

The effect of brain vitalization activity on dementia incidence in elderly at Budi Luhur Nursing Home of Yogyakarta, Kasongan, Bantul

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Abstract

For some people, dementia is considered as a disease that is common in elderly, regardless the impact of dementia. Taking care for the elderly with dementia brings stress for the family. It can cause and increase the family burden. Brain vitalization gymnastics is one of the methods to improve memory. The study aims to investigate the effect of brain vitalization activity on dementia incidence in elderly at Budi Luhur Nursing Home of Yogyakarta. The study used Quasi-Experimental with Pretest-Posttest control group and randomized sampling system. The samples were taken randomly as many as 26 respondents and were divided into two groups namely 13 respondents of experimental group and 13 respondents of control group. The statistical test used Wilcoxon Match Pairs Test. The result showed that Wilcoxon Match pairs test obtained p value 0,003, which is smaller than 0,005. There is an effect of brain vitalization activity on dementia incidence in elderly at Budi Luhur Nursing Home of Yogyakarta

Keywords: brain vitalization activity gymnastics, dementia, elderly

INTRODUCTION

The success of a country in national development has produced positive results in various fields such as economy, environmental reservation, science and technology, and especially in health field which improves the quality of community health and life expectancy. As a result, the number of elderly is increasing and is even growing faster. Indonesia is one of countries with more than 7% of elderly in its citizens' structure. Indonesia is one of countries with a huge development and experiences a great number of elderly increase. The great increase of elderly number affects the life expectancy (UHH) in elderly.

As the increase of elderly number, they are required to be independent and healthy. The population of elderly in some regions in 2010 in Special Region of Yogyakarta (DIY) was 12,48%. Based on the data from Health Department in 2008, DIY has 4 districts and 1 municipality and among them, the highest population of elderly is in Bantul district that is 11,26%. Thus, based on the world council decree, the high life expectancy shows the success of government in managing health problems in elderly. The increase of humans life expectancy in Indonesia shows the good citizens' health (Depkes RI, 2008).

According to Azizah (2011), in common, the changes experienced by elderly can be divided into 3 namely physical, psychological, and cognitive changes. The result



of cognitive disorder in elderly can cause many problems in elderly such as dementia. Dementia is a progressive cognitive disorder in cognitive functions without consciousness disorder caused by organic brain damage which is followed by behavior and personality degradation manifested in cognitive functions disorders such as memory, orientation, mood, and conceptual thinking (Julianti & Budiono 2009).

The number of dementia is very high in the world according to Azizah (2011) and the number of dementia incidence in the world is approximately \pm 30 millions citizens with various causal factors. Meanwhile, in Indonesia, the prevalence of dementia in 65 years of elderly is 5% of elderly population. The prevalence increases into 20% in elderly aged 85 years old and above (Amirullah, 2011 in Guslinda, Yolanda, Hamdayan, 2013). Dementia affects the family who treats them and causes stressful condition which creates family burden.

In the next level, dementia causes risky behavior changes emergence and thus, family needs to understand well the changes experienced by elderly with dementia (Nurgianti, 2012, 4, <http://www.rsi.co.id/> accessed on December 7th, 2015). To his family and friends, a dementia patient says that he is not the same person again. As a result, he loses awareness towards his surroundings (Febrina, 2010, <http://www1-media.acehprov.go.id> accessed on December 7th, 2015).

The policy by Health Department (Depkes) (2013) mentions activities in empowering elderly including promotional, preventive, curative, and rehabilitative efforts. Awareness of elderly well being is also named in Constitution No 13/ 1998 on elderly well being. Many policies and programs run by the government are for example mentioned in Government Policy Number 43 year of 2004 on The Implementation of Elderly Wellbeing Effort (Depkes RI, 2012). Based on Constitution No 36/2009 about health, the effort of preserving health for elderly must be aimed at keeping them alive healthily and productively both in social and economical aspects. Promotional and preventive efforts are the important factors to decrease the number of illness number on elderly. Exercise is one of promotional effort in elderly. Exercise in elderly starts with mild intensity and short time which is slowly increased as well as avoiding competitive goals. Exercise for elderly has a great advantage because it improves their aerobic ability which increases blood flow and supply carrying oxygen to their body organs especially brain.

According to the data from Finland, Italy, and Netherlands, there is a correlation between physical activities and cognitive degradation (Anonymous, 2014, Brain Gymnastic Vitalization Improves Cognitive Functions in Elderly Group Compared to Elderly Gymnastic at Social Protection Centre of Banten Province). Brain gymnastic vitalization is one of the sports created based on kinesthetical aspect which is inspired by various dances in Indonesia involving different processes such as imagination, hearing, sensory, and emotional (brain function) in one movement.

Brain gymnastic vitalization keeps various brain functions so that the brain could work based on the functions and needs by giving oxygen and blood supply optimally especially to the brain. Another effect of brain vitalization is well sleep and fresh brain in which elderly could preserve their memory and they could remember time and many more activities especially if they practice everyday which will automatically force them to remember the movements and thus, their brain works regularly every time (Markam, 2006). According to the result of interview in one of nursing homes with 3 health officers and 7 elderly among 88 in total with dementia living together in the nursing home, there were some elderly with dementia but even if it was only few of

them, it is feared that the number of elderly with dementia increases. It considers some risks such as when an elderly walks out the house to buy something such as cigarette, they will not be able to come back to the house. This is because of the cognitive function damage in elderly in which they experience memory disorder where they feel difficult to remember.

RESEARCH METHODS

The design of the study was quasi experiment and the design employed Pretest-Posttest with control Group Design that was a study in 2 randomly chosen groups by measuring the condition of object of the study before and after brain gymnastic vitalization. Brain vitalization consists of 5 steps divided into 3 parts; injit melambai (tiptoeing while spreading arms), kepak kupu-kupu (spreading arms up and down like a butterfly) and rangkai bunga melati (closing). Part 1 consisted of walking slowly, standing up firm, putting arms on left and right side, putting arms on waist, walking firmly and victory gesture/combination. Part 2 consisted of swing, joy, and greeting. Part 3 consisted of looking at the sky, looking at partners, dancing, reaching out hopes, walking on steps and hero swing. In the end, it is cooling down which consists of whistling, smiling beautifully, lifting and lowering eyebrows, opening and closing eyes, eyes contact, closing both hands in front the chest and saying “We love you all of you”.

The tools for vitalization therapy were musical instrument, DVD, VCD, suit, room, LCD, and laptop. Brain gymnastic vitalization was implemented in 10–15 minutes every morning or afternoon at the nursing home. Elderly were given 12 times of therapy consisting of 3 times practice in a week which was implemented in 4 weeks so there are 12 times of meeting. In implementing brain vitalization, the therapy was assisted by the researcher and assistant of researcher as well as nursing home’s officers. In the study, the samples were 13 respondents control group and 13 respondents of experiment group. The intervention was done from March 12th until April 16th 2016.

RESULTS AND DISCUSSION

Table 1. Characteristic of respondents based on sex, age, and education elderly with dementia in Budi Luhur Nursing Home of Kasongan Bantul Yogyakarta in 2016

Characteristics of respondents	Experiment group		Control group		Jumlah	
	F	%	F	%	F	%
Sex						
Male	2	15,38	8	53,85	10	38,47
Female	11	84,62	5	38,47	16	61,53
Total Amount	13	100	13	100	26	100
Age						
60-69 years old	5	38,47	7	53,85	12	46,15
70-79 years old	6	46,15	2	15,38	8	30,76
>80 years old	2	15,38	4	30,77	6	23,09
Total Amount	13	100	13	100	26	100
Educational Level						
Non-educated	2	15,38	0	0	2	7,69
SD (Elementary) / similar level	6	46,15	9	69,24	15	57,69
SMP (Junior High School) /similar level	2	15,38	1	7,69	3	11,53
SMA (Senior high School)/similar level	3	23,08	2	15,38	5	19,25
PT (Higher Education)	0	0	1	7,69	1	3,84
Total Amount	13	100	13	100	26	100

Religion						
Muslim	9	69,23	10	76,93	19	73,07
Non Muslim	4	30,77	3	23,07	7	26,93
Total Amount	13	100	13	100	26	100
Degenerative Disease						
Possess	4	30,77	8	61,53	12	46,15
Do not possess	9	69,23	5	38,47	14	53,85
Total Amount	13	100	13	100	26	100

Sources : Primary Data (processed)

According to table 1, it can be seen that the highest percentage of respondents' characteristics based on sex in experiment group were female namely 11 people (84,62%) and the highest percentage in control group were male namely 8 people (53,85%). Meanwhile, the highest percentage of respondents' characteristics based on age in experiment group were respondents aged 70–79 years old namely 6 people (46,15%) and the highest percentage in control group were 60 – 69 years old namely 8 people (53,85%). In educational background, the highest percentage of characteristics in experiment group were Elementary/similar level namely 6 people (46,15%) and the highest percentage in control group were Elementary/similar level namely 9 people (69,24%). In the basis of religion, the experiment group showed that the highest percentage were Moslem namely 9 people (69,23%) and the highest percentage in control group were Moslem namely 10 people (76,93%). In the basis of degenerative disease, the highest characteristic of respondents in the group of respondents without degenerative disease namely 9 people (69,23%), while in control group the highest percentage were respondents with degenerative disease namely 8 people (61,53%).

Table 2. The examination result of dementia incidence before intervention (pretest) elderly in Budhi Luhur Nursing Home of Yogyakarta in 2016

Category of dementia incidence	Experiment group		Control group	
	F	%	F	%
Severe	0	0	0	0
Moderate	8	61,53	6	46,15
Mild	2	15,4	3	23,07
Normal	3	23,07	4	30,78
Total	13	100	13	100

Source : Primary Data (processed)

Based on table 2, it can be seen that the criteria of dementia before brain vitalization therapy (pretest) showed that the highest percentage of respondents in experiment group were respondents with moderate dementia criteria namely 8 people (61,53%) and the highest percentage of dementia criteria were moderate dementia namely 6 people (46,15%)

Table 3. The examination result of dementia incidence after intervention (posttest) for 1 week in Budhi Luhur Nursing Home of Yogyakarta in 2016

Category of dementia incidence	Experiment group		Control group	
	F	%	F	%
Severe	1	7,7	1	7,7
Moderate	6	46,16	5	38,46
Mild	3	23,07	4	30,77
Normal	3	23,07	3	23,07
Total	13	100	13	100

According to table 3, it can be seen that dementia criteria, after being given brain vitalization therapy (Posttest) for 1 week, showed that the highest percentage of respondents in experiment group were moderate dementia criteria namely 6 people (46,16%) and the highest percentage of dementia criteria in control group were moderate dementia namely 5 people (38,46%).

Table 4. The examination result of dementia incidence after intervention (posttest) for 2 weeks in Budhi Luhur Nursing Home of Yogyakarta in 2016

Category of dementia incidence	Experiment group		Control group	
	F	%	F	%
Severe	0	0	1	7,7
Moderate	6	46,16	5	38,46
Mild	4	30,77	4	30,77
Normal	3	23,07	3	23,07
Total	13	100	13	100

Source : Primary data (processed)

Based on table 4, it can be seen that the dementia criteria, after being given brain vitalization therapy (Posttest) for 2 weeks, showed that the highest percentage of respondents in experiment group were moderate dementia criteria namely 6 people (46,16%) and the highest percentage in control group were moderate dementia namely 5 people (38,46%).

Table 5. The examination result of dementia incidence after intervention (posttest) for 1 month / 4 weeks in Budhi Luhur Nursing Home of Yogyakarta in 2016

Category of dementia incidence	Experiment group		Control group	
	F	%	F	%
Severe	0	0	0	0
Moderate	4	30,77	7	53,85
Mild	4	30,77	2	15,38
Normal	5	38,46	4	30,77
Total	13	100	13	100

Source : Primary (processed)

Based on table 5, it can be seen that dementia criteria, after being given brain vitalization therapy (Posttest) in 2 weeks, in experiment group showed that the highest percentage respondent were respondents with normal dementia criteria namely 5 people (38,46%) and the highest percentage of dementia criteria in control group were moderate dementia namely 7 people (53,85%).

Table 6. The statistical test result of wilcoxon match pairs test in intervention group and control group

	Post -1 week	Post -2 weeks	Post -4 weeks -
	- Pre	- Pre	- Pre
A. Intervention Group			
Z	-.656 ^b	-.498 ^c	-2.988 ^c
Asymp. Sig. (2-tailed)	.512	.619	.003
B. Control Group			
Z	-.887 ^b	-.718 ^c	-1.289 ^c
Asymp. Sig. (2-tailed)	.375	.473	.197

Sources : Primary (processed)

The result of Wilcoxon Match Pairs Test in intervention group used significance value. The result showed the value was less than 0,05 namely 0,000 ($<0,05$) meaning that there was a difference of dementia incidence before and after the therapy in experiment group.

Meanwhile, the significance value in control group was 0,197 which was more than 0,05 meaning that there was no difference before and after intervention in control group. Based on the analysis test, it can be seen that there was a significant difference between experiment group/intervention group and the group without intervention using brain vitalization gymnastic towards dementia incidence.

In conclusion, there was significant difference of dementia risk and dementia incidence in experiment group before and after intervention. The analysis test showed that there was a significant difference between the group with intervention and the group without intervention. There was a difference number of elderly having risks and dementia incidence between control group and intervention group after treatment.

Physical exercise can help elderly to balance body movement. It is proven by the theory from Priantono (2007) stating that measured and regular exercises or physical therapy can help elderly in doing daily activities as well as prevent physical disorders in elderly. The result of the study shows that there is an effect of brain vitalization therapy activity on the risk and dementia incidence which is also in line with Darmojo's argument (2006) mentioning that exercise or physical therapy implemented gradually and regularly will decrease the risk or incidence of dementia. Moreover, the theory from Markam (2006) states that the effect of brain vitalization therapy on dementia incidence are improving the strength of legs and hands, repairing balance, coordination, improving oxygen stimulation to the brain as well as brain activation to achieve brain fitness, improving balance and brain function endurance.

The result of the study mentioned that there is an effect of brain vitalization therapy on the risk and dementia incidence which is line with the result of the study is done by Tiara (2014) which investigated the effect of brain vitalization therapy on memory in elderly with dementia. The research was done in elderly aged 60 -> 87 years old showing that good and structured physical activity improved more brain function performance and was on the line of daily functioning. In more specific, physical activity affected some factors such as strength, balance, and coordination which became the key factors in preserving health.

The result of the study is the decrease of risk or dementia incidence in elderly and there is an effect of brain vitalization gymnastic therapy on dementia incidence after 4 weeks or 12 meetings of brain vitalization therapy. The risk decrease or dementia incidence in elderly can be proven by measuring using questionnaire of mini mental state examination which obtains p of 0,587 (before therapy) which is declining into 0,329 (after therapy). This means that there is an effect of brain vitalization therapy on dementia incidence and thus, cognitive function of elderly can be increased or dementia incidence can be decreased using brain vitalization therapy.

Other result of a research showing that physical therapy affects the risk or dementia incidence in elderly is the research by Blongkod (2015). In the research, an experiment was done by using physical exercise of brain vitalization gymnastic to elderly with cognitive problems. Cognitive disorder in elderly in the research was measured using mini mental state examination (MMSE). The result of the research used Wilcoxon signed rank test analysis and gained the result of Z value of -2,972 with the significance value (p=value) of 0,003 and thus, the probability 0,003 is smaller than

0,005 ($\alpha < 0,05$). This means that H_0 is refused and H_1 is accepted. This concludes that there is an effect of brain vitalization gymnastic on cognitive improvement in elderly at Werdha Ilomata Nursing Home of Gorontalo City. The researcher concludes that the result of the research before intervention shows that 8 (80%) elderly experience moderate cognitive disorder and 2 elderly (20%) experience severe cognitive disorder and after the intervention, the number turns into 10 elderly (100%) become normal.

CONCLUSION

There is an influence of brain gymnastic vitalization therapy on dementia incidence in elderly after being given therapy for 4 weeks or 1 month in the experiment group at Budi Luhur Unit of Nursing Home of Kasongan Bantul. There is no influence of brain gymnastic vitalization therapy on dementia dementia in elderly after therapy for 4 weeks or 1 month in control group at Unit Budi Luhur Nursing Home of Kasongan Bantul.

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