A REVIEW OF EFFECTIVE TREATMENT FOR PEOPLE DIAGNOSED WITH SCHIZOPHRENIA

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PSYCHOTHERAPY AND MEDICATION TO TREAT SCHIZOPHRENIA: RESEARCH EVIDENCE

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Abstract

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Schizophrenia is a debilitating disease of the mind. There is a substantial amount of research that exists regarding various treatment approaches for people who have schizophrenia, but questions still exist about what approaches are the *most* effective in treating this disease. The purpose of this paper is to provide the reader with an overview of schizophrenia; what the key terms and definitions are; and what types of methods seem most effective in treating and improving the lives of people who live with this debilitating mental health disorder.

This paper will also discuss future trends in the treatment of schizophrenia and the challenges that individuals who suffer with this disorder go through in their lifetime. At the end of this paper the reader should be able to identify what schizophrenia is, what the benefits and risks of the most frequently used medication treatment modalities are, and have a sense of the effectiveness of various clinical treatment methods used to treat this debilitating mental health disorder.

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A REVIEW OF EFFECTIVE TREATMENT FOR PEOPLE DIAGNOSED WITH SCHIZOPHRENIA

Chapter One

Schizophrenia is arguably one of the most serious and difficult to treat mental illness' that afflicts our world. The prevalence of schizophrenia is thought to be about 1% of the population around the world; it is thus more common than diabetes, Alzheimer's disease, or multiple sclerosis. (Schizophrenia. (2012). Retrieved on January 30, 2013 from http://medicaldictionary.thefreedictionary.com/schizophrenia).

In the United States and Canada, patients with schizophrenia fill about 25% of all hospital beds. The disorder is considered to be one of the top ten causes of long-term disability worldwide. (Schizophrenia. (2012). Retrieved on January 30, 2013 from http://medicaldictionary.thefreedictionary.com/schizophrenia).

Psychotherapy and medication are currently the most accepted forms of treating schizophrenia in the world today. In this paper it will be explored if medication and psychotherapy are effective in treating schizophrenia, and which approaches appear to be most effective for the majority of the population. This research paper we will also explore how psychotherapy and medication treat schizophrenia and the advantages and disadvantages of the current methods of treatment for this severe disorder and future trends in the treatment of schizophrenia will also be explored.

Statement of the Problem

Medication, complimented with psychotherapy, is the treatment method currently used to treat schizophrenia, but how effective are these approaches, and which medications and therapy approaches are most effective?

Definition of Terms

Schizophrenia- a psychotic disorder (or a group of disorders) marked by severely impaired thinking, emotions, and behaviors. Schizophrenic patients are typically unable to filter sensory

stimuli and may have enhanced perceptions of sounds, colors, and other features of their environment. Most people living with untreated schizophrenia gradually withdraw from interactions with other people, and lose their ability to take care of personal needs and grooming. The disorder is considered to be one of the top ten causes of long-term disability worldwide. The course of schizophrenia in adults can be divided into three phases or stages. In the acute phase, the patient has an overt loss of contact with reality (psychotic episode) that requires intervention and treatment. In the second or stabilization phase, the initial psychotic symptoms have been brought under control but the patient is at risk for relapse if treatment is interrupted. In the third or maintenance phase, the patient is relatively stable and can be kept indefinitely on antipsychotic medications. Even in the maintenance phase, however, relapses are not unusual and patients do not always return to full functioning. The English term schizophrenia comes from two Greek words that mean "split mind." It was observed around 1908, by a Swiss doctor named Eugen Bleuler, to describe the splitting apart of mental functions that he regarded as the central characteristic of schizophrenia. In the mid to late 20th century, some psychotherapists have begun to use a classification of schizophrenia based on two main types. People with Type I, or positive schizophrenia, have a rapid (acute) onset of symptoms and tend to respond well to drugs. They also tend to suffer more from the "positive" symptoms, such as delusions and hallucinations. People with Type II, or negative schizophrenia, are usually described as poorly adjusted before their schizophrenia slowly overtakes them. They have predominantly "negative" symptoms, such as withdrawal from others and a slowing of mental and physical reactions (psychomotor retardation). (*Schizophrenia*. (2012). Retrieved on January 30, 2013 from http://medicaldictionary.thefreedictionary.com/schizophrenia)

Psychotherapy- a general term referring to therapeutic interaction or treatment contracted between a trained professional and a client, patient, family, couple, or group. The problems addressed are psychological in nature and of no specific kind or degree, but rather depend on the specialty of the practitioner. Psychotherapy aims to increase the individual's sense of his/her own well-being. Psychotherapists employ a range of techniques based on experiential relationship building, dialogue, communication and behavior change that are designed to improve the mental health of a client or patient, or to improve group relationships (such as in a family). Psychotherapy may also be performed by practitioners with a number of different qualifications, including psychiatry, clinical psychology, counseling psychology, clinical or psychiatric social work, mental health counseling, marriage and family therapy, rehabilitation counseling, school counseling, play therapy, music therapy, art therapy, drama therapy, dance/movement therapy, occupational therapy, psychiatric nursing, psychoanalysis and those from other psychotherapies. Requirements of these professions vary, but typically require graduate school and supervised clinical internship experience. (*Schizophrenia*. (2012). Retrieved on January 30, 2013 from http://medicaldictionary.thefreedictionary.com/schizophrenia)

Medication- a pharmaceutical drug, also referred to as medicine, medication or medicament, can be loosely defined as any chemical substance intended for use in the medical diagnosis, cure, treatment, or prevention of disease. (*Schizophrenia*. (2012). Retrieved on January 30, 2013 from http://medicaldictionary.thefreedictionary.com/schizophrenia)

Treatment- therapy (in Greek: θεραπεία), or treatment, is the attempted remediation of a health problem, usually following a diagnosis. In the medical field, it is synonymous with the word "treatment". Among psychologists, the term may refer specifically to psychotherapy or "talk therapy". Preventive therapy or prophylactic therapy is a treatment that is intended to prevent a

medical condition from occurring. For example, many vaccines prevent infectious diseases. An abortive therapy is a treatment that is intended to stop a medical condition from progressing any further. A medication taken at the earliest signs of a disease, such as at the very symptoms of a migraine headache, is an abortive therapy. A supportive therapy is one that does not treat or improve the underlying condition, but instead increases the patient's comfort. Supportive treatment may be used in palliative care. Overtreatment is an overutilization, a treatment that is unnecessary or disproportionate to the situation. For example, the treatment of a condition that causes no symptoms and will go away on its own is overtreatment. Similarly, extensive treatment for a condition that could be remedied with very limited treatment is overtreatment. Overtreatment may be caused by over diagnosis, the identification of harmless abnormalities. (*Schizophrenia*. (2012). Retrieved on January 30, 2013 from http://medicaldictionary.thefreedictionary.com/schizophrenia)

Delimitations of Research

The references used for the review of literature were collected over a period of 13 weeks using the resources of the Karmann Library at the University of Wisconsin – Platteville and the World Wide Web. The several search engines provided by EBSCOHOST were used. The key search terms were “schizophrenia”, “schizophrenia and treatment”, “effective treatment for schizophrenia”, “future trends in treating schizophrenia”, and “research studies on the treatment of schizophrenia”.

Method of Approach

A review of literature on the effectiveness of psychotherapy and medication in the treatment of schizophrenia will be conducted. A review of literature relating to research, studies, and

anecdotal evidence will be conducted as well in order to obtain information related to the effectiveness in current methods to treat schizophrenia.

CHAPTER 2-Review of Related Literature

Schizophrenia-A Brief Overview. Schizophrenia is a group of severe brain disorders in which people interpret reality abnormally. Schizophrenia could result in some combination of hallucinations, delusions, and/or disordered thinking and behavior. Contrary to some popular belief, schizophrenia is not split personality or dissociative personality disorder (formerly known as Multiple personality Disorder). In Greek the word "schizophrenia" does mean "split mind," but it refers to a disruption of the usual balance of emotions and thinking. Schizophrenia is a chronic condition that requires lifelong symptom management. Schizophrenia symptoms also can be attributed to other mental illnesses, and no one symptom can pinpoint a diagnosis of schizophrenia. In men, schizophrenia symptoms typically start in their teenage years or in their twenties. In women, schizophrenia symptoms typically begin sometime in their twenties or early thirties. It is uncommon for children to be diagnosed with schizophrenia and rare for those older than forty-five to be diagnosed. Signs and symptoms of schizophrenia generally are divided into three categories — positive, negative and cognitive symptoms. (Perkins, (2008).

Positive symptoms of Schizophrenia-

In schizophrenia, positive symptoms reflect an excess or distortion of normal functions. These active, abnormal symptoms may include:

Delusions: these beliefs are not based in reality and usually involve misinterpretation of perception or experience. They are the most common of schizophrenic symptoms.

Hallucinations: these usually involve seeing or hearing things that don't exist, although hallucinations can be in any of the senses. Hearing voices is the most common hallucination among people with schizophrenia.

Thought disorder: difficulty speaking and organizing thoughts may result in stopping speech midsentence or putting together meaningless words, sometimes known as "word salad".

Disorganized behavior: this may show in a number of ways, ranging from childlike silliness to unpredictable agitation. (Perkins, (2008).

Negative symptoms of Schizophrenia-

Negative symptoms refer to a reduction or absence of characteristics of normal function. They may appear with or without positive symptoms. They can include: loss of interest in everyday activities, appearing to lack emotion, reduced ability to plan or carry out activities, neglect of personal hygiene, social withdrawal, and loss of motivation.

Cognitive symptoms of Schizophrenia-

Cognitive symptoms involve problems with a person's thought processes. These symptoms may arguably be the most disabling in schizophrenia because they may interfere with the ability to perform routine daily tasks. A person who has a chance to develop schizophrenia may be born with these symptoms. They include: problems with making sense of information, difficulty paying attention, and memory problems.

Symptoms in teenagers of Schizophrenia-

Schizophrenia symptoms in teenagers are similar to those in adults, but the condition may be more difficult to recognize in this age group. This may be in part because some of the early symptoms in teenagers are common during teen years, such as: withdrawal from friends and family, a drop in performance at school, trouble sleeping, and irritability. Compared with schizophrenia symptoms in adults, teens may be: less likely to have delusions and more likely to have visual hallucinations.

People with schizophrenia often lack an awareness that their difficulties arise from a mental illness that requires medical attention. Therefore, it often falls to family, friends, or society to get them access to medical care. It is not known what causes schizophrenia, but researchers believe that a combination of genetics and environment contributes to the development of the disease. Problems with certain naturally occurring brain chemicals, including the neurotransmitters dopamine and glutamate, also may contribute to schizophrenia. Neuroimaging studies show differences in the brain structure and central nervous system of people with schizophrenia. While researchers are not certain about the significance of these changes, they support evidence that schizophrenia is a disease of the brain. Although the precise cause of schizophrenia is not known, certain factors seem to increase the risk of developing or triggering schizophrenia, including: having a family history of schizophrenia; exposure to viruses, toxins or malnutrition while in the womb, particularly in the first and second trimesters; stressful life circumstances; older paternal age; and taking psychoactive drugs during adolescence and young adulthood

If schizophrenia is left untreated it may result in severe emotional, behavioral and health problems. Suicidal thoughts and behavior are common among people with schizophrenia. It may also cause legal, financial, and other psycho-social problems. These problems have the potential to affect every area of an afflicted person's life. Complications that schizophrenia may cause or be associated with include: suicide; self-destructive behavior; such as self-injury; depression; abuse of alcohol, drugs or prescription medications; poverty; homelessness; family conflicts; inability to work or attend school; health problems from antipsychotic medications; being a victim or perpetrator of violent crime; and heart disease, often related to heavy smoking. When doctors suspect someone has schizophrenia, they often request

access to previous medical and psychiatric records, conduct a physical exam, and run medical and psychological tests and exams. These tests and exams generally include: *laboratory tests*-these may include a complete blood count (CBC), other blood tests that may help to rule out other conditions with similar symptoms, screening for alcohol and drugs, and imaging studies, such as an MRI or CT scan and/or *psychological evaluation*-a doctor or mental health provider will check mental status by observing appearance and demeanor and asking about thoughts, moods, delusions, hallucinations, substance abuse, and potential for violence or suicide. (Perkins, (2008).

Diagnostic criteria for schizophrenia-

To be diagnosed with schizophrenia, a person must meet the criteria spelled out in the current edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM). This manual is published by the American Psychiatric Association and is used by mental health providers to diagnose mental conditions. A diagnosis of schizophrenia involves ruling out other mental health disorders and determining that symptoms are not due to substance abuse, medication or a medical condition. A person must additionally have at least two of the common symptoms of the disorder — delusions, hallucinations, disorganized speech, disorganized or catatonic behavior, or presence of negative symptoms for a significant amount of time during one month: experience significant impairment in the ability to work, attend school or perform normal daily tasks and/or have had symptoms for at least six months. There are several subtypes of schizophrenia, but not everyone easily fits into any one specific category. The five most common subtypes are:

- *Paranoid*- is characterized by delusions and hallucinations; this type generally involves less functional impairment and offers the best hope for improvement.

- *Catatonic*- people with this subtype don't interact with others, get into bizarre positions, or engage in meaningless gestures or activities.
- *Disorganized*- is characterized by disorganized thoughts and inappropriate expressions of emotion, this type generally involves the most functional impairment and offers the least hope for improvement.
- *Undifferentiated*- this is the largest group of people with schizophrenia, whose dominant symptoms come from more than one subtype.
- *Residual*- this type is characterized by extended periods without prominent positive symptoms, but other symptoms continue.

There is no sure way to prevent schizophrenia. However, early treatment may help get symptoms under control before serious complications develop in an individual and may help improve the person's psycho-social functioning. Sticking with the treatment plan can help prevent relapses or a worsening of symptoms associated with schizophrenia. Several researchers have suggested that learning more about risk factors for schizophrenia may lead to earlier diagnosis and earlier treatment. People with an increased risk of schizophrenia, are encouraged to take proactive steps such as avoiding illegal drug use, reducing stress, getting enough sleep and starting antipsychotic medications as soon as necessary to help minimize symptoms or prevent them from worsening. (Perkins, (2008).

Methods to Treat Schizophrenia. Schizophrenia is a chronic condition that requires lifelong treatment, even when symptoms have subsided. Treatment with medications and psychosocial therapy can help manage the condition. During crisis periods or times of severe symptoms in patients, hospitalization may be necessary to ensure safety, proper nutrition, adequate sleep and basic hygiene of the person. A psychiatrist experienced in treating schizophrenia usually guides

treatment. The treatment team also may include psychologists, social workers psychiatric nurses and possibly a case manager to coordinate care for the individual. Anti-psychotic medications, however, are the cornerstone of schizophrenia treatment because they are thought to control symptoms by affecting dopamine and serotonin in the brain. Many experts agree that without medication management as a part of treatment for schizophrenia, individuals who suffer from this debilitating disease will not be able to move through life as a productive member of society. (Cohen, (2002). Because medications for schizophrenia can cause serious but rare side effects, people with schizophrenia may be reluctant to take them. A person's willingness to cooperate with treatment may affect medication choice. Someone who is uncooperative may need to be given injections instead of taking a pill. Someone who is agitated may need to be calmed initially with a benzodiazepine such as lorazepam (Ativan), which may be combined with an antipsychotic. Atypical antipsychotics, newer medications used to treat schizophrenia, are generally preferred because they pose a lower risk of debilitating side effects than do the previously most used medications to treat schizophrenia. They include: Aripiprazole (Abilify), Clozapine (Clozaril, Fazaclo ODT), Olanzapine (Zyprexa), Paliperidone (Invega), Quetiapine (Seroquel), Risperidone (Risperdal), and Ziprasidone (Geodon). Side effects of atypical antipsychotic medications include weight gain, diabetes and high blood cholesterol. Conventional, or typical, antipsychotics, the older medications used to treat schizophrenia, have frequent and potentially significant neurological side effects, including the possibility of developing a movement disorder (tardive dyskinesia) that may or may not be reversible. This group of medications includes: Chlorpromazine, Fluphenazine, Haloperidol (Haldol), and Perphenazine. These typical antipsychotics are often cheaper than newer counterparts, especially the generic versions, which can be an important consideration when long-term treatment is

necessary. It can take several weeks after first starting a medication to notice an improvement in symptoms. In general, the goal of treatment with antipsychotic medications is to effectively control signs and symptoms at the lowest possible dosage. A psychiatrist may try different medications, different dosages or combinations over time to achieve the desired result. Other medications also may be helpful, such as antidepressants or anti-anxiety medications. Researchers have suggested that medication is most effective, when it is complimented with psychosocial treatments after psychosis has receded. Examples of psychosocial treatments are: *social skills training*- this focuses on improving communication and social interactions; *family therapy*- this provides support and education to families dealing with schizophrenia; *vocational rehabilitation and supported employment*- this focuses on helping people with schizophrenia find and keep jobs; and *individual therapy*- learning to cope with stress and identify early warning signs of relapse can help people with schizophrenia manage their illness. The following describes some alternative treatments for treating individuals who suffer from schizophrenia. The following methods sound like research is embracing alternative ways to possibly treat mental illness and the results appear promising.

Glycine (an amino acid sold as a dietary supplement) has been a subject of research for over 15 years as a potential treatment for the negative symptoms of schizophrenia. Only a handful of human clinical trials with fewer than 50 people in each trial, have been completed (though one trial with 150 people has recently completed and has not yet been published). The trials published to date are reporting that the results have been quite positive, showing a significant reduction (averaging around 24%) in negative and cognitive symptoms based on the PANSS (Positive and Negative Schizophrenia Symptoms) scale. The clinical trials have shown that Glycine did not help people who are taking Clozapine, but it did help (in reducing negative

symptoms) in people who were taking risperidone (Risperdal), and olanzapine (Zyprexa). The clinical trials suggest that the optimal dosage may be in the range of 30 grams to 60 grams a day. The biggest downside to taking glycine seems to be upset stomach and nausea which, researchers tell us, is quite common in people who take 60 grams of glycine a day for a month or two. Approaches used by the researchers to minimize this problem have been to start at lower doses (e.g. 5 to 10 grams split into two doses per day) and then to slowly phase up to higher doses over a period of weeks. Also taking it after meals may assist in reducing side effects. One hypothesis of schizophrenia pathology suggests that NMDA-receptor disfunction (a special kind of glutamate receptor in the brain) may contribute to disordered synapses and brain atrophy, which ultimately result in the visible symptoms. Glycine may turn out to be a very beneficial supplemental treatment (when added to standard antipsychotic medications) for some people with schizophrenia. Researchers hope to see longer and larger trials for glycine supplemental treatments. (Tel Aviv University, Israel).

While the research is somewhat conflicting (some positive studies, some negative studies) there is some early scientific research that suggests that people that have schizophrenia may benefit by a reduction in symptoms when they take fish oil capsules that are high in the EPA (a type of Omega-3 fatty acid) form of oil; however not *all* types of fish oil are effective. Researchers at the University of Scheffield tell us that what people really need to be looking at is the amount of EPA in the fish oil they are buying. Research data from previous studies suggests that DHA is of little use in the treatment of schizophrenia but EPA is the substance that yields the best results. Dosage wise it is suggested that about 2,000 mg/day to 4,000 mg/day (2 to 4 grams/day) should help. A research review article from Cochrane Review suggested that the use of omega-3 polyunsaturated fatty acids for schizophrenia remains experimental and large well

designed; conducted and reported studies are indicated and needed. Researchers have found a positive correlation between superoxide generation and the negative symptoms of schizophrenia, indicating a possible role for oxidative stress in the development of the disease (and the potential for antioxidants to help in decreasing the risk or severity of the disease). There are several lines of evidence to support the contribution of oxygen free radicals in schizophrenia, including increased lipid peroxidation, fatty acids, and alterations in blood levels of antioxidant enzymes. (Tel Aviv University, Israel).

Some research has shown that people with celiac disease, a genetic gluten (a type of protein found in wheat and other grains) intolerance have up to a 300% increased risk for developing schizophrenia. While the percentage of people that this impacts is small (less than 3% of people that have schizophrenia are estimated to have this intolerance), a wheat-free diet is theorized as potentially being helpful for these people. (Tel Aviv University, Israel).

Research has shown that pets (dogs and cats) may offer a cost-effective and helpful type of therapy for people with schizophrenia. What the researchers call "Animal-assisted Therapy" has been shown to encourage mobility, interpersonal contact, and communication and reinforced activities of daily living, including personal hygiene and independent self-care. It appears that the field has limited research on this topic, so it remains to be seen if this approach to therapy proves effective in additional studies. Current research has suggested that a calm and friendly adult dog could provide good companionship for people who have schizophrenia and do not socialize much.

Music therapy is a type of psychotherapy in which the patient is encouraged to utilize music to improve interpersonal and communication skills in ways that regular dialogue is

limited. Forms of music therapy generally are based around cognitive/behavioral, humanistic or psychoanalytic frameworks or a mixture of approaches. There are usually both active and receptive parts of the therapy, meaning that at times music is listened to and at other times there is the use of musical improvisation or creation. There have not been many studies on music therapy and schizophrenia, but the Cochrane review looked at the data available for a recent review. There were four studies included in the review. These studies looked at short term benefits of music therapy when used in addition to more conventional pharmaceutical treatments. The authors combined the results of these 4 studies in a "meta-analysis" meaning that the studies were similar enough that the data could be combined and form a larger sample. The number of sessions used in these studies varied from 7 to 75 and the length of time studied ranged up to 3 months duration. The results were encouraging. In one study, it was shown that the global state in the short term was frequently improved. Using a statistic called "number needed to treat (NNT)" it was described that to show an improvement in one patient, you only needed to put two patients through the therapy. (This compares with NNT in many situations of several hundred patients needed to be given a treatment in order to notice benefits in one person.) It was shown that the number of sessions had a direct impact on the success of the treatment with more sessions being better. It was also seen that active participation was better than a more passive approach to treatment. However, the length of treatment in these studies was short and the benefit in the long term is unknown at this time. (Tel Aviv University, Israel).

In January, 2006 The Cochrane Review (a leading medical publisher) published a review article of all the studies that have been done so far on Chinese herbal medicine use in treatment for schizophrenia. In their review article they stated: traditional Chinese medicine (TCM) has been used to treat mental health disorders, including schizophrenia, for more than 2000 years.

Chinese herbs may also have antipsychotic properties when used in a Western biomedical context. In this review we sought and found trials relevant to the effects of both approaches for schizophrenia. Traditional Chinese medicine methodology has been evaluated for schizophrenia, but the one included study was too limited in terms of sample size and study length to guide good practice. However, this pioneering study does show that TCM can be evaluated for its efficacy for people with schizophrenia, and should encourage trialists' to undertake further, more comprehensive trials in this area. The use of Chinese herbs in a Western medicine context, without incorporating TCM methodology, has been evaluated in six trials, although again these are limited by their sample size and study length. The results of these six trials suggest that using Chinese herbs alone for psychotic symptoms may not be indicated, but if used in conjunction with Western antipsychotic drugs, they may be beneficial in terms of mental state, global functioning and decrease of adverse effects. However, further trials are needed before the effects of TCM for people with schizophrenia can be evaluated with any real confidence. (The Internet Mental Health Initiative, 2010)

Many researchers have focused on identifying potential biological causes of schizophrenia. Research has suggested that neurotransmitters in the brain account for a lot of the "cause" of schizophrenia, with some stating that if certain natural chemicals in a person's brain are not working correctly it can lead the individual to developing schizophrenia. (Watson, 2003).

One group of researchers, in particular, may have unlocked key information regarding the relationship between schizophrenia and dopamine. They have explained that even if a drug is found that can counter excess dopamine synthesis in individuals with schizophrenia,

researchers have to make sure that it does not alter norepinephrine synthesis in addition to dopamine. Despite half a century of drug discovery, all medications available to treat schizophrenia rely on the same mechanism: blocking dopamine receptors. This, comprised of a team of British and American scientists, decided that if new, more effective treatments for schizophrenia are to be developed, the precise role that dopamine plays in the brains of individuals with schizophrenia needs to be identified. They have concluded that the problem is excessive synthesis of dopamine; they reported online April 2 in the Archives of General Psychiatry. The lead investigator, Oliver Howes, Ph.D., group head of the Department of Psychosis Studies at the Institute of Psychiatry, King's College, London, and his colleagues first searched PubMed, PsycINFO, and MEDLINE electronic databases to find published studies in which researchers used PET and SPECT imaging to evaluate dopamine function in the brains of individuals with schizophrenia and the brains of control-group subjects. They found 44 such studies, encompassing some 1,200 subjects—600 with schizophrenia and 600 controls. Howes and his team then conducted a meta-analysis of these studies. "We excluded studies of dopamine receptors where patients were taking antipsychotics, because drug binding to receptors is well established to alter receptor availability," Howes told Psychiatric News. "We did not exclude studies of other aspects of the dopamine system that included patients taking antipsychotics. However, most of the studies were of patients who were not taking antipsychotics, and the results remained the same after excluding studies of patients who were taking antipsychotics." The meta-analysis in the study showed that the big difference between the schizophrenia subjects and the control subjects was not in the availability of dopamine receptors, nor in the availability of dopamine transport, but in dopamine synthesis. The subjects diagnosed with schizophrenia made more dopamine than the controls did. "The most surprising finding was the size of the

presynaptic dopamine abnormality," Howes said, "For year's schizophrenia researchers have gotten used to brain findings in schizophrenia being small, so it was surprising and fascinating to find such a large effect." Therefore, Howes and his group believe that excessive dopamine synthesis constitutes the most important dopamine abnormality in schizophrenia and that efforts to find novel, more effective drugs for schizophrenia should focus on countering this synthesis, not on blocking dopamine receptors, which are further downstream in the schizophrenia disease process. They acknowledged, however, that finding a drug that selectively dampens dopamine synthesis will be a challenge, since dopamine and the neurotransmitter norepinephrine share part of the same synthesis pathway. Therefore, a drug that interferes with dopamine synthesis also risks affecting norepinephrine synthesis, leading to undesirable side effects. "I am not aware of any developing drugs that directly alter dopamine synthesis," said Howes, "but several pharmaceutical companies are developing compounds that indirectly act to reduce dopamine synthesis." (Arehart-Treichel, J. (2012). Dopamine synthesis appears at fault in schizophrenia symptoms. Psychiatric News, 47(10), 14b)

Another study regarding schizophrenia evaluated the effectiveness of treatment used for schizophrenia patients. The following information is the results from this study. The purpose of this particular study was to identify a list of performance measures for schizophrenia treatment services and to assemble a multi-stakeholder group to reach consensus on a core list. The study was conducted in two stages: first, a systematic review of the literature was conducted to identify a comprehensive list of measures; second, a consensus-building technique, the Delphi process, was used with participants from six groups of stakeholders: schizophrenia experts, mental health clinicians, mental health administrators, the payer (the Alberta Ministry of Health and Wellness), patients, and family members. Thirty stakeholders participated in three rounds of

self-completed questionnaires. The degree of consensus achieved in the Delphi process was defined as the semi-interquartile range for each measure. Ninety-seven measures were identified in the literature review. The Delphi method reduced the list to 36 measures rated as essential. The measures address eight domains of service-level evaluation: acceptability, accessibility, appropriateness, competence, continuity, effectiveness, efficiency, and safety. Despite the diversity in backgrounds of the stakeholder groups, the Delphi technique was effective in moving participants' ratings toward consensus through successive questionnaire rounds. The resulting measures reflected the interests of all stakeholders. Several further steps are required before these measures are implemented and include working toward reliability and validity of specific measures, assessing the feasibility and cost-effectiveness of collecting the data, and finally, undertaking risk adjustment for outcome measures. (Psychiatric Services 63:584–591, 2012)

Many patients with schizophrenia have psychological distress and receive some form of psychotherapy. Several different psychotherapeutic approaches for schizophrenia have been developed and studied and of these approaches, cognitive behavior therapy (CBT) has the strongest evidence base and has shown benefits for reducing symptoms in patients with residual schizophrenic symptoms. In addition to CBT, other approaches include compliance therapy, personal therapy, acceptance and commitment therapy, and supportive therapy. Although usually studied as distinct approaches, these therapies overlap with each other in their therapeutic elements. Psychotherapy for schizophrenia continues to evolve with the recent advent of such approaches as meta-cognitive therapy, narrative therapies, and mindfulness therapy. (Psychiatric Services 63:584–591, 2012)

Future Trends in the Treatment of Schizophrenia. Future research may also consider three different goals of psychotherapy in this patient population: to provide emotional support, to

enhance functional recovery, and to alter the underlying illness process. It was not until recently that science has been able to find any kind of effective treatment for schizophrenia, and even though there now appears to be some understanding of the etiology, neurobiology, and treatment of it, in each of these areas, all that is still up for debate, and perhaps further research will find that present understanding is either correct or woefully lacking. One thing that has happened in recent years is that, for better or worse, people with schizophrenia have been able to rejoin society. Previous treatment modalities were carried out inside the walls of a mental institution, and families regularly shuttled off their family and friends who were diagnosed with schizophrenia to live and die in a separate place. As treatments have improved and societal advocates began focusing on abuses within the mental institutions there was a call to close the institutions and allow treatment to happen at home. (Watson, 2003).

Despite all research that exists in the field, there seems to a great deal of suspicion where schizophrenia treatment is concerned. There is not as of yet a clear understanding of what schizophrenia is and how it works. A large number of patients still do not respond adequately to medication, and many are still on medication that is potentially as harmful as it is helpful. Clozapine was a previously forgotten medicine that was reintroduced when it was found how to prevent agranulocytosis (Watson, 2003). Risperidone and olanzapine were descendants of clozapine that had no potential for causing agranulocytosis. These medications were introduced quickly in the late 1980's and early 1990's as alternatives to conventional antipsychotics. Yet there is some doubt as to the adequacy of research into these medications. It is regularly accepted that these medications have a lower chance of causing extrapyramidal symptoms. The research generally compares these medications to haloperidol, which generally has the highest likelihood of causing these symptoms, rather than chlorpromazine, which is more commonly

used. Psychiatric research is supposed to occur under a double-blind condition, so that neither patient nor doctor is to know who is getting the experimental treatment and who is getting the control treatment. Yet the sudden occurrence of extrapyramidal effects in the patients receiving haloperidol makes it immediately clear which is the control group and which is the experimental group (Cohen, 2002). Research is rarely done on nonmedical treatments of schizophrenia, and perhaps that is appropriate, though perhaps it is not. There is some concern that the atypical antipsychotics may not be safe for long-term use, and some reports that extrapyramidal effects do eventually occur with long-term use. In addition, there is some evidence that some people living with schizophrenia have functioned well with episodic treatment of atypical antipsychotics for acute conditions and counseling for the rest of the time. Whether atypical antipsychotics are the magic bullet for treatment of schizophrenia and whether they are safe and effective for long term use remains to be confirmed. At this point, they appear to be more effective and safer than conventional antipsychotics for management of the condition on an outpatient basis, which is the reality of the situation today. If nothing else, there is now new research going into the treatment of schizophrenia, which was not the case twenty years ago. The inevitable result of that is that, whether with the current class of atypical antipsychotics, newer medications, or other treatment modalities, there will eventually be a safe and effective way of dealing with schizophrenia. In recent years, schizophrenia research has progressed in two major directions. First, it was determined if a disease entity within the schizophrenia syndrome could be identified. The presence or absence of negative symptoms in persons with the diagnosis of schizophrenia was ascertained and two subgroups were contrasted. The term *deficit schizophrenia* was introduced to refer to negative symptoms that are direct manifestations of schizophrenia, not negative symptom ratings that can occur for a variety of reasons in people with schizophrenia but are not

caused by schizophrenia itself. The group with primary negative symptoms, the deficit schizophrenia subgroup, represented about 25% of the cases. Deficit and non-deficit subgroups could be distinguished with regard to clinical manifestations, cognitive impairment, therapeutic response, neuropathology, and etiological risk factors. Thus, deficit schizophrenia appears to be a disease entity distinguished from other forms of schizophrenia (Kirkpatrick et al., 2001; Arango et al., 2004). Second, the focus was put on the domains of pathology in their own right, rather than as a method for identifying a subgroup. This work has been most influential in the evaluation of medication therapies. Medications approved for the treatment of schizophrenia have shown efficacy for psychosis per se, but not for critical aspects which determine long-term morbidity: here we find impaired cognition and negative symptoms highly associated with poor functional outcomes. Impaired cognition, with an estimated reduction in IQ of 5 points, starts relatively early in life and is probably in place by the time people begin to manifest psychosis. The etiology and treatment of cognitive and negative symptoms of schizophrenia must be considered as individual domains separate from psychosis. Since these two pathology domains are not addressed by current anti-schizophrenia medications, new mechanisms of drug action appear to be required (Arango et al., 2004). (McWilliam, Chris (2002). (Managing schizophrenia under new guidelines. Pulse, 62, 40-42)

Chapter III-Conclusions and Recommendations

Throughout the research conducted for this paper one thing has become abundantly clear: schizophrenia is a severe and debilitating mental illness that requires extensive life-long treatment in order for individuals to maintain a healthy functioning and positive well-being. Research has shown that medication and psychotherapy combined is the best choice for individuals suffering from schizophrenia. The research into what causes this disease and what is the most effective way to treat it needs to be continued for the foreseeable future in order to make inroads in treating individuals with schizophrenia. We are not very far as a society in figuring out the cause of this debilitating disease, however, with research into the cause and effects of medications related to schizophrenia hopefully one day we will get this severe mental health disorder under control. One day, as long as research continues into the causes of schizophrenia, maybe the experts will find a cure for this horrible disease so that individuals can have a more normal way of going through life.

Research has proven that if we are to fully understand this serious mental illness then testing needs to be continued and research studies continued as well in order to continue to give patients the best possible care they can receive per the knowledge that the medical community has thus far. With the majority of schizophrenic patients now living on their own, due to the abolishment of state funded mental health facilities, we need to be even more diligent in how we approach this disease so as to not burden the general public and, again, to provide the best possible care for the patients. Research focusing on the best possible medications to treat this mental illness also need to continue to be conducted so we are giving individuals who suffer from this disorder the best quality of care, while managing the side effects.

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