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The Effect of Puzzle Therapy on Improving Cognitive Function of the Elderly in Mongolato Village, Telaga District

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ABSTRACT

One of the most significant declines in old age is the decline in cognitive abilities which include memory, attention, language and problem-solving. One of the non-pharmacological approaches used to improve the cognitive function of the elderly is puzzle therapy. This study aims to determine the effect of puzzle therapy on the improvement of cognitive function of the elderly. The research design used quantitative methods with the Quasi-Experimental method (Two-group Pretest-Posttest Control group design), the number of population, namely all elderly people who experienced dementia as many as 52 respondents while the number of samples was 34 elderly divided into 17 elderly people in the intervention group and 17 elderly in the control group, this study used the Wilcoxon test. The results of the study were the cognitive function of the elderly in the intervention group before being given the intervention, namely the weight category as many as 13 respondents, after the intervention was moderate, as many as 13 respondents while the cognitive function of the elderly in the control group before was the weight category as many as 14 respondents, after the weight category as many as 14 respondents, the results of the Wilcoxon test obtained a significant value of 0.000. In conclusion, there was an effect of puzzle therapy on improving the cognitive function of the elderly in Mongolato Village, Telaga District. Suggestions for officers in the village and their families to cooperate with the Puskesmas in providing therapy to the elderly to improve the cognitive function of the elderly.

INTRODUCTION

Aging is a natural process that will be experienced by every individual. A person is categorized as elderly (elderly) when they have reached the age of 60 years and above, as stated in Law of the Republic of Indonesia Number 13 of 1998 concerning Welfare of the Elderly. The elderly generally affect their quality of life as a whole. (Deesirene Rohani Simanullang *et al*., 2024)

The elderly are an age group that is susceptible to a decline in bodily functions, both physically and mentally. One of the most significant declines in old age is the decline in cognitive abilities that include memory, attention, language, and problem-solving. This condition can interfere with the independence of the elderly in carrying out daily activities. (Mujiadi & Rachmah, 2022)

The growth in the number of elderly people in the world has increased significantly. *The World Health Organization* (WHO, 2022) noted that in that year there were more than 1 billion people classified as elderly worldwide. This number is predicted to increase exponentially in the next two decades, as a result of increasing life expectancy and declining birth rates. (Adolph, 2021)

In Indonesia, a similar trend also occurs. Based on data from the Central Statistics Agency, the number of elderly people in Indonesia reaches 10.82% of the total population, or around 29.3 million people. This figure has increased compared to previous years and is predicted to continue to increase along with the increasing life expectancy of the Indonesian people. (BPS, 2022)

Locally, data from the Gorontalo Provincial Health Office (2022) shows that the number of elderly people in the region reaches more than 100 thousand people, with the highest concentration in rural areas such as Mongolato Village. This condition is a challenge for health service providers in maintaining the quality of life of the elderly amid limited resources.

The condition of changes in the elderly generally experiences a setback, especially in cognitive function, The decline occurs with increasing age which reaches more than 60 years where this period is included in the stage

of late adulthood or called old age. One of the setbacks that occurs in the elderly is the decline in cognitive function ability in the form of a decrease in memory or memory (Firdaus 2020) in (Susanti *et al*., 2024)

Some of the cognitive disorders that often occur in the elderly include dementia, delirium, mild cognitive impairment (MCI), amnesia, and aphasia. These disorders can affect memory, concentration, language skills, and overall thinking processes. This condition certainly has an impact on the decline in the quality of life of the elderly and their ability to carry out daily activities. (Ainiyah Bintari Sholehah *et al*., 2022)

In Indonesia, it is estimated that there are more than 1.2 million people with dementia, and this number is projected to continue to increase as the elderly population increases. Lack of early detection and lack of non-pharmacological interventions are factors that worsen the quality of life of people with dementia in the country. (Nursing Study *et al.,* 2022)

Factors that can affect the occurrence of dementia in the elderly include a history of chronic diseases such as hypertension and diabetes, a sedentary lifestyle, lack of cognitive stimulation, and social isolation (Rahayu & Fitriana, 2020). Therefore, an intervention approach is needed that is not only medical, but also involves cognitive, social, and emotional aspects.

One of the non-pharmacological approaches that is starting to be widely used to maintain and improve the cognitive function of the elderly is *puzzle* therapy. This therapy involves play activities that require concentration, logic, and problem-solving, which can stimulate brain activity and slow cognitive decline (Susanti *et al*., 2021).

Puzzle therapy is considered effective in improving memory, attention, and thinking skills in the elderly. Research by Pratiwi *et al*. (2022) showed that the elderly who routinely followed *puzzle* therapy experienced an increase *in Mini Mental State Examination* (MMSE) scores, which indicated significant improvement in cognitive function compared to the control group.

In addition, *puzzle therapy* also has the advantage of being fun, accessible, and can be done in groups, thus at the same time supporting the social aspects of the elderly. This activity is able to create a positive environment and stimulate interaction between individuals, which is important in preventing social isolation in the elderly (Hapsari & Kurniawan, 2023).

In Mongolato Village, there is a tendency to increase cases of the elderly with symptoms of cognitive decline, but there have not been many community-based interventions implemented to deal with it. This condition is an important background in examining the effectiveness of *puzzle therapy* as a preventive and promotive effort in improving the cognitive function of the elderly in the region.

This research seeks to answer the need for easy, cheap, and applicable interventions in rural communities. Puzzle therapy is expected to be a potential alternative in improving the quality of life of the elderly, especially in terms of cognitive function, which greatly affects their independence in daily activities.

Thus, this research is important to be carried out as a basis to provide scientific evidence regarding the effectiveness of *puzzle therapy* in improving the cognitive function of the elderly. The results of this study are expected to be recommendations for village governments, health workers, and families in more holistic and meaningful care for the elderly.

RESEARCH METHODOLOGY

This study is a type of quantitative research using a quasi-experimental method with two groups (*Two-group Pretest-Posttest Control group design*) to compare changes in cognitive function between the intervention group (*puzzle* therapy) and the control group. This two-group approach allows control of the instrument, as well as minimizing internal bias with pre- and post-intervention measurements in the two groups (Patola & Tridiyawati, 2022). This design is consistent with experimental research practices in the elderly. The control group did not receive *a puzzle* intervention during the study period, while the intervention group received therapy systematically.

This research will be carried out in Mongolato Village, Telaga District. This research was carried out in August, the sample used in the researcher was 34 samples, 17 respondents for the experimental group and 17 respondents for the control group. Then, the researcher selected respondents with a decline in cognitive function to be used as a research sample by paying attention to the inclusion and exclusion criteria that had been determined previously.

Data Analysis Techniques

Data analysis is the process of processing data from research results that have been collected to answer the formulation of the problem and test the hypothesis that has been determined. In this study, data analysis was carried out using the help of *the latest version of the SPSS (*Statistic Package For The Social Sciences) program.

RESEARCH RESULTS

Respondent Characteristics

Table 1 Frequency distribution of respondent characteristics

Yes	Characteristics	Intervention Groups		Control Group	
		N	%	N	%
1.	**Age**				
	60-70 Years	8	47.1	9	52.9
	71-80 Years	9	52.9	8	47.1
2.	**Gender**				
	Male	5	29.4	8	47.1
	Women	12	70.6	9	52.9
3.	**Education**				
	SD	8	47.1	13	76.5
	Junior High School	7	41.2	4	23.5
	High School	2	11.8	0	0
	Total	**17**	**100**	**17**	**100**

Source: Primary data 2025

Based on the table above, it shows that the characteristics of the elderly in the intervention group were based on the highest, namely 9 (52.9%) respondents aged 71-80 years. The highest respondent gender was 12 female respondents (70.6%). Meanwhile, the highest respondent educational characteristics were 8 elementary school education respondents (47.1%). The characteristics of the elderly in the control group were based on the highest age, namely 60-70 years old as many as 9 people (52.9%). The highest respondent gender was 9 women (52.9%). Meanwhile, the highest respondent education was 13 people (76.5%).

Cognitive function of the elderly before and after in the intervention group in Mongolato Village

Table 2 Improvement in cognitive function of the elderly before and after the intervention

ervention groups	**provement of cognitive function of the elderly**							
	htweight		**dium**		**ight**		**al**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
test	0	0	4	23.5	13	76.5		
ttest	4	23.5	13	76.5	0	0		

Source: Primary data 2025

Based on the table above, it shows that the cognitive function of the elderly before being given *the highest puzzle* therapy intervention was 13 people (76.5%). Meanwhile, the cognitive function of the elderly after being given *the highest puzzle* therapy intervention was moderate as many as 13 people (76.5%).

Cognitive function of the elderly before and after in a control group in Mongolato Village

Table 3 Improvement in cognitive function of the elderly before and after control

ıtrol group	**provement of cognitive function of the elderly**							
	htweight		**dium**		**ight**		**al**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
test	0	0	3	17.6	14	82.4		
ttest	0	0	3	17.6	14	82.4		

Source: Primary data 2025

Based on the table above, it shows that the cognitive function of the elderly in the control group before the highest was the weight category of 14 people (82.4%). Meanwhile, the cognitive function of the elderly after the highest was the weight category of 14 people (82.4%).

Cognitive function of the elderly before and after in the intervention and control group in Mongolato Village

Table 4. Improvement of cognitive function of the elderly before and after in the intervention and control groups

Cognitive function of the elderly	N	Red	*Mean difference of*	SD	Sig. (2-tailed)
Intervention Groups					
Pretest	17	15.82	5,89	2.675	0.000
Posttest	17	21.71		1.829	
Control Group					
Pretest	17	16.12	0,0	1.728	1.000
Posttest	17	16.12		1.728	

Source: Primary data 2025

Based on the results of the statistical test, N is the number of samples used, namely 17 elderly people, the mean value or average value before 15.82 and after 21.71 with a *mean value of difference* or the average difference between before and after the puzzle *therapy* intervention is 5.89 while the SD (*Standard Deviation*) value before 2.675 and after 1.829 which shows that there is a change between before and after the intervention with a significant value or *Pvalue* obtained at 0.000<0.05 which indicates that there is an effect of *puzzle therapy* on improving cognitive function in the elderly in Mongolato Village, Telaga District.

In the control group, the mean value or average value before 16.12 and after 16.12 with the *mean value of difference* or the average difference between before and after was 0.0 or no change while the SD (*Standard Deviation*) value before 1.728 and after 1.728 which showed no change between before and after with a significant value or *Pvalue* obtained 1,000<0.05 which indicates that there was no effect before and after on the improvement of cognitive function in the elderly in Mongolato Village, Telaga District.

DISCUSSION

Cognitive function of the elderly before and after in the intervention group in Mongolato Village

The results showed that the cognitive function of the elderly before being given the highest *puzzle* therapy intervention was 13 people in the heavy category and 4 people experienced the medium category. Meanwhile, the cognitive function of the elderly after being given *the highest puzzle* therapy intervention was 13 people and 4 people in the light category.

Cognitive function in the severe category describes the condition of the elderly who experience a decline in thinking skills. They may have difficulty remembering information. They may also have difficulty concentrating. The elderly in this category often need structured interventions. Puzzle therapy was chosen as one of the cognitive stimulation methods. *Puzzles* are known to be able to train simple to complex thinking skills. This activity can stimulate the brain through the process of shape recognition and matching.

After the intervention was given, there was a change in the category of cognitive function of the elderly. The category that had the most after therapy was the medium category. The number of elderly people in the moderate category after the intervention was 13 people, where before the intervention the elderly were in the severe category. This shows a marked improvement in cognitive function. This change illustrates the effectiveness of *puzzle therapy*. The elderly who were previously in the severe category experienced improvement. They were able to show an improvement in cognitive ability. These results show the positive impact of the therapy carried out.

The medium category shows that the elderly experience a decline in cognitive function that is not too severe. They still have quite good thinking skills. The elderly in this category are able to carry out simple activities. Puzzle interventions help improve their concentration. In addition, *puzzles* can also train short-term memory. The pattern formation process also trains visual-spatial skills. This ability is important for maintaining brain function.

While as many as 4 elderly people experienced changes from before being in the moderate category and after the provision of how many interventions in the mild category, this change in category shows that cognitive stimulation is needed by the elderly. Puzzle therapy is a form of stimulation that is easy to do. This activity makes the elderly think more actively. When the elderly are involved in these activities, brain cells become more stimulated. The image matching process can improve problem-solving skills. This activity indirectly trains other cognitive skills. The elderly also become more focused during the therapy process. This intervention is able to increase the mental involvement of the elderly.

Puzzle therapy also helps to increase the activeness of the elderly. They become more involved in group activities. The social interactions that occur during therapy can improve mood. A better psychological state supports cognitive function. Older people also feel more valued for being involved in activities. Engaging activities make them more motivated. Such motivation affects participation during the intervention. Consistent participation helps to strengthen the results of therapy. Changes in cognitive function demonstrate such consistency (Martina, 2025).

The change from the heavy to medium category and from the medium category to the light category shows an improvement in structured cognitive function. This shows the effectiveness of the intervention method used. *Puzzles* can be the right alternative to non-pharmacological therapy. The elderly are more likely to receive therapy that does not cause fear. Puzzle activities *are considered simple but quite challenging. These challenges make the elderly think more actively. This activity is able to train several aspects of the brain simultaneously* (Sijabat, 2023).

The research conducted by Herisaon (2023) entitled Puzzle Therapy with Cognitive Abilities in the Elderly at the Pucang Gading Semarang Social Service Home. From the results of the puzzle game, it was found that from the first day to day nine, there was an increase of 26%, with the score results from 23 to 30 for the first subject, then for the second subject, there was an increase in the MMSE assessment, which was initially 20 to 27, an increase from the first day to day nine of 23%. Both subjects experienced an increase from moderate cognitive impairment with a score (17-23) increasing to normal (24-30). From the results of the two subjects, after being given puzzle therapy, there was an increase in cognitive ability seen from the increase in the score of the mini mental state exam.

Based on the results of the above research, the researcher concluded that most of the elderly in Mongolato Village experienced a decline in cognitive function, both in the moderate and severe categories, so that they needed treatment or intervention that could help improve the cognitive function of the elderly.

Cognitive function of the elderly before and after in a control group in Mongolato Village

The results of the study showed that the cognitive function of the elderly in the control group before the highest, namely the heavy category of 14 people and 3 people experienced the medium category. Meanwhile, the cognitive function of the elderly after the highest, namely the heavy category of 14 people and 3 people experienced the medium category. There was no change between before and after in this control group because the respondents were not given intervention or were not trained in their cognitive function.

In the *pretest* control group. In the initial condition, most of them were in the category of severe cognitive impairment. This shows that most of the elderly experience a significant decline in cognitive ability. This condition can be caused by various factors such as age, physical health, and social environment. In addition to the severe category, the results of the study show that there are 3 elderly people who are in the medium category. This difference in number shows that most of the elderly are in a worse cognitive condition. The elderly in the medium category still have quite good cognitive abilities compared to the severe category. However, the small number shows that the majority of the population is in the level of significant impairment.

Meanwhile, in the *posttest* group, the results showed that the cognitive function of the elderly in the control group did not show significant changes. This finding showed that the number of elderly people in the weight category remained at 14 people. This condition showed that the cognitive function of the elderly in the control group did not tend to improve. The absence of visible changes showed a lack of influence of general interventions on this group. This data also showed that external factors that affected cognitive function did not change much. This study confirms that environmental conditions or daily habits are not enough to help improve cognitive condition significantly.

The number of elderly people in the medium category in the *posttest* remained at 3 people. The absence of this change indicates that the control group experienced stagnation in the development of cognitive function. The elderly in the moderate category still maintained their cognitive level without any improvement. This condition shows that natural factors do not have a strong enough influence in improving cognitive function. The elderly in the medium category may have a relatively stable lifestyle so that their function does not change.

The results of this study show that cognitive impairment in the elderly does not improve naturally without proper intervention. Elderly people with severe cognitive impairment need certain stimuli to stimulate their brain function. Without these stimuli, cognitive ability remains at the same point. This study shows that the age factor has a great influence on the decline in cognitive function. The elderly tend to experience a decrease in memory and thinking skills as they age. These results emphasize the importance of programs or therapies that can improve the cognitive condition of the elderly.

Similar pre- and post-treatment conditions in the control group suggest that no environmental factors provide support for changes in cognitive function. Older adults in this group are likely to engage in regular activities that do not provide additional cognitive stimulation. Daily activities such as resting, chatting, or doing light work do not sufficiently improve brain function. This suggests that cognitive stimulation should be provided in a structured manner. Older adults need strategies such as cognitive exercise or activity therapy to experience improvement.

One of the setbacks that occurs in the elderly is the decline in cognitive function ability in the form of decreased memory or memory. The brain as a complex organ, the center of body system regulation and the cognitive center is one of the organs of the body that is vulnerable to the aging process. The function of the body's organs will decline either due to natural factors or disease factors due to the effects of aging (Ausriant, 2024).

The research conducted by Damayanti (2023) entitled The Effect of Puzzle Playing Therapy on the Elderly with Dementia. This study found that the results of the pree test of respondents had memory skills with an average score of 13.17. The elderly are at risk of cognitive decline, mood and behavioral changes such as irritability, suspiciousness, withdrawal from social activities, not caring and repeatedly asking the same questions, which affects the patient's daily life activities.

Based on the results of the above study, researchers concluded that the decline in cognitive function of diseases that are common in the elderly, precisely people aged 65 years and above, both men and women, the decline in cognitive function is likely to occur even higher in the elderly who are over 85 years old.

Cognitive function of the elderly before and after in a puzzle therapy intervention group in Mongolato Village

The results of the statistical test N are the number of samples used, namely 17 elderly people, the mean value or average value before 15.82 and after 21.71 with a mean value of difference or the average difference between before and after being given puzzle therapy intervention which is 5.89 while the SD (Standard Deviation) value before 2.675 and after 1.829 which shows that there is a change between before and after the intervention with a significant value or Pvalue obtained at 0.000<0.05 which indicates that there is an effect of puzzle therapy on improving cognitive function in the elderly in Mongolato Village, Telaga District.

This result is in line with the results in the univariate analysis, namely the cognitive function of the elderly before being given the highest puzzle therapy intervention, namely the heavy category of 13 people and 4 people experiencing the medium category. Meanwhile, the cognitive function of the elderly after being given the highest puzzle therapy intervention was the medium category of 13 people and the light category of 4 people.

The average value of cognitive function before therapy was recorded at 15.82, this average value shows the initial cognitive ability of the elderly before treatment. After being given puzzle therapy, the average value of cognitive function increased to 21.71. This increase in average value reflects a positive response to the intervention. The difference in the average score before and after the intervention was 5.89. This difference in the value of this difference shows a significant change in the cognitive function of the elderly. Puzzle therapy seems to provide effective cognitive stimulation to improve the thinking ability of the elderly.

This study showed that the standard deviation value before the intervention was recorded at 2.675. The standard deviation value describes the distribution of the variation in cognitive function scores in the elderly before being given therapy. After the intervention was given, the standard deviation value decreased to 1.829. The decrease in the standard deviation value indicates that the cognitive abilities of the elderly after therapy became more uniform. This condition can mean that most elderly people experience a relatively consistent improvement. A small variation in scores indicates the stability of the intervention results. Puzzle therapy provides an effect that not only increases the average, but also improves the uniformity of grades.

The average increase of 5.89 points with a decrease in standard deviation from 2.675 to 1.829 shows two important things: first, on average, respondents experienced a noticeable improvement in cognitive ability after the intervention, and second, individual scores became more uniform (variability decreased), suggesting that the increase was not only experienced by a few individuals but was relatively evenly distributed among participants. A p-value well below 0.05 reinforces that this change is very unlikely to occur due to chance

According to Untung *et al* (2020), there are several factors that cause cognitive function in the elderly to decline, namely age, gender, genetics, disease history, physical activity, social interaction, physical changes, education level, nutritional status and occupation. Aging (elderly) is the final stage in human life. Humans who enter this stage are characterized by a decline in their physical and psychological state. Many of those who have entered this elderly phase experience one of them, namely a decrease in memory. The gender factor is that women tend to have a greater risk of cognitive impairment than men, this is due to a decrease in the hormone estrogen in menopausal women. Genetic factors increase the risk of disease development but do not guarantee the occurrence of the disease, namely apolipoprotein E4. Meanwhile, the determinant gene directly causes Alzheimer's dementia, consisting of three proteins, namely amyloid precursor protein (APP), presenilin-1 (PSEN-1) and presenilin2 (PSEN2). Meanwhile, a history of chronic diseases such as hypertension, diabetes mellitus, and stroke has a lower quality of cognitive function compared to the elderly who do not have a history of chronic disease.

Physical activity factors play a role in cognitive function. In relation to physical activity, there is an element of movement. Moving functions to prepare the brain to learn optimally. By moving, blood flow to the brain is higher so that the supply of nutrients is better. The brain needs nutrients, especially in the form of oxygen and glucose. The lack of oxygen supply to the brain can cause disorientation, confusion, fatigue, concentration disorders and memory problems. Social interaction factors will affect the quality of life of the elderly. Social interaction certainly does not only require social intelligence but also requires emotional maturity. In maintaining positive social communication, people need the capacity to work together. Cognitive abilities are closely related to social interaction in the elderly. The physical strength factor as they age, the elderly will experience an aging process where in this process the elderly will experience gradual physical, mental and social decline. The aging process in the elderly causes anatomical and biochemical changes in the central nervous system, namely brain weight will decrease by 10%. Educational factors where highly educated adults will have better cognitive function early in life and can maintain a higher cognitive level in the future. Nutritional status factors caused by metabolic disorders in the body and hormonal disorders in the body of the elderly. Reduction in daily nutrient levels can be related to a decrease in the quality of metabolism that occurs in the body. The central nervous system is a part of the organ that is sensitive to a reduction in nutrient intake which can result in impaired brain function, namely cognitive function. Work factors that think too much can affect cognitive function. Activity can improve a person's cognitive ability

more because by doing activities can improve a better quality of life (Untung *et al*, 2020).

Improved cognitive function can be explained through the concept of neuroplasticity which means the brain's ability to form new synaptic connections and strengthen neural pathways in response to repetitive cognitive stimulation. Puzzle-mediated activities (pattern recognition, problem-solving, visual selection, hand-eye coordination) directly train areas related to working memory and executive function (e.g., prefrontal cortex, hippocampus), thereby supporting improved cognitive scores. (Kolb & Gibb, 2014; Stern, 2012).

The results of this study are in line with research conducted by Sijabat (2023) entitled Playing Puzzles in Improving Cognitive Function in the Elderly. Playing puzzles is able to reduce the level of dementia in the elderly, so this therapy can be used as an alternative to increase the memory of the elderly, because this puzzle therapy sharpens the brains of the elderly to work and remember. Puzzle play therapy can be used for educational games because it can and practice eye and hand coordination, train reasoning, train patience, with puzzles can delay the development of dementia which will become more severe.

This research is supported by research conducted by Margiyati (2021) with the title The Effect of Wapuwan Puzzle Therapy on the Cognitive Function of the Elderly at Posyandu Setyamanunggal III. The results of the study show that the administration of wapuwan puzzle therapy has an effect on improving cognitive function in the elderly in Lempuyangan Hamlet. Cognitive exercises with puzzle therapy will stimulate the brain by providing adequate stimulation to maintain and improve the remaining cognitive function of the brain. which will work when taking, processing and interpreting the questions or information that has been absorbed, and the brain will work in retaining the messages or information obtained.

The research was conducted by Wahyuningsih (2024) with the title puzzle play therapy to improve the cognitive function of the elderly. The results of the analysis show that descriptively, puzzle play therapy can improve the cognitive function of the elderly. Cognitive practice of playing puzzles will stimulate the brain by providing adequate stimulation to maintain and improve good brain cognitive function, based on research, puzzles of any type can be used to slow down the onset of cognitive function decline in the elderly.

According to Rohani (2024), an effective non-pharmacological therapy is used for dementia, namely puzzle therapy. Puzzle therapy is a picture that is divided into pieces of pictures that aim to hone thinking, train patience and habituate the ability to share. The elderly or elderly are an advanced stage of the growth and development process that begins from birth and continues downward, which is said to be a person over 65 years old. In the elderly, there are many changes, including physical, psychological, and spiritual changes. In addition, puzzles can also be used for educational games because they can and practice eye and hand coordination, train reason, and practice patience with puzzles that can delay the development of dementia which will become more severe.

Puzzle therapy is known to work through increased cognitive stimulation. This stimulation comes from drawing activities that require precision. The elderly need to pay attention to the shape, color, and pattern on the puzzle pieces. This activity stimulates the part of the brain that regulates visual memory. In addition, puzzles also require the ability to think logically to match the right parts. This combination of memory and logic provides good training for the brains of the elderly. Brains that are often stimulated tend to experience increased function. Puzzle therapy also helps improve focus and concentration. This activity keeps the brain active and trained (Martina, 2025).

According to Asrina (2023), playing puzzles is able to reduce the level of dementia in the elderly, so this therapy can be used as an alternative to increase the memory of the elderly, because this puzzle therapy sharpens the brains of the elderly to work and remember. It is hoped that it will be able to carry out puzzle play activities continuously in the elderly who experience dementia.

Based on the results of the above research, researchers concluded that puzzle therapy can improve cognitive function in the elderly, this therapy is one of the non-pharmacological treatments that can improve cognitive performance. This is because puzzles can improve mental speed and short-term memory by remembering colors, shapes and details and helping to think to both children and adults.

Cognitive function of the elderly before and after in a puzzle therapy control group in Mongolato Village

The results of the study in the control group showed that the mean value before was 16.12. The mean value after also remained at 16.12 without any change. This illustrates that the cognitive condition of the respondents in the control group did not improve. The stability of this mean value also shows that the intervention was given only in the treatment group. In the control group, there were no additional activities that could trigger an improvement in cognitive function. The mean value *of difference* in the control group was 0.0. This value indicates that there was no difference in the mean before and after the measurement. This figure illustrates the absence of an increase or decrease in cognitive function. The standard deviation value before in the control group was 1.728, the standard deviation value after also remained at 1.728. The consistency of the standard deviation value (SD = 1.728 before and after) confirmed that the score diversity between respondents remained uniform, so that no outside factors influenced the variation in outcomes in the control group. The Pvalue value = 1.000, which is well above the significance limit of 0.05 reinforces the conclusion that there was no significant difference between cognitive function before and after in this group.

Theoretically, the stagnation of cognitive function in the control group can be explained through the concept *of cognitive reserve* and neuroplasticity theory. The theory of neuroplasticity asserts that cognitive function can be

improved if the brain receives regular and meaningful stimulation, such as cognitive exercises, brain games, puzzle therapy, or activities that require problem-solving. On the other hand, if the elderly do not get stimulation or cognitive activities, there will be no formation of new synapses, so that cognitive function tends to be stable or has the potential to decline with age.

The absence of intervention in the control group in this study was the main reason for the lack of value changes. This condition is in line with the theoretical framework that explains that the elderly with monotonous daily activities or minimal stimulation have a tendency for cognitive function to remain in the initial condition. In other words, cognitive changes can only occur if there is sufficient stimulation in the areas of memory, attention, and language.

Research conducted by Sari (2021) entitled *The Effectiveness of Cognitive Training* on Improving Cognitive Function of the Elderly at the Sukamaju Health Center found that the group that was given *cognitive training* experienced a significant increase in MMSE scores. Meanwhile, the control group showed that the value remained stable, without change. These findings support that the improvement of cognitive function can only occur if the elderly are given activities that stimulate brain work

In addition, Aditya (2022) through a study entitled *Reminiscence* Therapy on Elderly Short-Term Memory Abilities also showed a similar pattern: significant improvements only occurred in the group that received reminiscence therapy. In the control group, short-term memory scores showed no significant difference between before and after the intervention, as they did not get any cognitive stimuli. These results again prove that without brain exercise, there was no change in cognitive function.

Based on the results of the above research and theory, the researcher concluded that in the control group, the average elderly experienced a decrease in cognitive function in the severe category both before and after. The absence of intervention made there was no change in the cognitive function of the elderly, in the control group there were no additional activities that could trigger an improvement in cognitive function.

CONCLUSION

Cognitive function of the elderly before being given a therapeutic intervention *Puzzle* The highest is the weight category of 13 people. Meanwhile, the cognitive function of the elderly after being given therapeutic intervention *Puzzle* The highest was 13 people, namely 13 people. The cognitive function of the elderly in the control group before the highest was the weight category of 14 people. Meanwhile, the cognitive function of the elderly after the highest was the weight category of 14 people.. There is a therapeutic influence *Puzzle* in the face of improved cognitive function in the elderly in Mongolato Village, Telaga District in the intervention group with a value of Vpalue = 0.000<0.05.

SUGGESTIONS

The results of this study can be a reference for the community and Mongolato Village Health cadres in implementing *puzzle* therapy as a simple and effective cognitive stimulus activity to prevent cognitive function decline.

The results of this study can be used as a reference for future nursing research. As a basis for conducting more detailed research on nursing interventions in the elderly. The results of this study are expected to be used as a source of information in efforts to develop the field of nursing, especially to deal with the elderly who have decreased cognitive function

The results of this study can add insight and knowledge about the effect of *puzzle* therapy on improving cognitive function in the elderly, as well as more in-depth knowledge, especially about the impact *of memory games* (matching pictures) on improving cognitive function in the elderly.

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