



REVIEW

The Cognitive Behavioural Therapy as a Treatment for Schizophrenia: Current Issues and the Future

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ABSTRACT

Cognitive Behavioural Therapy (CBT) has been widely practised as a method of addressing both negative and positive symptoms of schizophrenia. The treatment is combined with other forms of medication for increased efficiency. Clinicians use behavioural concepts to address the underlying problems in patients. The objective of this present review was to conduct a systematic review aimed at explaining the current issues and advancements in the application of CBT in the treatment of schizophrenia. The scope of the study was limited to the cognitive behavioural treatment of schizophrenia. The research focused on the current issues and the advancements in the CBT treatment of schizophrenia. The methodology used in this present review involved the use of secondary sources from a number of few databases, the majority being those published in the social science citation index (SSCI). The selection criteria were based on the relevance as well as the currency time of publication with exceptions in cases where the only publication available was not within the time-frame of the selection criteria. The selection of literature was done by searching for the journals which were indexed in the SSCI and a few that were indexed in the PubMed database. This present review reveals that CBT as a treatment of schizophrenia is an effective method of addressing the symptoms of schizophrenia. CBT was used to address issues such as delusion, hallucination, and co-morbidity among other negative and positive symptoms. However, the measure of the level of effectiveness remains a concern that is yet to be addressed. In addition to that, little is known about the long term effects of CBT in the treatment of schizophrenia.

Keywords: Cognitive Behavioural treatment (CBT), improvement, negative symptoms, psychosis, schizophrenia

INTRODUCTION

CBT as a treatment for mental dysfunction was first described as a manual and procedural treatment method that focused on conscious thinking. Later, it included behaviourism following the theories built by Beck. The current progress in the search for the right treatment for schizophrenia has not been successful in finding a cure for this condition. However, there exist recovery methods and rehabilitation, as well as the use of some medication, meant for psychosis cases to treat severe conditions.

Rehabilitation is also used in many patients with schizophrenia to ensure that they live productive lives.

There are a variety of treatment methods. Research carried out by Granholm and Holden (1) has shown that effective adherence to CBSST is one way of treating schizophrenia effectively. The study involved both young and older adults, and it covered milestones in educating the patients in social skills and the functioning outcomes for the psychosis were good. The treatment for the neural abnormalities for chronic cases and those in first episodes matched in severity and factors such as age, and its effect is still robust.

In a research carried out by Raymond et al. (2) the effect size for patients discovered to suffer from schizophrenia proved important in determining the number of patients that might be affected by this disorder. In addition to that,

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other co-variants such as age, gender, level of intellect measured in IQ, are essential in setting the framework for the effectiveness of treatment and the effect measure (3). It is also vital for the CBT of schizophrenia to determine the effectiveness of the treatment methods depending on the patients. The treatment is intended to increase the success of the treatment.

This present review is aimed at conducting a Systematic Review on the current issues surrounding CBT as a treatment of schizophrenia and the future advancements in this area. The study, therefore, intends to uncover:

- The current methods of CBT in the treatment of schizophrenia;
- The effects and effectiveness of CBT in the treatment of schizophrenia; and
- Future advances in CBT in the treatment of schizophrenia.

Scope

The scope of this present review is not bound by the age of the patients with this disorder or the severity of the condition, but instead, looks at all the possible ways of treatment for this disorder from the perspective of various researchers. The research methods used and the method of selection of the participants will be mentioned so as to understand the results and the hypothesis better. In a research carried out by Luckhaus, Frommann, Stroth and Wölwer (4), patients with schizophrenia have been known to be associated with violent offences. These researchers state that the chances of a schizophrenia patient to commit homicide are four times as compared to one who does not have this disorder. Therefore, this present review will also look at current and future ways to reduce symptoms and effect of schizophrenia.

Justification of the Study

In the recent past, many medical researchers and psychologists have developed an interest in improving the lives of the people with schizophrenia leading to a lot of studies and publications explaining the various findings of the research. It is essential to understand the current situation with a view to building a better ground for future advancements. This present review aimed to

uncover the current issues in the treatment process for schizophrenia. The treatment process for different cases has different results according to the symptoms of the disorder and effects on different patients. Therefore, it is necessary to uncover these issues and the milestones covered in the near past as well as the present to improve the understanding of the progress in CBT of schizophrenia and thus increase the chances of improved focus in advancements. Skelton, Waqqas, and Thacker (5), recommend the need to advance the treatment of some symptoms of schizophrenia before sticking to one treatment method. These researchers feel that until further research is done, CBT should stick to medication that is known to work in other psychotic disorders.

METHODS

Literature Searches

The selection of literature included journals from the databases of various websites. The keywords used when looking for journals included cognitive behavioural therapy, cognitive treatment psychosis, and schizophrenia. The literature search involved examining the reference section of the journals that were retrieved.

SSCI is a citation index that was developed from SCI to act as a database record for academic material including journals. The search was conducted in SSCI by identifying a key word such as schizophrenia on the master journal list (<http://mjl.clarivate.com/cgi-bin/jrn1st/jlresults.cgi?PC=MASTER&Word=schizophrenia>) of SSCI. For example, by searching for the term schizophrenia, a number of journals popped up. This included Schizophrenia Bulletin, Schizophrenia Research, Schizophrenia Research and Treatment and NPJ Schizophrenia. A few journals were also obtained from journals indexed in PubMed.

Selection of Studies

The search produced a large number of studies with each filter of the materials using the keywords. It was, therefore, important to narrow down the searches to the relevant material to be included in the research of the current and

future developments of CBT in the treatment of schizophrenia. One of the significant determinants was the time relevance. The scope of the study only allowed a focus on the current and future issues, and as such, 71% of the selected literature was published from 2009 to date. The research was not restricted to a particular study participant. The study results thus provided sufficient information to work with during the systematic review. The selection of study material had minimal to zero bias in the selection of the literature because it considered the relevance of every published article that met the time and topic relevance of the study.

Systematic Review Procedure

In order to achieve the objectives of the study, the systematic review had to offer a means of representing the findings regarding the application of CBT for this particular disorder. The studies had to be in the form that allowed for synthesis and analysis of the current issues and/or a focus on the advancement in the near future. The flowchart below shows the order of the systematic review procedure from various databases such as NCBI. The search involved use of keywords and full-text search to find literature published in the appropriate time frame and relevant to the aim of the study (Figure 1).

Other searches that were necessary for this present review included the search in other databases such as

Medline in order to reduce the bias of selection of published materials. The search from other websites as well as SSCI for the literature review had an extended time of publication because the intention was to look at the literature of other publishers that were not current but were relevant to the study for the purpose of the literature review.

RESULTS

CBT in the Management of Positive Symptoms

The behaviour of people who have schizophrenia can range from delusions, hallucinations, social withdrawal among other positive and negative symptoms to extreme cases such as homicide. Different researchers have different views on the causes of schizophrenia (6). The causes can be genetic, hormonal imbalance, structure changes before birth, and triggers from immune disorders. In addition to that, Duncan, Shen, Ballon, Hardy & Noordsy (7) claim that there are positive correlations that are based on genetics for the patients suffering from schizophrenia and other psychiatric disorders which increases the chances of identifying a more reliable conclusion of the major causes of schizophrenia in the near future.

The aim of the treatment for all forms of psychosis is to identify the possible cause so as to subscribe the best course of treatment for a patient. According to Christopher,

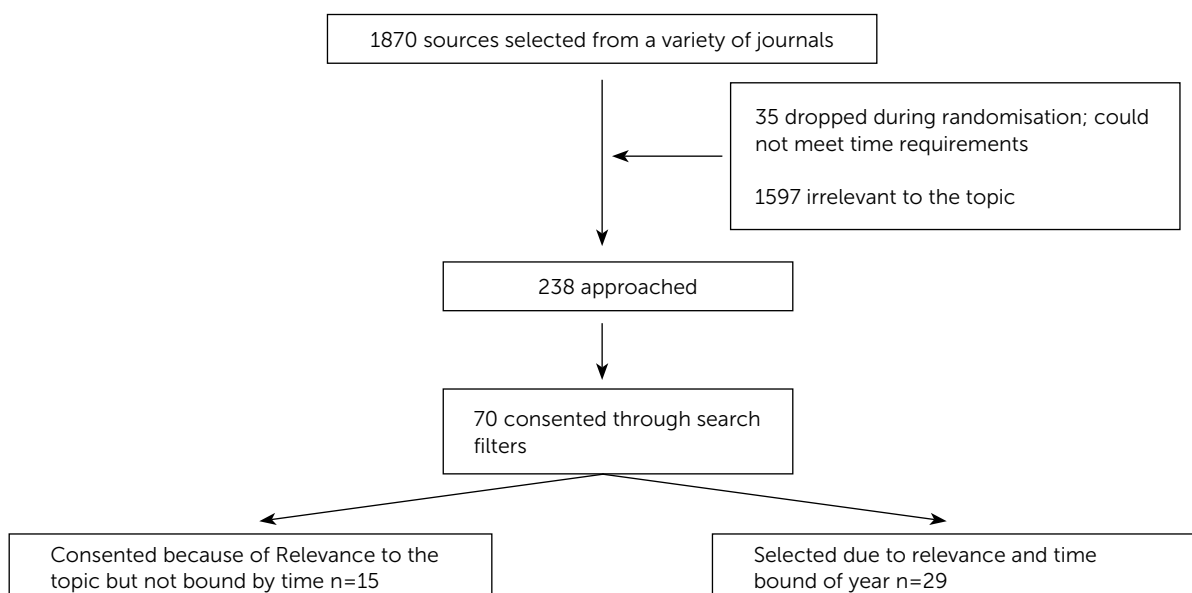


Figure 1: A flow diagram showing the systematic review procedure.

Grubaugh, Cusack, Kimble, Elhai, & Knapp (8), there are several methods of intervention for psychotic cases. This research shows that exposure-based CBT was effective for adults who did not have SMI. The exposure therapy for people with psychotic symptoms and trauma recovery also reduced the PTSD symptoms in patients (9). The treatment of schizophrenia was more promising for patients who completed the treatment and made a three-month follow-up after the treatment than for the others. This study was intended to reduce symptoms of anxiety among patients with schizophrenia and post-trauma victims. However, the hypothesis and results of this study may not be generalizable because of limitations such as methodological inhibitors that interfered with restricting the study to open trial, hence exposing it to limitations of type 1 error (10). This may have inhibited the interventions based on causality. In addition to that, the group out rate of the study sample was recorded at 35%, hence affecting the results of completeness and non-completeness of the test.

The success of the treatment for a schizophrenia patient depends on many factors, some of them being the quality of life of the patient and the determination in setting and achieving the set goals and the expectations of the results. The studies carried out by Luther et al. (11) and McQuaid, Granholm, Holden, & Link (12) focused on the effectiveness of setting illness management goals for patients who were starting the treatment. The theory of the influence of insight was also supported by other researchers such as Lysaker, Pattison, Leonhardt, Phelps & Vohs (13), who claimed that the efficacy of the cognitive-behavioural treatment for schizophrenia was highly dependent on the functioning goals and the extent of goal-directed activities in the treatment process (14). The patients with schizophrenia showed similar positive improvements for groups that had been enrolled at different times in terms of symptom reduction. However, the level of success varied from one patient to another depending on the positivity in the goal setting and the willingness to ask for and accept help.

Cognitive Assessment

One of the best ways to reduce the symptoms of schizophrenia in all types of patients is the use of

antipsychotic medication. However, the medication does not take care of the cognitive systems. It is thus important to focus on the cognitive functions and performance on the treatment process for the patients (15). There are measures of cognition that can be carried out to determine the extent of the effect. To begin with, clinicians may use interview-based cognition measures to assess the effect of treatment and the cognitive changes in the patients (16). The information for this form of assessment involves the clinician and the patient. The clinician conducts cognitive tests on the schizophrenia patient. The major drawback to this source is the inability of a patient to give accurate information regarding everyday functioning (17). The second method that may be used in the assessment is known as the interview-based assessment of real-world functioning. The reports used in this form of cognition test are usually obtained from friends, family members, and caregivers because they are reliable sources of information. Patient information may also be obtained from archived records.

Recently, the performance-based measure of the functional capacity has also proved effective in assessing the cognitive ability of schizophrenia patients. This form of assessment is useful in predicting the failure associated with cognitive disorders such as slow achievement of milestones. This form of measure is more closely associated with real-world functioning than cognitive measures. Other tests include brief cognitive performance assessment. The panellists in ISCTM meeting concluded that these tests were important in the treatment process of schizophrenia.

A study conducted by Dominique, Luther, Kelse, & Michelle (18) showed that despite the need for early intervention, some components of early intervention plans are not utilised. In addition, there are cases that go unreported especially for subjects who are not inpatients (19,20). An early intervention plan is necessary because it increases the chances of long-term prognoses and good quality of life for the patients. However, underutilization of early intervention components such as the outreach methods may reduce the chances of early intervention.

The studies done by various researchers have shown a consistent reduction of negative symptoms over time despite the researchers' reluctance to claim overall expectancy of effectiveness. As such, the majority

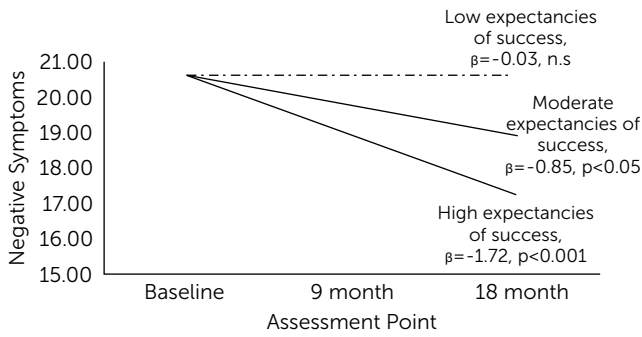


Figure 2: Negative symptoms over 18-months across different levels of expectations adapted from: (Luther et al., 2014, p. 24).

recommended further research to validate the suggested hypotheses. For example, a study carried out by (11) showed that the negative symptoms for the patients reduced over a period of 18 months. The research showed that the goals of patients are necessary for the application of CBT of schizophrenia to be effective. The graph below shows a sample presentation of the findings from one of the sources and the results for different levels of goals that were necessary for success (Figure 2).

There are various causes of schizophrenia. A study carried out by Wimberley, Gasse, Meier, Agerbo, MacCabe and Horsdal, (21), showed that there was evidence of increased polygenic risk on treatment-

resistant schizophrenia for patients based on such factors as the history of the patients in relation to genetics, time of diagnosis and treatment setting. The table below shows the outcome for the different characteristics of participants (Table 1).

Negative Symptoms

Negative symptoms of schizophrenia are seen in the absence of normal behaviour and function in patients. They are Identification of such symptoms is necessary because they help in the prediction of future functional impairments for the patients who have schizophrenia. A variety of negative symptoms have been identified in the past and various theories have been propounded explaining why they occur. Goldsmith, et al. (22), suggests that inflammatory cytokines are linked to the negative symptoms of schizophrenia. The study showed that indeed, the pro-inflammatory cytokine is associated with social deficits in schizophrenia patients. In addition to that, the IL-1 α is negatively correlated with similar negative symptoms (23). The administration of inflammatory stimuli has also shown that there are effects that affect the basal ganglia.

Other persistent symptoms of schizophrenia and definitive negative symptoms of schizophrenia include

Table 1: Characteristics of Individuals with Schizophrenia adapted from: (Wimberley, Gasse, Meier, Agerbo, MacCabe, & Horsdal, 2017, p. 3)

Characteristics	TRS during follow-up	No TRS during follow-up	Total
N	181	681	862
Polygenic risk score (Mean, SD)	0.24 (1.04)	0.20 (1.01)	0.21 (1.02)
Age at first schizophrenia diagnosis years (Median, inter-quartile range)	19.0 (16.9-20.8)	19.2 (17.0-20.9)	19.1 (17.0-20.9)
Sex, n (%)*			
Female	101 (55.8%)	290 (42.6%)	391 (45.4%)
Male	80 (44.2%)	391 (57.4%)	471 (54.6%)
Geographical area at birth, n (%)			
Capital	25 (13.8%)	116 (17.0%)	141 (16.4%)
Provincial or rural	156 (86.2%)	565 (83.0%)	721 (83.6%)
Treatment setting at first diagnosis of schizophrenia, n (%)*			
Inpatient	121 (66.9%)	306 (44.9%)	427 (49.5%)
Outpatient	60 (33.1%)	375 (55.1%)	435 (50.5%)
Psychiatric comorbidity in the year prior to first diagnosis of schizophrenia, n (%)*			
Yes	91 (50.3%)	208 (30.5%)	299 (34.7%)
No	90 (49.7%)	473 (69.5%)	563 (65.3%)

reduced emotional range; inability to communicate through speech, reduced a sense of purpose, and reduced social interaction (24). These features occur at different levels and for them to count as deficit features; they must be identified at a clinical level.

Behavioural Interventions

Cognitive-behavioural treatment has proven to be effective in the treatment of cognitive dysfunction of schizophrenia as well as the positive and negative behavioural deficits. A study done by Brenner, Hodel, Roder, & Corrigan (25) described cognitive dysfunction as a vicious loop that encompasses cognitive deficits and social dysfunction. Using CBT, the treatment aims at finding solutions to these dysfunctions so as to improve the lives of the patients. The study further described ways of reducing these symptoms through such therapies as improving interpersonal problem solving, improving social skills, verbal communication, social perception as well as cognitive differentiation. The integrated psychological therapy was found to be an effective treatment method, but the order of cognitive and social effects had to be established in order to realise maximum results.

Delusion is one of the symptoms of schizophrenia. A study conducted by Bortolon, Capdevielle, Yazbek, Norton and Raffard (26) played a major role in showing the how individuals project themselves and how it influences their sensibility to such things as reward and punishment. Therefore, if one is not able to project themselves into the future without being delusional, it might be a symptom of grandiose delusions. Sensibility to the reward and punishment is a psychological measure for the level of optimism of an individual, and if the level is biased to a clinical level, it may indicate a problem with a perception of oneself, hence providing evidence for the possibility of grandiose delusions.

Recent research conducted by Cindy, Matcheri, Tronick and Larry (27) to identify premorbid risk indicators showed that children might inhibit signs of pre-psychotic characteristics. Such characteristics may be noted in such behaviours as clumsiness and odd involuntary movements among children. Studies suggest that such cases of schizophrenia originate from genetic causes or defects

before birth that alters the brain functionality. The treatment of such cases can be carried out by using such measures as emphasising on prenatal care, increasing social support so as to reduce stress among parents, reduction of cognitive deficits as well as symptoms among the parents and coaching mothers who have schizophrenia (28). These measures can prevent the occurrence of schizophrenia among children. There are other intervention mechanisms that can be applied to the developmental stages of a child. This may include integrated care for the family including the child. However, such care may fail to address the role of the parents in the welfare of the child and its treatment. For example, the psychosocial treatment in the US does not offer treatment features that address the caregiver role of the patients with young children.

Empirical evidence of efficacy for the CBT of psychosis such as schizophrenia is necessary to determine the effectiveness of the therapy in reducing the symptoms associated with the disorder. A study done by Adams et al. (29) claims that 67% of individuals who have schizophrenia had reduced levels of distress after the CBT. This study is significant in showing that cases of resistant symptom reduction can be handled by the use of CBT because it increases the level of cognitive functioning of patients. Future research should, however, be carried out to assess the level of efficiency of this method of treatment for patients with resistance.

One of the major issues that affect the effectiveness of the schizophrenia treatment is the inability to eliminate all behavioural abnormalities and more so, to capture them. According to Sharon et al. (30), failure to make this capture is associated with glutamatergic abnormalities. A study that involved double-blind treatment showed a significant improvement of PANSS for the patients upon administration of cariprazine (31). The use of cariprazine was found to be effective in improving the symptoms of schizophrenia. This study shows that cariprazine could be an effective way of reducing the symptoms of schizophrenia. A second trial was carried out to determine the results of the use of placebo-controlled study in a phase 2 examination of outpatients. This study used evenamide for the treatment of patients. The results of the study showed that the negative and positive symptoms of schizophrenia were effectively reduced

(31). Therefore, this provides an alternative treatment method for patients with psychotic disorders, particularly schizophrenia.

Resistance to Treatment

Using proton magnetic resonance, Mouchlianitis et al. (32) who studied participants with DSM-IV schizophrenia found that antipsychotic treatment resistance is associated with elevated cortical glutamate in chronically ill patients. The research findings showed that in cases of patients with treatment resistance, the glutamate to creatine ratio levels were higher than in patients who were responsive to treatment. Age, sex and smoking duration did not affect the resistance to treatment. The scans done using MRI showed that levels of anterior cingulate metabolite were significantly higher than for patients who responded to treatment even after accounting the effects of medication dose (33). It was claimed that there is a possibility that effective antipsychotic treatment reduces glutamatergic turnover. However, the increase of the condition is noted to be more robust in ventral brain regions. This study also noted that there was a linear effect that was dependent on the age of the participants. The study was based on the creatine that would be observed in the tissue of patients of different ages.

The results of this test showed a reduced level of total creatine in SP vs HC for the older patients. Further research to find the dependencies of the tissue, group and age showed that the cognition of the subjects differed among the subjects. The positive symptoms of the older patients were negatively correlated with WM NAAc (34). The effect of glutamatergic on people with psychotic disorders can be attributed to excitotoxicity on the spines of animals which cause retraction of dendritic spines. In addition, other factors were found to elevate the chances of axonal dysfunction (35). The blockade of sub-chronic NMDA is responsible for reduction and the increase of astroglial processes, and when interfered with by the glutamatergic excitotoxicity, it may result to treatment resistance.

The study of neurobiological causes has proven to be of importance in understanding the necessary psychotherapies for schizophrenia patients. In the recent

studies, researchers have explored the neuron-imaging and measures of predicting the efficacy of cognitive behavioural treatment on patients (36). The research shows that increased levels of gray matter in the inferior right lobe resulted in an improvement in positive symptoms while improvement of gray matter in the left lobe showed improvement in negative symptoms.

CBT is a form of cognitive behavioural treatment that that is used to remove residual cognitive and behavioural negative symptoms of schizophrenia as well as other psychosis (37). Clinicians use this empirical form of treatment as a therapeutic means to correct such aspects as speech and the ability to communicate as well as comorbidity (38). This treatment is used in severe cases of schizophrenia (39). By treating the conditions that inhibit full recovery of patients, clinicians and CBT therapists are able to increase the chances of full recovery.

Other developments such as the Beck Cognitive Insight Scale (BCSI) have improved the outcome of CBT in treating schizophrenia. This scale offers a means of increasing the validity of a patient's belief by using external feedback to make the correct assessment of the current situation of the patient. A study done by Penney, Sauve, Malla, Joobar, & Lepage (40) showed that introducing BCSI cut-offs would help to facilitate the intervention for schizophrenia patients.

Treatment of stigma can take different paths. To begin with, Chadwick developed a method based on Beck's principles to show how negative beliefs that lead to stigma can be identified. Such symptoms are addressed by focusing on the positive thoughts in patients. An example of the application was seen in the research done by Lawrence, Michael, Graciete, Chou, Zhang, & Hopper (41) where they proved that excessive thinking could be a major cause for stigma. The study used methods such as accommodating social response from others so as to reduce excessive thinking in patients, hence reducing symptoms such as stigma.

Hallucinations and Delusions in patients, a positive symptom of schizophrenia, are addressed by focusing on the stream of thought of the patients that is biased. Such indicators as jumping to conclusions are a sign that one could be delusional and some styles of bias are so extreme that they could lead to hallucinations (42). Such

patients may also explore actions and ideas in another environment such as television. These positive symptoms can be treated using behavioural therapy.

Randomized Controlled Trials in using CBT to treat schizophrenia show that this treatment method is effective in reducing the positive and negative symptoms of schizophrenia in patients. The study is carried out over a given amount of time mostly six months to two years for in-patients and/ or outpatient participants. A case studied by (43), indicates that there is potential benefit for the application of CBT in treating psychosis for schizophrenia.

Future Directions

Future advancements should seek to establish to what extent the goals and expectations of the results impact the outcome of the treatment by tracing similar patterns across a group of participants.

In addition, future advancements can focus on understanding the nature of schizophrenia because the CBT treatment does not explain the nature of the disorder. Furthermore, little is known about the exact cause of this psychosis and as such, some researchers have concluded that the other forms of treatment that are therapeutic in nature should match those of other psychotic diseases because there is little information on the effectiveness of some forms of treatment that use drugs.

Limitations

The major limitation of this present review was the access of the most recent publications especially those published in 2018 in order to get a detailed view of the methodology and findings of the most recent research. This limitation was overcome by carefully reading the abstracts and locating supporting material from other sources to illustrate and lend depth to the research and findings intended by the author. However, despite this challenge, it was clear that the application of CBT to treat schizophrenia was beneficial to patients.

The attempts of combining CBT with other treatment methods have showed increased levels of efficiency in cognitive remediation. The use of other forms of treatment with CBT reduces the number of sessions required for a patient to recover or to achieve significant negative and positive symptom reduction.

CONCLUSIONS

The major requirement for the advancement of the research into the application of CBT to treat schizophrenia is to find out the extent of the benefits of CBT for psychosis. It is vital to find out how efficient it is in reducing the negative behavioural reactions of patients with schizophrenia that go against the expectations of the goals of treatment and the maintenance target. Moreover, most researchers also recommended that the process of treatment be hypothesised in such a way as to reveal a central mechanism of dealing with the behavioural reactions of the schizophrenia patients.

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