

# Effectiveness of cognitive behavior therapy in comparison to CBT-plus play therapy among children with post-traumatic stress disorder in Manado

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## Original Research Article

# Effectiveness of cognitive behavior therapy in comparison to CBT- plus play therapy among children with post-traumatic stress disorder in Manado, Indonesia

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## ABSTRACT

**Background:** Disaster may bring such impacts as PTSD. Concerning flood that befell in Manado City, this study examined the effectiveness of CBT and CBT-plus intervention to overcome PTSD among school-age children that have been affected by flood disaster in this city.

**Methods:** This quasi experiment pre-post-test study was done two a total of sixty children, divided into CBT group and CBT plus group. Play therapy was employed to for CBT plus group to see the difference of the PTSD score in comparison to the CBT only group's PTSD score.

**Results:** There were decreases in the score of PTSD among the children both in CBT only group and CBT plus group. Play therapy in CBT plus group could give higher reduction in PTDS score in comparison to children who received CBT only intervention.

**Conclusions:** CBT plus intervention is proven effective in reducing PTDS score among children who are affected with PTDS.

**Keywords:** CBT-Play therapy, PTSD, School-age

## INTRODUCTION

Disaster is an event that threatens or disrupts the lives and livelihood of society caused by natural and/or non-natural factors as well as human factors leading to the onset of loss of life, environmental damage, loss of property and the psychological impact.<sup>1</sup> The City of Manado in North Sulawesi, one of Indonesia's provinces, is geographically and geologically prone to natural disasters such as flash floods and landslides.

One of causes of disasters that hit this area is deforestation, changing green areas into residential areas. The northern of Manado is watershed areas of Tondano River that empties into the Manado bay. Flash Flood on

January 15, 2014 caused people to lose their homes, property and family members. Disasters will commonly be traumatic events for individuals who experience or witness them and one of the psychological impacts that is often encountered in the disaster victims is Post-traumatic stress disorder or PTSD.

According to some definition, PTSD is a collection of symptoms experienced by a person who experiences traumatic events and the individual is not able to erase the memory of the incident out of his/her mind and it can happen to everyone, including children who are vulnerable to get PTSD.<sup>2,3</sup> Traumatic experiences affect the stages of physical, psychological and social developments which impact on mental and emotional disorders, manifested in the form of feelings of anxiety

when remembering such traumatic experiences through memory, nightmares, and reactions to internal cues about the events associated with the trauma.<sup>4</sup>

The impacts of disaster that are most common in children are traumatic experiences perceived long term probably for their entire life. It is, for example, described in research by Morgan about the disaster of Abefan when coals befell a primary school in Wallis, South America, which killed 116 students. About 46% of the children were reported with PTSD and the symptoms persisted into adulthood.<sup>5</sup> In another study on the incidence of PTSD after two years of the flash floods in the Manado, Sarimin explained that, of 60 students as the samples, 32 primary school students experienced PTSD.<sup>6</sup>

Many victims of disaster show symptoms of PTSD immediately after the incidence (acute PTSD), three to six months (chronic PTSD), while others emerging after six months or more (delayed onset of PTSD). This relates to the individual's coping ability in perceiving the problem. Typically, individuals with PTSD will display maladaptive coping as a reaction to stressors perceived. Thus, they need a proper treatment for PTSD.<sup>7</sup>

The PTSD management, according to National institute of mental health (NIMH), is psychotherapy and medication or a combination of both. Psychotherapy often used to address PTSD is anxiety management, cognitive therapy, and exposure therapy.<sup>8</sup> Meanwhile, according to Support Service of PTSD there are several types of treatment for PTSD, among others, group treatment, brief psychodynamic psychotherapy, and cognitive behavioral approaches which consist of exposure therapy and cognitive behavior therapy.<sup>9</sup>

Development of children aged 7-12 years is the displacement stage from pre-operational into concrete operational. By thinking concrete pre-operational, children learn to form logic system, cognitive ability which is in conjunction with concrete situations that occur around them. In this stage, children have been beginning to think operational; the children have been beginning to use mathematical concepts, be able to classify, and be able to think reversibly. During this period, children are also able to express the relationship of one matter to another and able to see the serial connection based on some facts.<sup>10</sup> Regarding the disasters that frequently hit the City of Manado, this study examined the effectiveness of Cognitive Behavior Therapy (CBT) compared to CBT plus in school-aged children with PTSD post-flash floods in the city.

### Objectives

This research aimed to determine the difference of PTSD pre-and post CBT interventions in school-age children in Manado, determine the difference of PTSD pre-and post CBT Plus intervention in school-age children in Manado,

and determine the difference of PTSD in school-age children given CBT and CBT plus interventions

### METHODS

This was a quantitative research using a quasi-experiment pre-post-test study design to compare the intervention on two groups conducted before and after-experiment, in which the difference in pre-test and post-test was assumed as the effects of the experiment. This research was conducted on two groups of school children diagnosed with Post traumatic stress disorder (PTSD). Group A was given CBT (cognitive behavior therapy) plus while Group B was only given CBT (cognitive behavior therapy). The CBT method used was cognitive restructuring method (writing negative thinking and problem solving).

Sampling technique used purposive sampling with criteria of students aged 8-12 years and diagnosed with PTSD, students who actively participated in school activities and were willing to be a respondent. The exclusion criteria were those who did not follow all treatment sessions to complete. Measurement to solicit the existence of PTSD on school children used a questionnaire by Weathers, Huska and Keane, which consisted of 17 questions. The measures of CBT implementation were reviewing, cognitive therapy, behavioral therapy, evaluation of cognitive therapy and behavior therapy, and relapse prevention.<sup>11</sup>

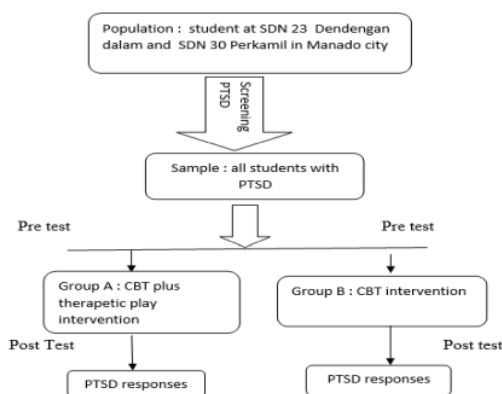


Figure 1: Participant flow diagram.

CBT plus employed in this research was a CBT intervention added with a play therapy as a new method applied to one of the groups after receiving the CBT intervention in sessions 2 and 3. The activities were in the form of drawing and colouring. In session 2 (two), the cognitive therapy was conducted between 30-45 minutes. In this therapy, the children were given the task of free-drawing and colouring, and then asked to describe what they had drawn on the task. This method served as a

medium for the children to explore their feelings. This game was expected to release a sense of discomfort, anxiety and helplessness so that the children could maintain adaptive coping. The game therapy in sessions 3 (three) was behavioral therapy, i.e. poetry and singing where the goal of the game was to train children's ability to maintain coping, increase their socialization, and train their courage and independence (Figure 1).

## RESULTS

Since one person in the CBT plus group did not finish the sessions of the intervention and therefore was disqualified, the total samples of this group were 29 children while the total samples of the CBT group were 30 children.

### Characteristics of respondents

The samples were selected using a purposive sampling technique in which all the students who suffered from PTSD symptoms were recruited to be the respondents based on the age category, i.e. school age 8-12 years (Table 1).

**Table 1: Characteristics of respondents' sex.**

Sex	CBT		CBT-plus	
	N	%	N	%
Male	12	40	15	51.72
Female	18	60	14	48.28

### Normality test

Based on kolmogorow-Smirnov test, the results of the analysis can be seen in the Table 2. The data in this research were normally distributed, so that the analysis of the data could be continued by using paired t-test or independent t-test.

**Table 2: Results of normality test.**

Description	P-value	Interpretation
Pre-test PTSD CBT plus	0.194	P-value > $\alpha$ 0.05; data normally distributed
Post-test PTSD CBT plus	0.072	
Pre-test PTSD CBT	0.182	
Post-test PTSD CBT	0.170	
Post-test PTSD of two groups	0.072	

### Bivariate test

The significant results of the scores pre-and post CBT intervention. There was a decrease of mean score of PTSD with p-value of 0.001. From the results of the test there was an effect of CBT interventions in children with PTSD (Table 3). The significant results of scores pre-and post- CBT plus intervention. There was a decrease in mean score of PTSD with p value of 0.001. Thus, there

was a significant effect of CBT plus intervention in children with PTSD (Table 4).

**Table 3: Differences in PTSD scores pre-and post CBT interventions in school-age children in Manado City.**

CBT	N	Mean	P-value
Pre-test score	30	54.53	0.001
Post-test score	30	44.67	

**Table 4: Differences in PTSD scores pre-and post CBT plus intervention in school-age children in Manado City.**

CBT plus	N	Mean	P-value
Pre-test score	29	55.00	0.001
Post-test score	29	31.55	

**Table 5: Differences in PTSD scores in school-age children given CBT and CBT plus intervention in Manado City.**

Intervention	N	Mean	SD	P-value
CBT	30	44.67	10.375	0.001
CBT plus	29	31.55	11.661	

The significant results of PTSD scores in the group given CBT interventions and in the group given CBT plus intervention with a p-value of 0.001. According to the results of the test, there was a difference in mean score of PTSD in the group given CBT intervention and the group given CBT plus (Table 5).

## DISCUSSION

Post-traumatic stress disorder (PTSD) is an anxiety disorder that can occur after experiencing or witnessing a traumatic event. PTSD can be acute (symptoms lasting less than 3 months), chronic (symptoms lasting more than 3 months), or delayed onset (an interval of 6 months to the onset of symptoms).

Many victims show symptoms of the incidence of PTSD immediately after the occurrence of the disaster, while others develop symptoms in months or even several years later. In a small number of people, PTSD may become a chronic psychiatric disorder and settle several decades and even a lifetime.

In this study, the authors do not select the respondents based on the condition of acute, chronic or delayed onset, but anyone who has the characteristics of PTSD at pre-test. On average, the respondents were experiencing flash flood in 2014, and they still feel the impact of it at data retrieval.

Based on the research results obtained from school children in SDN 23 Manado and SDN 30 Manado, some

matters related to post-traumatic stress disorder (PTSD) are:

#### **Respondent characteristics**

Based on the existing data, it was found that the respondents who received cognitive behavior therapy (CBT) were 30 people consisting of 12 boys and 18 girls while those who received cognitive behavior therapy (CBT) plus were 15 boys and 14 girls. According to Berman, there is a difference between girls and boys in response to PTSD. Boys show more disorders or external behavioral symptoms and require a longer recovery period than girls. Boys tend to react with aggressive behavior, violence and antisocial behavior. However, girls are more at risk for internalizing disorders such as depression and anxiety.<sup>12</sup>

Looking at the data contained in this study, it shows the characteristics of the respondents from both groups given interventions in form of either CBT or CBT plus. The number of boys and girls is almost equally the same. Of the both groups, there are 40% of boys identified as having PTSD symptoms in group A and 52% of boys in the group B. It is like in the theory described earlier that the symptoms of PTSD tend to be found in boys, although this study does not discuss the emerging trend of symptoms between boys and girls.

#### **Differences in PTSD scores before and after CBT intervention in school children**

One of the effective therapies for PTSD is cognitive behavior therapy.<sup>13</sup> The group of school children who receive CBT intervention show a decrease in mean score of PTSD with a p-value of 0.00. From the results of the test, there is the effect of CBT interventions to decrease PTSD scores.

According to Cormier and Cormier in Mirza R and Sulistianingsih W, in CBT therapists attempt to help the client change negative thoughts and statements as well as the irrational belief that happens. Irrational thinking can cause emotional problems. Thus, CBT is directed to modify the function of thinking, feeling and acting by emphasizing the role of the brain to analyse, ask, act, and re-decide to hopefully change the behavior of anything negative to be more positive. This therapy was once conducted on child victims of conflict in Aceh to improve emotion regulation.<sup>14</sup>

CBT with trauma focus has been tested in children and adolescents with PTSD aged between 3 to 17 years by three independent research teams in the United States and Australia. These studies have shown that CBT is superior to increase the range of the children's symptoms, including PTSD, depression, internalizing symptoms, common behavioral symptoms, and shame. All of these studies were conducted with children experiencing trauma of sexual abuse. A study that involved more than

200 children, most of whom had suffered multiple trauma histories in addition to sexual harassment, i.e. for children who experienced terrorism and traumatic sadness, also showed a significant improvement of symptoms of PTSD.<sup>15</sup>

#### **Differences in PTSD scores before and after CBT plus intervention**

In this study, the mean score of pre-therapy of PTSD was 55.00, and after CBT plus therapy is given, the mean value falls to 31.55. This decrease is statistically highly significant. Play therapy is useful in healing children with PTSD. It is used to treat children with PTSD. The therapist put the game to start a topic that cannot be started directly. This can help the children feel more comfortable.<sup>13</sup>

According to Li, Lopez and Lee therapeutic play is more influential on school-age children's anxiety before surgery. It is very beneficial for children who will get operating procedures to overcome anxiety, fear, anger and feelings of uncertainty and helplessness.<sup>16</sup> Individuals with PTSD who have received treatment for PTSD will have the ability to recognize the thoughts that disturb the mind and overcome them by using realistic thoughts that create emotional balance.<sup>17</sup>

In the intervention group with CBT plus, play sessions are added in addition to CBT therapy. In addition to being taught on how to replace negative thoughts that come on mind when remembering the flood with positive thoughts, the children are also led in the game such as drawing, singing or writing poetry. In this condition, the children are easier to explore their feelings in the form of fear or anxiety. Fear and anxiety can be ventilated through a song or image, thus creating a sense of comfort and calmness.

#### **Differences in PTSD scores after CBT and CBT plus intervention**

In this study, the mean score of PTSD in the group after being given CBT is 44.67 while the mean score of PTSD in the group given CBT plus is 31.55. These are significant decreases. According to Lubit, non-pharmacological therapy given to children with PTSD includes CBT, relaxation, and play therapy techniques<sup>13</sup>. According to Berman, one of the specific interventions in children with PTSD is to provide an opportunity for children to express their feelings through play.<sup>12</sup>

In this study, the therapy in children is performed one by one, not to combine more than one intervention. There have not been the same interventions or a combination of CBT and play therapy like one in this study. Therefore, based on the result of this current study, the CBT therapy plus play therapy is effectively used for school children who experience PTSD. There are differences between the mean score in the group of school-age children before

and after the intervention of CBT and CBT plus. There are difference between two groups that given intervention of CBT and CBT plus. Based on the research results, CBT plus module can be used to reduce the symptoms of PTSD in children with PTSD as a result of a disaster or other traumas

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