

# Improvement Cognitive Abilities of Elderly with Dementia in Retirement Home Facility through Life Review and Music Therapy

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## Abstract:-

### ➤ Introduction

As the elderly with dementia increase, many elderly people experience low self-esteem. As a result the cognitive and emotional stability of elderly are disturbed. Verbal communication becomes very difficult and confusing. This has a negative impact on the health of the elderly. Pharmacological treatment is considered less effective because it's severe side effects. Non-pharmacological treatment was developed, one of which was through live therapy combining with music therapy. The study aims to determine the increase in cognitive abilities of the elderly in dementia before and after a live therapy review with music therapy in the Retirement Home facility.

### ➤ Methods

Research uses a quantitative research approach with "Quasi Experimental pre and post-test with control group. The location of the study is at Retirement Home facility. The research instrument uses MMSE (Mini Mental State Exam). Data analysis using Paired sample t-test and Independent t test.

### ➤ Results

There was an increase in cognitive abilities of the elderly in dementia after live review therapy with music therapy combination. Elderly people who received life review therapy and music therapy after intervention significantly increased cognitive abilities compared to the elderly who only received music therapy.

### ➤ Suggestion

Recommended to nurses at the Retirement Home or Nursing Home facility to get life therapy with music therapy training program. Improvement of the life review therapy module and music therapy needs to be done as one of the interventions in an effort to increase the cognitive abilities of the elderly in dementia.

**Keywords:-** Life Review Therapy – Music Therapy – Cognitive Elderly with Dementia.

## I. INTRODUCTION

Increasing number population of elderly may bring impact and changing. Few particular changing that could occurred on elderly are changing in biological function, psychological and social economy with lower productivity impact. One of the psychological impact for elderly is Dementia (Sivertsen, Bjørkløf, Engedal, Selbæk, & Helvik, 2015).

Dementia is generic term to describe failure of global cognitive functional which progressive and affected daily activities (AKS)(Sivertsen et al., 2015). It is characterized by difficulties in managing daily routine activities, remembering things, repeating words during conversation, not aware of time-room-or space such as sleeping in dining room, easy to get angry and difficult to guide, loss of memory, difficult to learn new things, lack of concentration and lack of personal hygiene (Grover & Malhotra, 2015) (Tripathi & Tiwari, 2009).

Currently there are 23.4 million people had dementia with 4.6 million new cases of people with dementia added annually. This number may increase become double in every 20 years and could reach 81.1 million cases later by year 2040 which mostly elderly with dementia are located in developed countries. The increment rate of this cases are projected 100% in developed countries between year 2001 – 2040, but could be more than 300% for specific countries such as India, China, country in South Asia and country in West Pacific (Velázquez-brizuela et al., 2014).

For Indonesia, by year 2025 it is projected to have 35.9 million populations of elderly or equal to est. 13% of total population of the country. On 2005, Indonesia has 606.1 thousand cases of elderly with dementia with increment 191.4 thousand new cases compare to previous year. By year 2020, Indonesia is projected to have dementia prevalence up to 1.016 million populations of elderly with incident 314.1 thousand (Wall & Duffy, 2014). This prevalence number shall be increased 3 times greater to 3.042 million case in 2050 with incident rate up to 932 thousand cases (Oktadiputra & Kurniati, 2015).

Along with increase of number of elderly with dementia, many elderly with dementia experience lower self-esteem (Keliat, BA, 2011). It is disturbing the cognitive behavioral and emotional of patient. People with

dementia suffer from aphasia and amnesia. Verbal communication is very difficult and confusing (Gail Wiscarz Stuart, 2013). Patient with memory loss may not aware with his/her own identity and also create strange feeling of surround environment (Hinrichsen, 2008). This can cause memory disturbance that degrade the ability in receiving and delivering messages and degrade the brain metabolism (Videbeck, 2008).

Due to pharmacological treatment is considered less effective which cause heavy side effect (Ritchie, Terrera, & Quinn, 2015) innovative non-pharmacological treatment such as Life Review therapy and Music therapy become alternative option. Combination of modified Life Therapy with Music is helping elderly with dementia to recall memories from past to stimulate cognitive abilities to become better than before therapy session (Molinari, 2016).

Listen to music will stimulate human brain to actively recall important memories from past (Townsend, 2009). It is highlighted as one of most effective approach to improve cognitive of elderly with dementia. Prabasari (2016) described that by listening music and singing it will activate left and right brain of elderly with dementia. Brain shall comprehensively activate and work which make elderly with dementia to use their brain capacity larger than they used to (Velázquez-brizuela et al., 2014).

According to Molinari, 2016, combination of Life Review therapy with music is a complex therapy process but consistently incorporate 4 supporting components: 1) Remembering (aware to any memories); 2) Recall (able to share memory to other verbally or non-verbal); 3) Review (evaluate the memories); and 4) Reconstruction (able to create something to represent specific memories).

A research (Gangrade, 2015) states that music therapy is a proven approach to improve life quality of elderly with dementia due to its relaxation effects produced by music waves. Research also had shown that music therapy trigger human brain to produce chemical compound which send positive signal to the brain itself. These chemical compounds repair the neurotransmitters, hormones, cytokines and peptides in patients. So that music can produce positive emotions and increase immunity in patients (Gangrade, Abhishek. 2012). Music selection is adjusted to the preferences of patients for maximum results. Music therapy has been shown to reduce anxiety by approximately 80% in the elderly with dementia.

Based on data on October 2017, from Social Retirement Home “Sabai Nan Aluih Sicincin”, there are 110 persons elderly consist of 69 men and 41 women which located in 14 residential. The results of the guided interview in this institution using the MM SE (Mini Mental State Exam) for 5 elderly people it was found that 3 elderly people experienced dementia which 1 of them had mild dementia (score 15) and rest of 2 of them had moderate dementia (score 13 and 15).

Elders who are identified with dementia reveal following symptoms: easy to feel irritate or angry, insomnia, often waking up on midnight or sometimes too much sleeping, body felt tiring, hard breathing and heart pounding, feel sad and worry if being forgotten by family, lose enthusiasm, high tension on back muscle and neck, difficult to concentrate for activity, easy to forget, and difficult to relax. There is one elderly person who plead that he entered the institution as his own wishes due to no children or relative who could take care of him, and due to anxiety of uric acid that never been healed. Meanwhile there are two other elderly people who being admitted to the institution due to poverty hence their family could not afford to take care of them at home. The non-pharmacological approach never been attempted in this institution; Social Retirement Home “Sabai Nan Aluih Sicincin”. Only when any on-job-training program being conducted from any university which uses this institution as study case then program such as joint aerobic program, music therapy and group therapy are being conducted for these elderly in this institution.

Refer to above phenomenon; Researcher conducted a study on “Improvement Cognitive Abilities of Elderly with Dementia in Retirement Home Facility through Life Review and Music Therapy” with objective to enhance cognitive abilities of those elderly people with dementia.

## II. METHODS

This research apply quantitative research approach with “*Quasi Experimental pre and post test with control group*” of life review therapy and music therapy to see the intervention result on the cognitive abilities of elderly people. The location of research is in Social Retirement Home “Sabai Nan Aluih Sicincin” Padang Pariaman District, West Sumatra Province, Indonesia, hereinafter called as Institution. Period of research is from April to November 2018.

This institution has in total 105 people. For sample calculation of this study, to get 5% significance level and 95% strength level for hypothesis test of different pairs (in average) of elderly, was set by 51 people. To anticipate any *drop out* number of sample has been increased to keep 10% precision of the study hence the number of sample was set by 56 people.

Data collection is using validated MMSE (*Mini Mental State Exam*) which its questionnaire had 0.91 validity and reliability number and processed based on assessment of Cronbach’s Alpha. As per procedure the research begins with Ethics Review through the Research Ethics Commission. Conduct a socialization of the research program in the Institution by providing the purpose and objective of the research and also share the Life Review module. Do the pre-test to measure cognitive abilities of the elderly people by grouping into life review and music therapy group (hereinafter called as First group) and only music therapy group (hereinafter called as Second group). On the intervention stage, the first group will have 4

sessions with 45-60 minutes duration of each session and conducted 1-2 times per week. The second group is listened to music up to 2 times per week for 4-6 months duration observation. The music option is selected from favorite list of elderly people. For post-test stage, the post test is conducted to measure the cognitive abilities after 1 month therapy.

Data is processed through editing coding, entry data and data cleaning stage and analyzed using univariate and bivariate approach. Univariate analysis aims to explain the

characteristics of the variables measured in the study. For characteristic variable of age and how long respondent stay in the institution, the number of mean, deviation standard, minimum and maximum number are calculated. For characteristic variable such as gender, education, religion, race and work employment are analyzed using descriptive and its distribution number. Bivariate analysis was performed to analyze differences in cognitive abilities in the elderly in 1 group before and after the intervention stage using the Paired sample t-test.

### III. RESULT

#### 1. Respondents' characteristic based on gender

Characteristic	Group 1 TLR and TM		Group 2 TM		Total		P. Value
	f	%	f	%	f	%	
<b>Gender</b>							
a. Male	17	60.7	16	57.1	33	59,19	0,074
b. Female	11	39.3	12	42.9	23	41,1	

Table 1:- Respondents' characteristic based on gender (n=56)

Refer to table 1; there are 60.7% male respondents in Group 1 (therapy life review and therapy music) and 57.1% male respondents in Group 2 (therapy music only). The equality test result between Group 1 and Group 2 is equivalent (p value > 0.05).

#### 2. Respondents' characteristic based on education

Characteristic	Group 1 TLR and TM		Group 2 TM		Total		P. Value
	f	%	f	%	f	%	
<b>Education</b>							
a. No education	6	21.4	7	25.0	13	23.2	0,064
b. Elementary	13	46.4	16	57.1	29	51.7	
c. Junior High	6	21.4	2	7.1	8	14.3	
d. Senior High	3	10.7	3	10.7	6	10,8	

Table 2:- Respondents' characteristic based on education (n=56)

Refer to table 2; there are 67.8% total respondents who have no education and only graduate up to elementary school in Group 1 and 82.1% total respondents in Group 2). The equality test result between Group 1 and Group 2 is equivalent (p value > 0.05).

#### 3. Respondent's characteristic based on religion

Characteristic	Group 1 TLR and TM		Group 2 TM		Total		P. Value
	f	%	f	%	f	%	
<b>Religion</b>							
a. Moslem	28	100	27	96.4	55		0,044
b. Buddhist			1	3.6	1		

Table 3:- Respondents' characteristic based on religion (n=56)

Refer to table 3; there are 100% total respondents who Moslem in Group 1 and 96.4% respondents in Group 2. The equality test result between Group 1 and Group 2 is equivalent (p value > 0.05).

4. Respondent's characteristic based on race

Characteristic	Group 1 TLR and TM		Group 2 TM		Total		P. Value
	f	%	f	%	f	%	
Race							
a. Minangnese	28	100	27	96.4	55	98,2	0,055
b. Chinese			1	3.6	1	1,8	

Table 4:- Respondent's characteristic based on race (n=56)

Refer to table 4; there are 100% total respondents with Minangnese race in Group 1 and 96.4% respondents in Group 2. The equality test result between Group 1 and Group 2 is equivalent (p value > 0.05).

5. Respondent's characteristic based on age

Characteristic	Group	f	Mean	SD	Min Max		Pv
					Age	TLR and TM	
	TM	28	72.64	10.231	50-89		

Table 5. Respondents' characteristic based on age (n= 56)

Refer to table 5; in group 1, average age of respondents is 78.14, with age 64 as the youngest and age 95 as the oldest. Meanwhile in group 2, average age of respondents is 72.44, with age 50 as the youngest and 89 age as the oldest. The equality test result between Group 1 and Group 2 is equivalent (p value > 0.05)

6. Respondent's characteristic based on duration stay in institution

Characteristic	Group	f	Mean	SD	Min Max		Pv
					Duration stay	TLR and TM	
	TM	28	4.27	3.782	1-15		

Table 6. Respondents' characteristic based on duration stay in institution (n= 56)

Refer to table 6; in Group 1, average duration of respondents stay in institution is 4.24 years, with 1 year as minimum duration and 12 years as maximum duration. Meanwhile in Group 2, average duration of respondents stay in institution is 4.27 years, with 1 year as minimum duration and 15 years as maximum duration. The equality test result between Group 1 and Group 2 is equivalent (p value > 0.05).

7. Respondents' scoring for cognitive abilities before intervention stage

Variable	Group	Mean	SD	Min Max	f	Pv
	TM	18.5714	2.63071	12-23	28	

Table 7. Scoring for cognitive abilities (n=56)

The equality test result between Group 1 and Group 2 is equivalent (p value > 0.05).

8. Result for Group 1 cognitive abilities before and after intervention stage

Variable	Group 1	f	Mean	SD	SE	Pv
Cognitive	Before	28	19.0714	4.09	.77311	0,005
	After	28	24.1786	3.30	.62372	
	Deviation		5.1072			

Table 8. Group 1 cognitive abilities before and after intervention stage (n= 56)

There is improvement of cognitive abilities in Group 1 after Therapy Life Review and Therapy Music in average as much as 5.1072 higher (P value < 0.05).

9. Result for Group 2 cognitive abilities before and after intervention stage

Variable	Group 2	f	Mean	SD	SE	Pv
Cognitive	Before	28	18.5714	2.63	.49716	0,005
	After	28	20.6429	3.88	.73502	
	Deviation		2.0715			

Table 9. Group 2 cognitive abilities before and after intervention stage (n= 56)

There is improvement of cognitive abilities in Group 2 after only Therapy Music in average as much as 2.0715 higher (P value < 0.05).

10. Result for cognitive abilities of Group 1 after Life Review and Music therapy and Group 2 after only Music Therapy

	Group	f	Mean	SD	SE	P Value
Cognitive abilities after intervention stage	TLR & TM	28	24.1786	3.30043	.62372	0,001
	TM	28	20.6429	3.88934	.73502	

Table 10. Result cognitive abilities of Group 1 and Group2 after intervention stage (n=56)

Refer to table 10; there is different result in cognitive abilities gained after the therapy session between Group 1 and Group 2, with p value = 0.001 (P value < 0.05). Improvement of cognitive abilities in Group 1 after intervention stage is higher compare to Group 2 which only has only music therapy without life review therapy.

11. Relation between characteristic age of respondent with cognitive abilities after intervention stage

	Mean	Std. Deviation	f	Pvalue
Respondents' age	78.14	8.159	56	0.015
Score cognitive abilities after intervention	24.1786	3.30043	56	

Table 11. Analysis for relation of respondents' age and cognitive abilities after Life Review therapy and Music therapy (n=56)

There is improvement of cognitive abilities after Life Review therapy and Music therapy (P value < 0.05).

12. Relation between characteristic duration stay in institution of respondent in with cognitive abilities after intervention stage

	Mean	Std. Deviation	f	Pvalue
Duration stay in institution	4,25	3.305	56	0.079
Score cognitive abilities after intervention	22.4107	3.99444	56	

Table 12. Analysis for relation of respondents' duration of stay and cognitive abilities after intervention (n=56)

There is no relation between improvements of cognitive abilities after intervention with duration stay in institution (P value > 0.05).

13. Relation between characteristic gender of respondent with cognitive abilities after intervention stage

Cognitive abilities after intervention stage	Gender	f	Mean	SD	SE	P Value
	Male	33	22.5758	3.56222	.62010	0,0715
	Female	23	22.1739	4.61866	.96306	

Table 13. Analysis for relation of respondents' age and cognitive abilities after Life Review therapy and Music therapy (n=56)

The result is P value > 0.05, means there is relation between improvements of cognitive abilities after intervention with gender of respondents.

#### IV. DISCUSSION

##### ➤ *The Impact of Life Review Therapy and Music Therapy in Improving Cognitive Abilities of Elderly with Dementia.*

Cognitive abilities of elderly people with dementia have been evaluated increasing after provided with life review therapy combining with music therapy. Dementia is a common finding in elderly population. Also people in this community feel depress and low self-esteem (G.W. Stuart, 2009) which impact to their cognitive and emotional. Pharmacological treatment is considered less effective due to high side effect. Hence treatment non-pharmacological is developed such as life review therapy and music therapy (Prabasari, 2016).

Many experts conducted research and concluded that music therapy may bring effective influence to elderly with dementia. Methods assessment and measurement of each research are different, but yet to maintain similar positive results. Music therapy has been proven to improve life quality of elderly people with dementia due to its relaxation effect through musical's wave frequency (Prabasari, 2016). Music therapy also can improve personal psychology and social of elderly people. The therapy should be provided continuously either at hospital, clinic, retirement home facility. Similar approach could improve life quality of elderly people.

Research also had shown that music therapy trigger human brain to produce chemical compound which send positive signal to the brain itself (Mcdermott, Orrell, & Mente, 2014). It affected the psychological mechanism of recipient of music therapy. These chemical compounds repair the neurotransmitters, hormones, cytokines and peptides in patients. So that music can produce positive emotions and increase immunity in patients (Gangrade, Abhishek. 2012). Music therapy is also able to reduce anxiety on elderly with dementia. It improve the communication ability, emotional control and cognitive ability (Wall & Duffy, 2014).

Music therapy also proven showing reduce of anxiety level as much as 80% on elderly people with dementia. Therapy could be provided with playing music or actively play musical instrument by patient. Patient shall be provided with pre-post-test to compare before therapy and after therapy result.

Listening music able to make human brain more active to recall precious memories from past (Mcdermott et al., 2014). It is an effective way to improve cognitive abilities of elderly people with dementia. Stimulation of memories from past will boost elderly's emotion in positive way (Molinari, 2016). Listen to music and singing will activate left brain and right brain hence elderly will push their brain to have higher capability and capacity than they does regularly (Garrido, Dunne, Chang, Perz, & Stevens, 2017).

Life review therapy is a therapy that help patient to activate long term memories where memory recall mechanism will bring up all memories from past until now (Mcdermott et al., 2014). Modification of the therapy by combining it with music therapy as therapy modality tools is expected to improve social interaction and also as therapy to maintain active mobility of elderly people with dementia (Molinari, 2016).

This therapy can be implemented and conducted anywhere by anyone. Research result from Life Review therapy with combination of music therapy three sessions with duration 60 minutes each session in Social Retirement Home facility show it helps elderly people with dementia to recall positive memories from their past instead of drowning in negative life experience. It also help to improve their emotional feeling as elderly as survivor in their transition life period. Life review therapy has positive impact to support development of elderly life quality which is better accomplishment of self-integrity (Muhith, 2015).

The cognitive aspects of the assessment that the researchers performed included evaluating seven functions, namely: 1) orientation function with respect to time (year, season, month, day and date), 2) function orientation towards the place (country, province, district, floor), 3) registration function (repeating quickly 3 words), 4) attention and concentration functions (sequentially reducing number 7, starting from number 100, or spelling words upside down), 5) recalling (recalling 3 words that have been repeated before), 6) language functions (giving names of 2 objects, repeating sentences, reading aloud and understanding a sentence, writing sentences and following 3-step commands), and 7) visual construction (copying images). The results of the research conducted increased after the combination of life review therapy and music therapy was carried out.

Based on the results of research conducted Life Review Therapy that has been modified with music therapy as a therapeutic tool to help elderly dementia remember past events so that cognitive abilities can be stimulated again and become better than before (Tripathi & Tiwari, 2009). Besides this modification therapy is able to make the elderly socialize with the environment because this modification therapy is deliberately set so that the elderly can not only recall their past, but it is hoped that the elderly will be able to interact and socialize with the surrounding environment (Keliat, 2010). This modification therapy also makes the elderly able to move actively because this therapy makes the elderly as the main subject in implementing Life Review modification therapy.

The results of the research that has been carried out and supported by the results of previous studies prove that Life review therapy and music therapy have an effect on improving the cognitive abilities of the elderly in dementia compared to the elderly who have only been given music therapy. Increased cognitive ability of elderly in dementia after taking Life review and music therapy, supported by the implementation of exercises which communicated openly

with the elderly, clear contracts and positive reinforcement giving are always given to the elderly.

## V. CONCLUSION AND RECOMMENDATIONS

There are significant differences in the average cognitive ability of the elderly in dementia before and after being given life review therapy and music therapy compare to elderly in groups given only music therapy. There are significant increases in the average cognitive ability of the elderly in dementia before and after being given music therapy only.

In the group given life review therapy and music therapy there was an increase in cognitive abilities of 5.1072. In the group that only received music therapy there was an increase in cognitive abilities of 2.0715. Elderly people who received life review therapy and music therapy after intervention increased cognitive abilities significantly compared to the elderly who only received music therapy. There were significant differences in the cognitive abilities of the elderly in dementia who received life review therapy and music therapy with the elderly group of dementia who only received music therapy.

It is recommended that nurses or health workers working at the Social Retirement Home or Nursing Home need to get life review therapy and music therapy training, so they can apply it to the elderly group of dementia by referring to existing life review therapy and music therapy modules. The principal of the Social Retirement Home facility is necessary to provide tools to support the implementation of life review therapy and music therapy such as the life review therapy module and music therapy and the venue for the implementation. The application of the results of this study needs to be evaluated continuously so that its beliefs and efficacy can be proven. Improvement of the life review therapy module and music therapy needs to be done as one of the interventions in an effort to increase the cognitive abilities of the elderly who experience dementia. To see the process of implementing life review therapy and music therapy, qualitative research is needed.

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