

## Conference Paper

# Literature Review: The Effectiveness of Cognitive Remediation Therapy in Increasing Cognitive Functions in Patients with Skizofernia

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## Abstract

Many people are diagnosed with schizophrenia, which is characterized by having a significant deficit neurocognitive, especially in the areas of attention, memory and executive function. This deficit can worsen patients with psychiatric symptoms. Schizophrenia disorders such as behavioral disorders, cognitive will cause the client can not solve the problems that exist in independently. The combination of nursing interventions to deal with cognitive decline is with cognitive remediation therapy to reach its maximum potential in improving neurocognitive function and can cause improvements in psychiatric symptoms in people with schizophrenia. Objective: The purpose of this literature is to determine the effectiveness of cognitive remediation therapy in patients with schizophrenia. Methods on this researsch Using several databases which are used as search sources related to research, namely "Pubmed", "NCBI", and "EBSCO". The results show that cognitive remediation therapy can affect the independence of improving the cognitive function of patients in meeting their daily needs. Cognitive Remediation Therapy (CRT) is believed to improve cognitive function in verbal memory, problem solving skills, executive functions, attention, social perception and performance

**Keywords:** Schizophrenia, Intervention, cognitive remediation therapy

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## 1. Introduction

Mental health is still one of the significant health problems in the world, including Indonesia. According to the WHO in 2016 in the Ministry of Health Republic of Indonesia, 2016 there were around 35 million people affected by depression, 60 million people affected by bipolar disorder, 21 million people affected by schizophrenia, and 47.5 million people affected by dementia. According to the 2018 RISKESDAS's data, the prevalence of severe mental disorders in Indonesia, schizophrenia, reached around 400,000 people

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or as many as 1.7 per 1,000 inhabitants [1]. This shows that the number of schizophrenia especially in Indonesia is very high.

Along with the increase in the number of cases of mental disorders, this has an impact on increasing the country's burden and decreasing human productivity for the long term [1]. Therefore cases of mental disorders need to be given special attention and handled further to minimize the decline in human productivity. One type of mental disorder that needs to be addressed is schizophrenia.

Schizophrenia is a form of functional psychosis with a major disruption in the process of thought and disharmony (rifts, splits) between thought processes, affective / emotional, volition and psychomotor accompanied by distortion of reality, especially due to insights and hallucinations; associations are divided so incoherence, affect and emotion of bizar behavior arise (Maramis, 2009). Schizophrenia is a form of psychosis that is often found everywhere, but the causes have not been clearly identified. Kraepelin calls this disorder precox dementia. Dementia means deterioration of intelligence and precox means young / premature) [2].

Schizophrenia is a severe mental disorder associated with deterioration in the functions of daily life and social functions [3]. The prevalence of schizophrenia in the world is around 1% of the population. Psychopathology in schizophrenia can be classified into three dimensions, namely positive symptoms, negative symptoms and disorganized symptoms. Positive symptoms include hallucinations, understanding, rowdy noise, strange behavior and hostility. Negative symptoms include blunt or flat affect, withdrawal, reduced motivation, poor emotional contact (quiet, difficult to talk to), passivity and apathy. Symptoms of disorganization include speech, behavioral disorganization and disruption in concentration and information processing [4].

Impaired cognitive function is also found in schizophrenic patients, so cognitive deficits are one of the core symptoms of schizophrenia. Cognitive dysfunction in schizophrenic patients has a very high prevalence, it is estimated that 98% of schizophrenic patients show deterioration of cognitive function. This deterioration can usually be identified at the beginning of the course of the disease, before getting antipsychotic therapy and will continue to persist throughout the course of schizophrenia. The cause of cognitive dysfunction in schizophrenia can be caused by anatomical and functional abnormalities of neuron cells in the brain. Recent research emphasizes the causes of cognitive dysfunction in schizophrenic patients due to abnormalities of neuron cell neuroplasticity in the brain, partly due to molecular changes in mRNA expression for the formation of neurotransmitters, transporters and receptors

or changes in the expression and secretion of neurotrophins responsible for neural circuit development and modulate synapse function in the brain.

The essence of schizophrenia is impaired cognitive function in attention, memory and executive functions [5]. This disorder is relatively independent of other symptomatic domains such as positive and negative psychotic symptoms and has been found to predict functional outcomes as well, if not better, than negative symptoms. Therefore, in order to improve results, treatment efforts should target cognitive impairments in addition to symptomatology [5].

One treatment that targets cognitive disorders is cognitive remediation therapy. Cognitive remediation is a method to help a schizophrenic person to improve his cognitive abilities so that he can achieve functional recovery both in work, academics, and daily life [6]. The practical approach of cognitive remediation in people with schizophrenia can take the form of various forms of exercise that aim to determine the cognitive domain that is the target of the growth of brain neuroplasticity (Eack, 2012). Cognitive aspects show neurocognitive deficits in attention, learning or memory skills, problem solving, executive function, language or motor and sensory skills. Cognitive remediation therapy is considered a therapeutic method that is safer, simpler and does not require expensive costs compared to pharmacological therapy [7]. Based on the background above, the authors are interested in making a literature on cognitive remediation therapy (CRT) as an alternative in overcoming cognitive decline in schizophrenics.

## 2. Methods

This study discusses the effectiveness of cognitive remediation therapy that serves to show efficacy in improving neurocognitive function and can provide an effect to improve psychiatric symptoms in people with schizophrenia. The data analysis used in this study is using the simplified approach method. The purpose of this method is to combine the results of studies that have different research methods into a literature review. Data obtained from researchers in making literature review did not use respondents or participants.

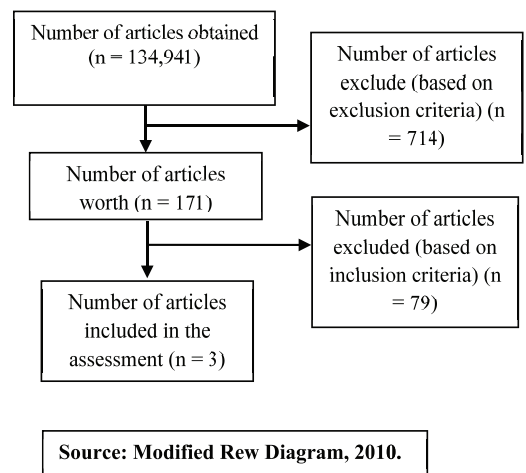
This literature review is the result of various sources, namely articles and journals that have been researchers evaluating and analyzing various databases. The author uses a database that is used as a source of search related to research, Pubmed. Data search used a boolean operator to combine keywords such as "AND" and "OR". The keywords used in database searches in this study are "Schizophrenia" AND "cognitive remediation", in the Pubmed's database the inclusion criteria from this literature study

are journals using English, journals are the last 5 years, the journal answers questions research, fulltext journals are available, and journals use the critical trail method. The journal search process is carried out on December 2018.

### 3. Result

Searching "Pubmed" data using one database produces journals (n = 714), then the journal is analyzed based on the research method obtained (n = 176) then the journals obtained are re-inclusion according to the year of publication the last 5 years obtained (n = 171) from the journal obtained re-inclusion according to the journal that can be accessed fulltext obtained (n = 79). From the final results of the journal, the authors examined (n = 3) which will be input in the matrix table.

Query	Amount found	Time
Sumber: Pubmed		
Schizophrenia	134.941	16.40
Schizophrenia AND cognitive remediation	714	16.42
Schizophrenia AND cognitive remediation clinical trial	176	16.46
Schizophrenia AND cognitive Remediation (clinical trial, full text)	171	16.46
Schizophrenia AND cognitive remediation (clinical trial, full text, 5 years)	79	16.48



### 4. Results

The following is a matrix analysis of three journals obtained by the group

### 5. Discussion

Cognitive dysfunction is a decrease in cognitive function at a young age where there are 98% of schizophrenic patients who experience cognitive dysfunction. Cognitive Remediation Therapy (CRT) is believed to improve cognitive function in verbal memory,

TABLE 1

Author, Title, Article, and Year	Location of the Nursing Room	Research methods	Population and Samples	Overview of CRT Therapy	Research result
Bhing-Leet Taan and Robert King. 2013. <i>The Effect Of Cognitive Remediation On Functional Among People With Schizophrenia:A Randomised Controlled Study</i>	Inpatient	Randomized Controlled Trial Man Withney for the first session comparing Cognitive Remediation and Psychiatry Exercise in a clinical trial was issued by 20 participants. The second and third sessions use One Way Anova without removing participants	70 participants with schizophrenic patients Gender: 30 men 40 women Pen method	This research model uses Cognitive Remediation and Psychiatry Exercise conducted 3 sessions in 1 week. the first and second sessions were conducted for 2 hours, and the third session was conducted for 1 hour by doing exercises 52 times, after achieving 90% accumulation the exercise was improved with certain difficulties. The types of Cognitive Remediation activities include dish washing, car washing, and cleaning. Types of Psychiatric Exercise activities include aerobic and treadmill exercises to improve cardiovascular and activity tolerance.	Types of Psychiatric Exercise activities include aerobic and treadmill exercises to improve cardiovascular and activity tolerance. After: the client given Cognitive Remediation therapy showed improvement with the p-value <0.05. while clients given Psychiatric Exercise therapy showed better physical fitness results in each participant with p-value 0,0001.
Shuping Tan Yizhuang Zou Til Wykes Clare Reeder Xiaolin Zhu Fude Yang Yanli Zhao Yunlong Tan Fengmei Fan Dongfeng Zhou. 2015. <i>Group Cognitive Remediation Therapy For Chronic Schizophrenia A Randomized Controlled Trial</i>	Inpatient	Randomized Controlled Trial	104 inpatients were randomly assigned to 40 small group CRT therapy sessions or contact-compatible Music and Dance Therapy (MDT). 44 people in the CRT group and 46 people in the MDT group completed all planned care and analysis. Age of respondents taken from ages 20-60 years Participant criteria: schizophrenics who have been sick for 2 years or more.	CRT therapy is used to train focus and train the sharpness of participants' memory. CRT therapy is carried out in 40 sessions where each session is taught to train focus by inviting respondents to speak and remember simple letters in basic Chinese.	The results of the study after CRT therapy were that cognitive increase in CRT was more significant than MDT in terms of cognitive function especially in cognitive flexibility and memory.

TABLE 1

Author, Title, Article, and Year	Location of the Nursing Room	Research methods	Population and Samples	Overview of CRT Therapy	Research result
Gharaeipour, manouchehr, Scott BJ (2012) <i>Effects Of Cognitive Remediation On Neuro Cognitive Functions and Psychiatric Symptoms In Schizophrenia In Patient.</i>	Inpatient	Case Control	42 people in 2 groups, n = 21. There are 16 men and 5 women Inclusion Criteria: Aged 20 years with schizophrenia can read, write, speak and hear.	Implementation of using a CRT and control uses supportive therapy, the intervention was carried out for 2 months, with 40 sessions divided into 6 meetings in one week, with an duration of one hour. First session, education and attention. Sessions two to six, strategies for managing attention. consists of contingent reinforcement, signs, importance of mood and physical health. for example: pain, concentration, fatigue, sleep management. Session seven, reviews attention about homework and practice. Nine to thirteen sessions of strategies for managing working memory. Fourteenth session reviews homework and assignments, memories. Fifteen education sessions on memory. Sixteen and twenty-seven sessions of strategies for managing memory. Twenty-eight sessions review homework and practice. Twenty-nine sessions of education about executive functions. Sessions thirty to thirty nine, first strategies for managing executive functions, second problem solving. Session forty homework reviews and executive practice assignments.	Before: In the study it was stated that many who were diagnosed with schizophrenia had significant neurocognitive deficits especially in the areas of memory attention and executive function. After: In the study it was stated that cognitive remediation therapy showed an increase in cognitive function and a decrease in symptoms of negative schizophrenia in schizophrenia patients.

problem solving skills, executive functions, attention, social perception and performance. Journals that have been included in the matrix table, each of which discusses the components regarding Cognitive Remediation Therapy which includes 3 modules, namely:

1. Cognitive Shift Module

Describes flexibility in thinking and processing information

2. Working Memory Module

Describes the working capacity of memory where participants work by processing 2 to 5 information in one time

3. Planning Module

Where training the ability to Self Ordered, goal orientation, set or scheme of manipulation and planning formation.

The three modules aim to enhance specific cognitive functions of cognitive and memory flexibility, and some social functions. Meanwhile according to Gharaeipour (2012), cognitive remediation therapy consists of 40 sessions including; Session 1 is about attention education, session 2-6 about strategies for managing attention consisting of two strategies, namely external environment. Session 7 depicts attention tasks and practical assignments. Session 8 Education about working memory. Session 9-13 is a strategy for managing memory work, Session 14 re-describes memory work assignments and group assignments, Session 15 memory education, Session 16-27 Strategies for managing memory with internal strata namely associating visual images and mainmaps, while external strategies namely using external memory such as calendars and diaries. Session 28 is to re-describe memory tasks and practical tasks. Session 29 is education about executive functions. Session 30-39 Strategies for managing executive functions such as cognitive flexibility and problem solving. Session 40 is to re-describe the duties of the executive and his practical duties.

The 40 sessions function to improve cognitive function especially attention functions, memory functions, executive functions. Meanwhile according to Tan and King (2013), Cognitive Remediation Therapy There are 3 sessions in a week, the first and second sessions are carried out for 2 hours and the third session is done in 1 hour. The results obtained showed a significant improvement with the results of  $v$  value  $<0.05$ .

TABLE 2

	SIMILARITY	DIFFERENCE
Assesment	The research conducted by Gharaeipour, (2012) is in line with the research of Tan, Zou, Wykes, Reeder, &Etc, (2015) with Quasi Experiment method	Research according to Tan & King, (2013) uses the Randomized Control Trial method
Patient	Research conducted by Tan, Zou, Wykes, Reeder, etc (2015), and research conducted by Tan, King, (2013) as well as research conducted by Gharaeipour, (2012) all three used Schizophrenia patients.	
Therapist Qualifications	The research conducted by Tan & King, (2013) and Tan, Zou, Wykes, Reeder, etc (2015) was conducted by Specialist Doctors	The research conducted by Gharawi Pour, (2012) was conducted by a Bachelor of Nurses
Session	<p>Cognitive remediation therapy conducted by Gharaeipour (2012), consists of 40 sessions including; Session 1 is about attention education, session 2-6 about strategies for managing attention consisting of two strategies, namely external environment. Session 7 re-describes attention tasks and practical assignments. Session 8 Education about working memory. Session 9-13 is a strategy for managing memory work, Session 14 re-describes memory work assignments and group assignments, Session 15 memory education, Session 16-27 Strategies for managing memory with internal strata namely associating visual images and mainmaps, while external strategies namely using external memory such as calendars and diaries. Session 28 is to re-describe memory tasks and practical tasks. Session 29 is education about executive functions. Session 30-39 Strategies for managing executive functions such as cognitive flexibility and problem solving. Session 40 is to re-describe the duties of the executive and his practical duties.</p> <p>Cognitive remediation therapy conducted by Tan and King (2013), Cognitive Remediation Therapy There are 3 sessions in a week, the first and second sessions are carried out for 2 hours and the third session is done in 1 hour.</p> <p>Cognitive remediation therapy carried out by Tan, Zou, Wykes, Reeder, etc, (2015) consists of 40 sessions covering 3 modules, namely:                      Cognitive Shift Modul                      Describes flexibility in thinking and processing information                      Working Memory Modul                      Describes the working capacity of memory where participants work by processing 2 to 5 information in one time                      Planning Module                      Where training the ability to Self Ordered, goal orientation, set or scheme of manipulation and planning formation.</p>	
Evaluation Result	From the three articles, the results showed that there was a significant increase in cognitive function, attention function, memory function, social function and exsecutive functions after cognitive remediation therapy.	



## 6. Conclusion

Many people are diagnosed with schizophrenia, which is characterized by having a significant neurocognitive deficit, especially in the areas of attention, memory and executive function. This deficit can worsen patients with psychiatric symptoms. Schizophrenia disorders such as behavioral disorders, perspective, cognitive will cause clients to be unable to solve the problems that exist in meeting their daily needs independently. If this cannot be dealt with, people with schizophrenia are at high risk of impaired social functioning, work and daily activities.

Cognitive Remediation Therapy (CRT) given to schizophrenia patients which has been analyzed in 3 journals, explains the increase in cognitive function. Each session provided changes from significant improvements to cognitive recovery in schizophrenic patients, including:

1. Cognitive Shift Module

Describes flexibility in thinking and processing information

2. Working Memory Module

Describes the working capacity of memory where participants work by processing 2 to 5 information in one time

3. Planning Module

Where training the ability to Self Ordered, goal orientation, set or scheme of manipulation and planning formation.

In addition, cognitive remediation therapy is also effective at the psychiatric hospital. In the literature study this therapy is important to consider because this technique is effective at a low cost, does not need the place and time that makes the patient agree, but does not need to format the content of the conversation of each session in the administration of the intervention.

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