THE EFFECT OF MATCHING CARD AND CROSSWORD PUZZLE THERAPY ON COGNITIVE FUNCTION IN THE ELDERLY

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Objectives: to examine the effect of matching card and cross-puzzle therapy to cognitive function in the elderly. **Methods:** Quasy Experiment pre-post Control Group design was used in this research. The total sample was 30, divided into 15 for the treatment group and 15 for the control group. The sampling method used was total sampling based on the inclusion criteria. Matching card therapy and cross-puzzle therapy were done by the respondent for 1 week. The Mini-Mental State Examination (MMSE) was used to measure the respondent's cognitive function. Data were analyzed using Wilcoxon signed rank test and Mann whitney U test with significance level 0.05. **Results:** Wilcoxon test results for the treatment group showed p=0.157, in the control group revealed p=1,000, while the Mann whitney test revealed p=0.173. It means there is no difference between the control group and the treatment group significantly. **Conclusions:** matching cards and cross-puzzle therapy are no significant impact on cognitive changes. Suggestions for the caretaker of the orphanage can look for alternative interventions or other activities that can help improve the ability of cognitive function of the elderly. The matching card and cross puzzle therapy can do for provide entertainment for the elderly and communicate with other elderly in the orphanage.

Keywords: Card therapy, cross puzzle therapy, elder

Introduction

The aging process is a natural process marked by a decrease or change in physical, psychological, and social conditions when the elderly interact with other people. The aging human population is currently a worldwide phenomenon. According to the population division of the United Nations in 2015, there were more than 900 million people aged 60 years and over (Nair, 2015). While in 2017 there were 962 million people aged 60 years and over in the world. The development of an aging human population is visible in European countries. The development of the human population into old age has gone hand in hand with socio-economic developments over the past 50 years, accompanied by a decline in fertility and an increase in life that is as dramatic as life expectancy (Pilotto & Martin, 2018).

The age of a person who enters 65 years and over will experience many changes, especially if there are additional diseases (Lindquist & Dresden, 2020). Aging age

experienced by a person can not be avoided. In the aging process, there is a progressive decline or loss of physiological functions at the molecular, cellular, and organismal levels (Nagaratnam, 2020). The number of elderly people in the world is increasing over time. Along with the increase in the number of elderly people, it is necessary to pay attention to the elderly, especially at-risk groups (Erwanto & Amigo, 2017). Indonesia is a country with a human population entering the elderly age that has exceeded 7% of the total population. The social function of the elderly is largely determined by their functional, instrumental, executive, and social relations abilities. While degeneratively these functions continue to decline with age (Syamsuddin, 2018). Elderly people who experience decreased cognitive function such as dementia will have an impact on daily activities and will experience dependence on others (Komsin, 2020).

The onset of the non-pharmacological therapies that can be done to slow the onset of dementia is puzzle therapy (Rakhmawati, 2019). Elderly physiologically there is a decline in cognitive function (memory) that is irreversible. Such conditions are caused by the aging process and degenerative changes that take place progressively. Promotion of memory treatment (memory stimulation) can be used in adolescents and adults and especially in the elderly which can help improve cognitive function. The solution to overcome problems that occur related to memory in the elderly is to improve cognitive function through puzzle therapy. Puzzle therapy is one of the non-pharmacological therapies to inhibit cognitive function decline (Isnaini, 2020).

Dementia is a cognitive function disorder that often occurs in the elderly, as a sign of the aging process due to metabolic decline in the brain. Non-pharmacological therapy can be done through art therapy, coloring therapy which is believed to be able to improve the cognitive function of the elderly with dementia (Ayu TP, Dwi, & Wilis, 2019). In addition to this therapy, the domino game is also a relaxing activity that is familiar and easy to play for all ages, including the elderly. When playing dominoes, the elderly will feel relaxed and relax the mind to stimulate brain cells which can ultimately maintain cognitive function, one of which is the ability to count (Taplo, 2019). The results of research related to game therapy show that there is a significant effect of board games on cognitive function (Marcello, 2019). In addition, playing card games with the mosquito slap method also have a positive effect for the elderly on improving cognitive function (Yuniarsih, 2011).

The results of another study conducted on the elderly population who experienced

dementia after being given gymnastics activities and puzzle games showed a decrease in the degree of dementia, but a more significant intervention showed that elderly exercise is more effective than puzzle therapy (Hatmanti & Ana, 2019). Gymnastics activities in the elderly can provide a comfortable effect so that it affects thinking activities in the elderly (Hardika & Pranata, 2019). Other research also shows that by assisting in coloring pictures there is a change in cognitive function for the better by using the MMSE instrument (Pranata, Indaryati, & Fari, 2020). Cognitive function in the elderly can be trained so that memory loss does not occur. Such conditions can be trained by providing therapy or intervention exercises as in the previous studies above. Based on the description above, it is necessary to conduct further research to see the effect of matching card therapy and cross puzzle therapy on the cognitive function of the elderly.

Research Methods

Design

This research is quantitative. A quasi-experimental pre-post-control group design was used in this study. This design is used to analyze the effect through differences that appear before and after being given treatment in the intervention and control groups.

Respondent

The respondents in this study were the elderly who were in the Harapan Social Institution, South Sumatera. Sampling technique using non-probability sampling with total sampling technique used. The inclusion criteria in the study were the elderly who were more than or equal to 60 years old, had healthy and good eyesight, were able to communicate well, were not bed rested, and were willing to be respondents. Evidence of the respondent's willingness is stated by the respondent signing the consent form to be involved in the research. The number of samples in this study was 30 elderly, which were divided into 15 intervention groups and 15 control groups.

Location and Time of Research

This research was conducted at the Harapan Kita Social Institution, located in South Sumatera. The research was conducted on 22 – 27 February 2021.

Data Collection

The data collection method used is a questionnaire consisting of a questionnaire sheet of respondents' demographic data containing age and gender as well ad the MMSE questionnaire. MMSE questionnaire is used to see the level of cognitive function of the respondents. The questionnaire used was distributed to the intervention and control groups. The MMSE questionnaire was distributed twice before being given treatment and after treatment. The intervention group received treatment in the form of matching card therapy and cross puzzle therapy, while the control group did not receive any treatment. The implementation of matching card therapy and cross puzzle therapy for the intervention group was carried out for 1 week. Matching card therapy is done by preparing playing cards with the same picture and color, then the respondent is asked to remember the location and the same color in the picture, the researcher closes or flips the picture and asks the respondent to guess the same picture. This activity is carried out 5 times with a duration of 10 – 15 minutes. While cross puzzle therapy is done by preparing puzzles with pictures of animals and plants, respondents are asked to remember the original pictures first, then the researchers sort and break up the original pictures first, then the respondents put the pictures together into one whole. This activity is carried out 5 times with a duration of 10 – 15 minutes.

Data Analysis

Data analysis was assisted by using the SPSS software program. The data analysis technique used is descriptive statistics and non-parametric statistics using the Wilcoxon test.

Results and Discussions

Results of Respondent Characteristics

Table 1.1 Respondent Characteristics

Characteristics	Intervention Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
Age:				
60 – 70 year	8	53.3%	7	46.6%
71 – 80 year	5	33.3%	7	46.6%
>80 year	2	13.4%	1	6.8%
Gender:				
Male	2	13.3%	3	20%
Female	13	86.7%	12	80%

Table 1.1 above shows that the majority of respondents are in the age range of 60 – 70 years both in the intervention group (53.3%) and the control group (46.6%). While for gender the majority of respondents were women in both the intervention group (86.7%) and the control group (80%).

MMSE Characteristic Distribution

Table 1.2 MMSE Characteristic Distribution

Characteristics	Pre-Intervention		Post-Intervention	
	Frequency	Percentage	Frequency	Percentage
Mild cognitive level	8	26.7%	10	33.3%
Moderate cognitive level	17	56.7%	15	50%
Heavy cognitive level	5	16.7%	5	16.7%

Table 1.2 above shows that before the intervention the cognitive function level of the elderly was at the moderate level (56.7%), while after the intervention the cognitive function level of the elderly was at the moderate level (50%).

Bivariate Analysis Results

Mann-Whitney U Test

Table 1.3 Mann-Whitney U Test Results

Group	n	Mean Rank	Sum of ranks
Control	15	16.70	250.50
Intervention	15	14.30	214.50
Total	30		
Control	15	17.50	262.50
Intervention	15	13.50	202.50
Total	30		

Test Statistics

	Pretest	Postes
Mann-Whitney U	94.500	82.500
Wilcoxon W	214.500	202.500
Z	-.837	-1.362
Asymp. Sig. (2-tailed)	.402	.173

Exact Sig. [2*(1-tailed Sig.)]	.461[b]	.217[b]

Table 1.3 above shows that the results of the comparison test using the Mann-Whitney U test at the time of the pre-test there was no significant difference between the intervention and control groups (p=0.402), this indicates a good condition. Before being given the intervention both groups must have the same condition (homogeneous). Comparison of post-test results between the intervention and control groups also showed no significant difference (p=0.173).

Wilcoxon Test Results

Table 1.4 Wilcoxon Test Results

	N	Mean Rank	Sum of Ranks
Negative Ranks	2[a]	1.50	3.00
Positive Ranks	0[b]	.00	.00
Ties	13[c]		
Total	15		

Table 1.4 above shows the results of the pre-test and post-test 2 respondents experienced an improvement in the level of cognitive function, while the other 13 respondents were at the same level.

Test Results of Different Intervention Groups

Table 1.5 Test Results of Different Intervention Groups

Test Statistics

	Post_kat	Pre_kat
Z		-1.414[b]
Asymp.Sig. (2-tailed)		.157

Table 1.5 above shows no significant difference in the intervention group (p=0.157).

Ranks

	N	Mean Rank	Sum of Ranks
Negative Ranks	0[a]	.00	.00
Positive Ranks	0[b]	.00	.00
Ties	15[c]		
Total	15		

The table above shows that all respondents in the control group did not experience changes in cognitive function.

Test Results of Different Control Groups

Table 1.6 Test Results of Different Control Groups

Z	.000[b]
Asymp. Sig. (2-tailed)	1.000

Table 1.6 above shows that there is no significant difference in the control group (p=1,000).

Discussion

The results showed no difference between the control group and intervention groups. This study is not in line with Marcello's research (2019) which states that there is a significant effect of board games (puzzles) on cognitive function. Another study conducted by Yuniarsih (2011) also showed that playing cards with the mosquito slap method gave a positive effect on the elderly to improve cognition.

The results of the researcher's analysis showed that the activities during the intervention were also strongly influenced by several factors such as the environment, age and gender, and the activity of the elderly. Theoretically, it should have an impact on changes in cognitive function, so this makes the results of research require intense activities even more than one week.

This study still has limitations, namely, the data collection process was carried out during the COVID-19 pandemic so that it was carried out in a position to maintain distance and reduce contact with the elderly so that activities were less than optimal.

Conclusion

The study showed that there was no significant difference between before and after being given treatment in both the intervention and control groups. The results of this study can be input for nursing home managers to continue to provide activities in the form of exercise activities such as matching card therapy and cross puzzle

therapy as a form of entertainment for the elderly. In addition to exercise activities that need to be improved interactive communication with the elderly.

This study still has limitations, namely, the data collection process was carried out during the COVID-19 pandemic so that it was carried out in a position to maintain distance and reduce contact with the elderly so that activities were less than optimal.

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