structures. PET images can also be obtained by a traditional dual-head gamma camera equipped with a coincidence detector. However, this method provides a cost-effective on-site solution for facilities that require less PET scanning. Alternatively, referral of these patients to another center or the use of mobile scanners may be another option. The widespread use of PET is limited because of the high cost of the cyclotron, which is necessary for the production of short-lived radionuclides for PET scanning, and a device dedicated to chemical in-situ synthesis for the production of radiopharmaceuticals is required. Production of radioisotopes.

5. Conclusion

It has been found that PANSS can be used not only to diagnose the various stages of schizophrenia, but also to determine the type of treatment required for a particular patient. It has been found that this tool requires relatively little additional training and is more objective and repeatable. In addition, the items selected for the test are considered suitable for construction and internal consistency, but can also include other clinical variables. SAPS and SANS are widely used to assess the symptoms of schizophrenia, but their positive/negative symptom models for assessing schizophrenia have been criticized. It has been proposed to develop a new model with more dimensions and incorporate various elements of schizophrenia symptoms into its structure. In addition, the functional and structural techniques used in MRI today help explain the characteristics of schizophrenia and help diagnose schizophrenia. In addition, given the limitations and advantages of the projection method, some researchers have also used the Rorschach method to study many personality disorders. Despite the lack of credibility and reliability, the Rorschach test has proven to be a legitimate method of psychological diagnosis of mental disorders such as schizophrenia. Psychiatric sufferers and their fitness care this is extensively used to assess Depression. A correct prognosis is essential, for the reason that 50% or greater of psychiatric sufferers are prescribed a sequence of mixture antidepressants over months or years. Methods imparting greater correct diagnoses might make good relationship believe among sufferers and their caregivers, thereby strengthening this relationship.

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