

# *Effectiveness of Stress Inoculation Training to Reduce Stress in Family Caregiver People with Dementia*

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**Abstract - This study aims to test the effectiveness of stress inoculation training (SIT) to reduce stress on family caregivers of people with dementia (ODD). The research design used was a quasi-experimental pretest-posttest control group design with purposive sampling data collection method and matched-group design sample placement method. The subjects of this study were twelve family caregivers for ODD. SIT therapy module includes conceptualization, skill development and practice and application. Measurement of stress using Cohen's perceived stress scale 10 (PSS-10) and analyzed by Mann-Whitney nonparametric statistical test. The results showed a significant difference between the scores of the stress category in the experimental group and the control group after being given SIT ( $U=4.5$ ,  $Z=-2.173$ ,  $p<.05$ ,  $r=.69$ ) meaning that stress inoculation training was effective for reducing stress in the family caregiver for ODD with a relatively high effect size.**

**Keywords – stress, family caregiver for people with dementia, stress inoculation training**

## I. INTRODUCTION

The number of elderly people around the world has increased sharply in recent years. The increase in the number of people aged 60 years and over between 1970 and 2025 is estimated to increase by around 694 million people or will increase by 23%. In Southeast Asia, the elderly population is around 142 million or 8%. In 2010, the number of elderly people was 24,000,000 (9.77%) of the total population, and by 2020 it is estimated that the number of elderly people will reach 28,800,000 (11.34%) of the total population. In 2025 there will be around 1.2 billion people in the world aged 60 years and over which will become 2 billion in 2050, 80% of whom live in developing countries including Indonesia (WHO, 2019).

Badan Pusat Statistik Republik Indonesia (2009) estimates the number of elderly people in Indonesia to reach 18,575.00 people. This figure is about 7% of the total world population which is estimated at 234,181,400 people. Komisi Nasional Lanjut Usia (2010) estimates that the proportion of the elderly population will continue to increase to reach 11.34% in 2030. Badan Pusat Statistik Republik Indonesia (2012) estimates that the elderly population has a percentage of above 10%, which is seen from the distribution of the elderly population by province.

The increasing population of the elderly in Indonesia makes various problems arise, including the increase in diseases that are typical of the elderly. This disease is associated with a decrease in the ability to live and an increase in individual sensitivity (Alzheimer's Indonesia, 2019).

Based on age classification, the elderly people have several multi-pathological characteristics, including decreased biological reserves, changes in symptoms and signs of disease from classic ones, impaired functional status of the elderly, and nutritional disorders or malnutrition. Multi-pathological characteristics can be seen from the pattern of disease that shifts towards degenerative diseases such as joint disorders, hypertension, stroke and diabetes which are related to the nutritional status of the

elderly. Various problems will be faced such as cognitive impairment or decreased cognitive function which is one of the signs of dementia (WHO, 2015).

Santrock (2012) states that old age brings greater physical decline than previous age periods, including a decrease in the functioning of the senses, nervous system, body organs, and reproductive organs, so it is natural that the elderly then have many health complaints, even become agitated. sick. According to data from the Central Bureau of Statistics of the Republic of Indonesia (BPS RI) in 2009 it was stated that the types of health complaints most experienced by the elderly were the effects of chronic diseases such as gout, high blood pressure, rheumatism, and diabetes as well as degenerative diseases (Komnas Lansia, 2010).

One of the manifestations of degenerative diseases that has recently been declared a world health priority is dementia (WHO, 2012). Dementia is the most common neurological disorder in the elderly. Dementia is a syndrome caused by a disease or brain disorder that is usually chronically progressive in which there are multiple higher cortical functions, including memory, thinking ability, orientation, comprehension, arithmetic, cognitive abilities. learning, language, and judgment. Dementia is generally accompanied and sometimes begins with a deterioration in emotional control, social behavior, or life motivation (Maslim, 2013). Dementia occurs due to damage to brain cells where the nervous system is no longer able to carry information into the brain, resulting in memory decline, progressive skills, emotional disturbances, and behavioral changes. People with dementia often show daily behavioral disturbances (Pieter, Janiwarti & Saragih, 2011).

The impact of dementia in the early stages is a decrease in cognitive function such as a decrease in memory ability so that it is difficult to remember (short term memory), decreased understanding and capturing information, difficulty solving problems, difficulty making decisions (Alamsyah, 2017). At a more advanced stage the problem becomes more serious, including people with dementia (ODD) will have difficulty in carrying out activities of daily life, experience changes in behavior, perform inappropriate behavior in society and are very dependent on others (Hooper, 2010).

The increasing incidence and prevalence of dementia is a challenge for health care providers, especially in Indonesia because dementia has serious impacts, but ODD must also continue to live their lives (Oliver, 2020). Based on research conducted by Murtiyani & Haryani (2010) showed that dementia will affect the daily life activities of the elderly with dementia in the form of eating disorders (54.55%), continence (30.30%), dressing (42.42%), toileting (48.49%), ambulation (54.55%) and bathing activity (30.30%).

For ODD whose condition is no longer able to function normally, it is necessary to have a caregiver to help care for and provide services for a long time and continuously, especially meeting daily needs (National Alliance for Caregiving, 2010). Caregivers are individuals who help care for and provide comfort to ODDs in order to improve the health and well-being of ODDs, help ODDs accept their conditions, and help ODDs face their lives by being treated humanely (Bumagin, 2009).

According to Oliver (2020) caring for ODD is a dilemmatic condition with all the consequences of the impact obtained by the caregiver, namely psychological impacts, economic impacts and impacts on physical conditions. Other impacts that arise on caregivers include losing their social life because they do not have time to connect with friends and relatives to socialize. The caregiver's condition that is emotionally burdened, the continuous and long treatment process in ODD treatment can cause stress because some caregiver needs cannot be fulfilled optimally.

To explain the phenomenon of family caregivers in ODD care, researchers conducted interviews with 5 caregivers who are members of the ODD family (Caregiver, 2020). The results can be concluded that the ODD treatment process has a negative impact on the family caregiver's emotional, mental, physical and behavior. This condition is caused by a change in the situation from a normal life to an unusual one with the obligation to care for ODD. Such a situation can cause psychological distress for the family caregiver, namely a negative situation experienced by a person, which can affect their mental and physical health. Psychological distress is formed from anxiety, sadness, irritability, self-awareness, and emotional vulnerability (Winefield, Gill, Taylor & Pilkington, 2012). When the caregiver experiences psychological distress, it will have an impact on the pattern of parenting and care for ODD as well as on the caregiver itself, namely stress and variations in negative consequences on physical and mental health.

In dealing with conditions like this, it takes a person's ability to reduce pressure when experiencing difficulties, namely the ability to reduce stress through various techniques. To avoid impacts related to physical problems and psychological problems

on caregivers, it is necessary to consider the need for caregiver knowledge and skills that must be met in caring for the caregivers themselves. One of them is Stress Inoculation Training (SIT). The ability to manage a person's stress can change and develop throughout his life as a result of the learning process and interaction with his environment (Sarafino, 2011). SIT is important because when individuals are able to manage stress well when dealing with stressful situations, the individual can develop life skills such as communication skills and the ability to take the right steps for himself and also ODD. Conversely, when the individual or caregiver is not able to manage stress, the individual will not be able to carry out individual functions and carry out their duties normally.

SIT is designed to support individuals in preparing and developing abilities to cope with stress. Thus, decreasing stress levels plays an important role in the recovery process, both physically and psychologically (Meichenbaum, 2005). Meichenbaum also explains that SIT helps distressed individuals or groups become more aware of how they are behaving which actually maintains and exacerbates the distress. SIT also helps individuals to become more adaptive, seek understanding and have more adaptive skills to solve problems, manage emotions, accept and also have coping skills.

## **II. STATEMENT OF THE PROBLEM**

This study wants to provide an overview of SIT can reduce stress in adolescents, can also reduce stress, anxiety, and depression in breast cancer patients, be able to reduce fear and anxiety related to the birth process, have the effect of reducing stress on ICU nurses, and be able to reduce stress and anxiety in breastfeeding mothers with low baby weight, and can reduce stress on Odapus. Is Stress Inoculation Training (SIT) effective for reducing stress on family caregivers of ODD?

## **III. LITERATURE OF VIEW**

### **1. Stress**

Lazarus & Folkman (1984) stated that stress is a stimulus and response reaction that emphasizes the relationship between the individual and his environment. The stimulus experienced by the individual is a stimulus that is considered to be endangering his life or well-being, and an activity that is considered to exceed the capacity he has. Meanwhile, Selye (1976) states that stress is a non-specific response of the body to any demands. Sarafino & Smith (2011) also state that stress is a person's perception of the difference between environmental demands and the resources or abilities they actually have.

Cohen, Kamarek & Mermelstein (1983) divide stress into three dimensions, namely:

#### **a. Feeling of unpredictability.**

It means that events that occur in an individual's life occur suddenly and cannot be predicted, so that individuals will feel helpless and hopeless.

#### **b. Feeling of uncontrollability.**

It occurs when the individual feels unable to control the situation from outside himself, thus giving a certain effect on individual behavior which will then be used as learning for the individual.

#### **c. Feeling of overloaded.**

It is characterized by various symptoms including feelings of hatred, low self-esteem, feelings of sadness, anxiety, psychosomatic symptoms and so on. Cohen, et al (1983) explain that individuals with feelings of depression are more likely to experience stress than individuals who do not experience feelings of depression.

### **2. Stress Inoculation Training (SIT)**

Meichenbaum (1983) says that SIT is a type of cognitive-behavioral therapy designed to help individuals cope with stress. Gerald Corey (2009) describes stress inoculation training as form of cognitive behavior modification developed by Meichenbaum that involves educational, rehearsal and application phases. Clients learn the role of thinking in creating stress and given a set of skills to deal with future stressful situations. In self-modification programs people make decisions about their specific behavior. People often find that the main reason they don't achieve their goals is a lack of certain skills or unrealistic expectations.

According to Meichenbaum (1983) SIT has three stages, namely:

a. Conceptualization

The therapist educates clients about the general nature of stress and explains important concepts such as judgments and cognitive distortions that play a role in shaping stress reactions. Individual perceptions often inadvertently make their stress worse through inappropriate coping habits. Finally, the therapist works to develop a clear understanding of the nature of the stress the individual faces. An important part that needs to be communicated in the initial conceptualization stage of SIT is the perception of stress as a creative opportunity and puzzle to be solved, not as an obstacle. Individuals are helped to distinguish between aspects of stress and stress reactions so that individuals can determine appropriate stress coping. At this stage the collaborative relationship between the individual and the therapist is also well built so that a reciprocal learning process emerges and exchanges information.

b. Skill Development and Practice

This stage is to determine coping strategies in certain situations. Skills taught to individuals are adjusted to individual capacities and characteristics so that implementation becomes more effective. Skills that can be provided include emotional management, relaxation, cognitive assessment, problem solving, communication and socialization skills that can be selected and these results are given based on individual needs. There are three kinds of exercises that can be done in this stage, namely: 1) Deep Breathing, 2) Progressive Muscle Relaxation and 3) Coping Thoughts.

c. Application

In the final stage, focus on application and follow-up. The therapist gives the individual the opportunity to practice using coping skills. Clients will be encouraged to use a variety of simulation methods to help improve coping skills including visualization exercises, role play, and simple repetitive behavior practices to overcome routines until they become more familiar with dealing with stress in an appropriate way.

3. Family Caregiver

According to Reinhard (2017) family caregivers are companions or informal caregivers consisting of family members, friends, friends, or neighbors who take care of people who have acute or chronic illnesses and need assistance from companions to carry out several activities such as cleaning themselves, wearing clothes, and taking medication

Schulz, Sherwood & Paula (2009) identified the impact of being a caregiver as follows:

- a. Privacy breach
- b. Lack of social contact
- c. Not getting time to be alone or doing recreational activities
- d. Increase the likelihood of giving up on job responsibilities
- e. Increases the risk of depression
- f. Increases feelings of anger, guilt, sadness, anxiety, depression, helplessness, chronic fatigue and emotional exhaustion
- g. Physical health is weaker when compared to people who are not caregivers.

4. People with Demetia (ODD)

Early signs of dementia are very subtle and vague and do not immediately become apparent. The aging process does not automatically cause dementia. Aging causes anatomical and biochemical changes in the central nervous system (Scanlon, 2006). There are several risk factors for dementia, including increasing a person's age over 65 years, genetics, head trauma, lack of education, environment (aluminum poisoning), certain diseases (systolic hypertension, Down syndrome, stroke and immune disorders), high blood pressure (Potter & Perry, 2005).

With age, energy gradually decreases, reactions to surrounding events are slow, creative power and initiative gradually narrow, memory decline and cognitive function decline can interfere with daily routines. Brain volume in old age will also change.

## 5. Hypothesis

Ho : Stress Inoculation Training is not effective for reducing stress on family caregivers of ODD

Ha : Stress Inoculation Training is effective for reducing stress on family caregivers of ODD

## IV. MATERIAL AND METHOD

This study uses a quasi-experimental type with the consideration that it cannot place the research subject in a pure laboratory situation and free from environmental influences during the intervention.

### 1. Stress

Stress is an individual's assessment process of a stressful situation and if it can't be overcome it can endanger both physically and well-being. Stress will be measured using a Perceived Stress Scale-10 adapted from the Perceived Stress Scale-10 Cohen & Williamson (1988). The scale consists of 10 items. The stress score will be obtained from the total of all indicators on the PSS-10 scale. The higher the score obtained by the subject, the higher the stress

### 2. Stress Inoculation Training (SIT)

Stress inoculation training is a technique based on the idea that helping clients cope with mild stressors will enable them to develop tolerance for forms of distress. Meichenbaum believes that clients can improve their ability to cope with more severe distress. In addition, SIT is expected to increase a person's ability to cope with problems by modifying his beliefs about his own performance in stressful situations. SIT involves three phases, namely: 1) Conceptualization 2) Skill acquisition and practice 3) Application and completion.

In the conceptualization phase, the researcher will teach the client the nature of stress and the client's role in creating stress. This process will be held in groups that have been determined. Next is the process of evaluating the client's coping, which will be done by asking the client to write down the current coping techniques. During the second phase, the client will acquire skills and practice. Clients will be taught coping techniques, namely cognitive restructuring such as being taught to identify stress; relaxation such as breathing, exercise, walking, and singing; client-like assertiveness taught with positive beliefs; and self-rewarding as clients are taught to respect themselves and religious values. The third phase, implementation and completion. At this stage the client will be taught about relapse prevention. Clients are invited to identify high-risk situations that cause relapse. Then anticipate stress reactions and practice the learned coping responses.

### 3. Research design

The form of experimental research design that will be carried out in this study is a pretest-posttest control group design in which both groups will measure their stress levels before and after the experiment by being given the same pretest and posttest, namely PSS-10. Furthermore, the experimental group will receive treatment in the form of SIT while the control group will not be given any treatment. Then the effectiveness can be seen through the difference in the mean or average score between the pretest and posttest given to the control group and the experimental group using the PSS-10 scale to see the scores before and after being given treatment.

## V. RESULT

Research participants are individuals who meet the stress criteria according to the results of the PSS-10 test and have never received psychological treatment. The participants in this study were 12 people, which were obtained by conducting a screening at Meraxa Hospital Banda Aceh. Then a selection process was carried out on prospective participants who had been obtained by conducting clinical interviews to confirm that the prospective participants were experiencing stress and working on the PSS-10 scale to determine the level of stress experienced by participants.

### 1. Data Before Research (pre-test)

In this study, the division of groups was carried out by matching the severity of stress obtained through the PSS-10 score (pre-test). The goal is that the distribution of scores between the control and experimental groups is the same or balanced. All participants had stress levels in the mild, moderate, and severe categories. This interpretation was obtained from the results of the PSS-10 pre-test which showed that the two groups had a relatively balanced score distribution with the lowest score of 10 and the highest score of 37. This condition made it possible to see the effect of the treatment given, because both groups had the same weight score. categorized as having the same interpretation.

2. Data After Research (post-test)

Both groups experienced a change in scores after one month given the pre-test. In the experimental group the change in score looks quite large. In the experimental group, the lowest value was 2 and the highest was 23, meaning that all participants showed stress levels in the mild category. In the control group, the lowest score was 13 and the highest was 38, meaning that participants in this group showed various changes in stress levels, namely, some had decreased stress levels, some remained constant and some increased.

3. Changes in the Study Participants' PSS-10 Score

Changes in the PSS-10 score before and after the administration of SIT in each group were known through the Gain Score test.

Table of PSS-10 Skor Score Change

Group	Name	Age	Gender	PSS-10 Score		Gain Score	N Gain Score	Rank
				Pretest	Posttest			
Experiment	AM	55	Female	12	2	-10	-0.36	5
	WT	52	Female	37	37	-14	-4.67	1.5
	IL	35	Female	25	25	-12	-0.80	3
	ZR	30	Female	11	11	-9	-0.31	6
	LA	27	Female	24	24	-12	-0.75	4
	NA	23	Female	37	37	-14	-4.67	1.5
Average Value				24.33	12.50	-11.8	-1.93	3.50
Control	EW	58	Female	7	28	1	0.09	9
	MA	57	Female	37	38	1	0.33	12
	MN	37	Female	26	27	1	0.08	8
	BI	34	Female	12	14	2	0.07	7
	SJ	31	Female	10	13	3	0.10	10
	TT	28	Female	36	37	1	0.25	11
Average Value				25.33	26.83	1.50	0.15	9.50

Changes in the PSS-10 Gain Score in the experimental group had an average value of - 11.83, meaning that after being given therapy using the SIT technique, generally participants experienced a decrease in stress level scores of 11.83 points. Judging from the normalization of the N-Gain Score, the percent of the experimental group has an average score for the experimental group of -193% which is included in the very effective category, with a minimum value of -467 and a maximum of -



31, while for the control group it is 14.96 or 15%, which is included in the ineffective category. With a minimum N-gain score of 7 and a maximum of 33, giving SIT is very effective in reducing stress on family caregivers.

Following are the criteria for the N-Gain index according to Hake, R.R, 1999), which has been modified:

Category Table of N-Gain Effectiveness Interpretation:

Percentage (%)	Interpretation
<40	Ineffective
40 - 55	Less Effective
.56 - 75	Effective Enough
>76	Effective

**4. Mann-Whitney Test**

**Table Mann-Whitney Test**

	Hasil Uji
Mann-Whitney U	4.500
Wilcoxon W	25.500
Z	-2.173
Asymp. Sig. (2-tailed)	.030
Exact Sig. [2*(1-tailed Sig.)]	.026 <sup>a</sup>

Based on the results of the Mann-Whitney test, the results obtained a U value of 4.5 (U-count = 4.5). This value is then compared with the Mann-Whitney table score obtained, which is 5 (U-table = 5). Then it can be seen that the U-count value is smaller than the U-table ( $4.5 < 5$ ), meaning that there is a significant difference between the two groups or there is an effect after being given SIT, resulting in a decrease in the PSS-10 score in the experimental group. The table above also shows a sig.2-tailed .030, so for a one-way test, the number is divided by two to obtain a figure of .015. The significance value is smaller than .05 ( $.015 < .05$ ), which means that there is a significant difference between the two groups, namely the PSS-10 score of the experimental group experienced a significant decrease after the administration of SIT.

**VI. DISCUSSION**

Based on the results of statistical tests, the Mann-Whitney (U) score was 4.5, and the U table value was 5. The U value obtained was smaller than the U table. The significance value obtained was .03 smaller than .05, meaning that there was a significant change in the PSS-10 score between the control and experimental groups. Based on the test results,  $H_a$  is accepted, which means that stress inoculation training is effective in reducing stress on family caregivers of people with dementia. The effect size obtained is 68.7%, which means that SIT has an effect in reducing stress. This is in line with the results of research conducted by Suzsanna & Marian (2012) on adolescents in Romania showing that SIT is effective and has a significant effect on adolescents in dealing with stress. Then research conducted by Kashani, et al (2015) stated that SIT was able to reduce stress, anxiety, and depression in breast cancer patients. The results of this study indicate a significant difference between the control group and the experimental group. Individuals who apply SIT skills in daily life get positive feedback and reduce the tendency to avoid problems, SIT interventions are proven to be effective in reducing stress.

Based on the results of the mann whitney test, obtained Asymp. Sig (2tailed) is .03 ( $p < .05$ ), which means that there is a significant difference between family caregivers who receive SIT and those who do not. Through SIT, the responses to stress of

experimental group participants were evaluated and analyzed. The participants identified the coping methods they used to deal with the stressor and the impact of the body's response to each demand, and how they tried to reduce the stress and the consequences they received through this intervention. This is in accordance with the opinion of Lazarus & Folkman (1987), where coping is all efforts to reduce stress which is a process of regulation or demands (external or internal) which is assessed as a burden that exceeds one's abilities. Sarafino & Smith (2011) added that coping is a process where individuals make efforts to manage situations that are considered to have a gap between effort and ability, which then causes stress. This has an impact on high stress.

Apart from the decreasing score of the experimental group, it can also be seen through the form of emotional focus coping used by participants in controlling their emotional response to stressors, because they realize that existing stressors cannot be changed and overcome. The form of an emotional-focused coping strategy that is often used by NA is to run from problems or avoid problems (escape-avoidance). After participating in SIT, NA can evaluate the form of coping strategies used and choose a new coping strategy, namely accepting responsibility, where NA has self-awareness by acknowledging that there is self-responsibility in the problems experienced. Then NA, who usually likes to get angry when facing stressors, now has a new coping strategy, namely self-control, meaning that NA tries to regulate feelings when facing stressful situations.

Then the IL participants before receiving SIT, when faced with stressful situations always responded by crying and getting angry with ODD, but after taking SIT, they became more aware of new ways to respond to pressure, namely choosing a coping strategy of distancing. IL tries to avoid or stay away from temporary problems, by paying more attention to positive things. WT and AM participants, before receiving SIT almost every day faced stressors in a confrontative way, because they hoped and tried to change the situation that was considered stressful until they realized that this situation could not be changed and chose a positive reappraisal coping strategy, namely an attempt to looking for a positive meaning from a problem with a focus on self-development, and usually related to matters related to religiosity. Meanwhile, LA and ZR, who always feel the burden of responsibilities are so heavy and want to run away from their routines, but after receiving SIT, they have become self-aware and admit that there is self-responsibility in the problems they experience (accepting responsibility).

In addition to understanding the new coping method, the experimental group participants were also able to overcome the physical problems they experienced such as difficulty breathing regularly, body muscles such as neck, shoulders and arms feeling stiff and tense, heart palpitations, difficulty concentrating, easy to forget, easy to anger and even difficult to think, by doing deep breathing and progressive muscle relaxation. This is in line with what was stated by Selye (1976) that when a person experiences stress, the body gives signals and alarms that something is not right with their body due to the problems they face. So that they are able to understand these signals and deal with them so that they feel more prepared when dealing with stressors.

The control group was not given any treatment. So that the posttest score shows almost the same number as the pretest. However, the results indicated that there was a slight increase in the overall score, which was an average of 1.5 points.

From this discussion, it can be seen that SIT is effective in reducing stress. This effectiveness can be seen from changes in the behavior of participants who continue to face their stressful situations by doing deep breathing, PMR and coping thought. SIT is an effort made to deal with stressful situations. The SIT performed eliminates physical symptoms such as muscle tension, irregular breathing, heart palpitations, shaking, irritability, difficulty smiling and even difficulty thinking and turns it into a calm and comfortable response. From this action, participants learn that they have the ability to cope with stressful situations by using SIT techniques. Their belief in their new abilities encourages them to be ready to face stressful situations. This explanation illustrates the advantages of using SIT in dealing with stress. Another advantage is that SIT is very easily accepted by participants, they are more prepared to undergo SIT because the SIT application process can be carried out according to directions. On the other hand, SIT has shortcomings in overcoming the problem of cognitive distortion.

## VII. CONCLUSION

1. There was a significant decrease in the PSS-10 score in the experimental group after the implementation of SIT. This shows that giving SIT is effective in reducing stress levels, thus  $H_0$  is accepted.
2. SIT has an effect of 68.7% in reducing stress levels, which means SIT has a major influence in reducing stress. Participants showed changes in the way they deal with stressful situations, so that participants were better prepared to deal with stressful situations and felt more comfortable and calm.



3. Participants who received SIT experienced a decrease in stress symptoms such as reduced irregular heartbeat, shaking, rapid breathing, muscle tension, aches, forgetfulness, irritability, difficulty smiling and even difficulty thinking. Participants have confidence that they are able to deal with stressful situations with new skills, namely understanding stress, being able to do deep breathing, PMR and coping thought, so that they are able to think adaptively in dealing with stressful situations.

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