



## The Effect of O'clock Puzzle Playing Therapy on Cognitive Function in the Elderly in Nursing Home Area 3 Cirebon in 2023

Mala Amillah<sup>1</sup>, Leya Indah Permatasari<sup>2</sup>, Maulida Nurapipah<sup>3</sup>

<sup>1-3</sup>University of Muhammadiyah Cirebon, West Java, Indonesia

**Abstract.** Significant changes in the neurological system, which can lead to a decline in cognitive function, are shared among the aged. Giving puzzle play therapy to senior citizens is one way to enhance their cognitive abilities. This study aims to find out how O'clock Puzzle Play Therapy affects cognitive function in the elderly at Nursing Home Region 3 Cirebon in 2023. This study uses a pretest-posttest with a control group design and a proper experimental design. A total of 40 respondents make up the sample, which is obtained by complete sampling. They are employing the SPMSQ questionnaire to assess the cognitive abilities of the elderly. Univariate and bivariate data analysis was performed using the data normalcy test and the marginal homogeneity test. When older patients receiving o'clock puzzle play therapy were compared to those who did not get therapy, the results of the intellectual evaluation score using the SPMSQ showed a substantial rise. Four older adults from the intervention group (26.7%) who had severe cognitive impairment during the SPMSQ assessment prior to playing the o'clock puzzle therapy had severe intellectual impairment. In contrast, the number of older adults in the intervention group who had severe intellectual impairment decreased to zero. The study's findings, when combined with the Asymptotic value of the Marginal Homogeneity Test, indicate that o'clock puzzle play therapy impacts cognitive performance in the senior residents of the regional 3 Cirebon caring facility. 0.002 as the 2-tailed significance. Asymptotic value. Sig shows an Asymp in this study. The value difference is substantial when the sig value is less than 0.05.

**Keywords:** Cognitive function, Elderly, O'clock puzzle, Play therapy

---

### INTRODUCTION

A person who is 60 years of age or older is considered elderly. Humans who reach the end of their life phase are called elderly (WHO, 2020). The aging process, often known as the aging process, is something people classified as seniors will go through. According to Maghfuroh (2023), aging is an inevitable process that changes the senior population. These changes can be attributed to various factors, including deterioration and mental, emotional, cognitive, and spiritual development.

Brain system alterations that might lead to a decline in cognitive performance are among the main changes with aging. Most older adults have a deterioration in cognitive function at some point in their lives. 39% of those in their 50s and 60s report having cognitive function issues, which

rises to over 85% in those over 80 (2022). Cognitive changes that occur in an individual result from physiologic changes typically linked to aging. According to Isnaini and Komsin (2020), impairment of any of these functions may lead to disturbances in the aged's social, occupational, and everyday activities.

Elderly residents in different institutions may experience physical and motor health issues as well as psychological issues like loneliness, helplessness, and being quickly taken away. Several therapies, including play therapy, are available to help older people with their cognitive function. The idea behind play therapy is to encourage older people to actively engage in the process by building their belief in its efficacy. Seniors in orphanages can benefit significantly from play therapy, which makes them feel better and trains their motor skills and cognitive function, encouraging them to be more active (Emilia, 2022).

To improve cognitive abilities, develop patience, and practice sharing among the elderly, consider creating a puzzle, a picture divided into randomly ordered parts (Dahlia, 2018). Puzzle games are frequently employed in educational contexts since they help improve cognitive function and hand-eye coordination. This game is a cognitive exercise that stimulates the brain by giving the brain enough stimulation to preserve and enhance the remaining cognitive functions. According to Margiyati (2021), the brain is involved in the following processes: capturing, processing, deciphering, and remembering images or information. Seniors play puzzle games to preserve their residual cognitive function, and these are some of the games that kids play most frequently to enhance their cognitive growth.

The decline in cognitive function that occurs in older adults, including problems with eating, drinking, and bathing, forgetting where they are or who they are, losing track of daily activities, and losing track of one's own identity or family member's names, has an impact on independence and productivity. Additionally, depression may worsen as a result of cognitive impairment, and older people may experience a lower quality of life (Pragholapati, 2021). According to the author's observations from kindergarten and PAUD Mandiri Gemilang, there were no indications of social-emotional problems in the children, as evidenced by the fact that the kids were cooperative in lending toys to their friends, did not frequently fight over toys with their friends, and did not want to wait in line for their turn.

As per the administration of the orphanage, ten old individuals, comprising six men and four women, were found in the preliminary study done on February 11, 2023, at PSTW Kasih Ibu Indramayu. The initial research results were based on the study's findings. Due to the absence of caregivers, the senior residents of this facility appear dirty, the state of the house is run-down, and

there are no planned activities for them. The PSTW Kasih Ibu Indramayu suffers from a rapid decrease in cognitive function as a result of this condition, which influences the elderly's behavior, such as their increased use of the nursing home or their room. According to preliminary research findings, two older adults were given Short Portable Mental Status Questionnaire (SPMSQ) questionnaire sheets. One elderly participant had an error score of 7, which was interpreted as moderate intellectual impairment, and the other older adult had an error score of 9, which was interpreted as severe intellectual damage.

Researchers did an initial investigation at Panti Wreda Kasih Cirebon on February 18, 2023. Based on the findings of the interviews, 15 old persons were counted, including seven women and eight men. Regular activities are arranged, and the older residents appear safe and comfortable. The original research used the Short Portable Mental Status Questionnaire (SPMSQ) questionnaires completed by three old individuals. The results revealed error scores ranging from 8 to 10, indicating severe intellectual loss. Elderly behavior changes, such as remaining in the room or nursing home more frequently, are influenced by this condition's disruption of daily activities that the elderly typically carry out. There is no doubt that such situations can hasten the cognitive impairment of the aging process.

In LPKSLU Amal Mulia Kuningan, ten older women were found to be the subjects of a preliminary study on February 18. The findings were derived from interviews with the orphanage's management. Regular activities are arranged, and the older residents appear safe and comfortable. Senior citizens like participating in study sessions held every Saturday at the Mulia Kuningan Charity Foundation, according to the administration of LPKSLU Amal Mulia. In order to maintain control over their cognitive function, it is assumed that the elderly will continue to engage in social activities.

Recalling the day, month, year, and location of one's presence is among the memory impairments that appear to affect the elderly, according to the findings of an initial study that involved five older adults who were interviewed. On the other hand, data from a few senior citizens indicates that even while they may not be cognizant of the exact date, day, month, or year, they are aware of their location. After that, the researcher inquired about playing "o'clock puzzles," which involve assembling picture pieces, and the five senior participants said they had never done so in the past. According to study findings utilizing the Short Portable Mental Status Questionnaire (SPMSQ) questionnaire sheet, of the 40 elderly residents in nursing homes in Region 3 Cirebon, 5 have moderate intellectual damage (erroneous score of 7), and 4 have severe intellectual damage (erroneous score of 8–10).

## **LITERATURE**

Anyone sixty years of age or older is considered elderly. Reducing the body's resilience to external and internal stimuli is the process of aging, not a disease (WHO, 2020). *Aging* is a long process that leads to cumulative alterations. The processes of the mind that comprise cognitive function include remembering, thinking, and observational processes, as well as awareness of the subject of thought or perception. Numerous processes fall under the cognitive abilities category, including thinking, construction, direction, language, attention, computation, and memory. Cognitive functions are conscious mental processes like remembering, learning, speaking, and reasoning. The executive function skills, planning, judging, supervising, and assessing are also included in cognitive function (Sri Sunarti, 2022). Other cognitive functions include attention, recall, problem-solving, and contemplation.

According to Santrock, playing is an enjoyable action done for the enjoyment of the game itself. There are mutually agreed-upon regulations and explicit guidelines for this type of play. Solving puzzles as therapy can help exercise the brain and delay the onset of Alzheimer's. The unique riddles in this jigsaw come in various shapes, sizes, and colors. The objective is to hone memory and teach the brain to make forgetting difficult. According to Rini (2018), puzzle games help seniors improve their memory and creativity while encouraging them to think and act joyfully and animatedly.

Games like puzzles are suitable for senior citizens. There is a strong belief that riddles are highly instructive. The conditions and educational background of the elderly can be changed, as well as the puzzle's degree of difficulty. Some advantages of puzzles for the elderly include improved hand-eye coordination, problem-solving abilities, fine motor skills, anger management, and focus. Proficiency with scientific or cognitive.

## **METHOD**

The researcher in this study uses an experimental design to treat cognitive function in the elderly and then assess the impact of that therapy by having the elderly play the o'clock puzzle. The aim of this investigation was to determine the impact that results from the therapeutic use of playing o'clock puzzles. To evaluate hypotheses, this study measures research variables with numbers and analyzes data using statistical techniques. These quantitative research approaches are reviewed from the perspective of the research paradigm (Avia, 2022).

An accurate experimental design research methodology was applied to this study. Since the control group and experimental group are grouped according to random or random, this design is

randomized (Notoatmojo, 2018). This study has a control group and an intervention group, which follows the Pretest-Posttest with a Control Group design. Playing the o'clock problem for two weeks without any therapeutic intervention was the control group's cognitive function as assessed by the SPMSQ. After therapy to play the o'clock puzzle seven times over two weeks, the intervention group's cognitive performance was assessed using the SPMSQ before and after. The two groups then completed a pretest (X1), with the intervention group receiving treatment afterward by solving the o'clock puzzle. Both groups took posttests (X2) (Notoatmojo, 2018).

## DISCUSSION

### Univariate Analysis

**Table 1. Frequency Distribution of Characteristics of Elderly Respondents in Control Group and Intervention Group in Nursing Home Region 3 Cirebon (n = 30)**

Characteristics of Respondents		Group	
		Control	Speakers
Age	60-69 years old	6 (40%)	5 (33,3%)
	70-74 years old	9 (60%)	10 (66,7%)
Gender	Man	5 (33,3%)	7 (46,7%)
	Woman	10 (66,7%)	8 (53,3%)
Education	No School	2 (13,3%)	0
	SD	8 (53,3%)	8 (53,3%)
	SMP	3 (20%)	2 (13,3%)
	SMA	2 (13,3%)	5 (33,3%)
Work	IRT	8 (53,3%)	7 (46,7%)
	Farmer	3 (20%)	1 (6,7%)
	Employee	1 (6,7%)	4 (26,7%)
	Merchant	3 (20%)	3 (20%)

Table 1 indicates that the age range of 70–74 years old predominates in the similarities between the control and intervention groups. Six senior control group members, or 40% of the total, were 60–69 years old, and nine elderly control group members, or 60%, were 70–74. Five older adults were in the intervention group (age 60–69, 33.3% of the total), and ten senior people (age 70–74, 66.7%).

Ten older adults were in the control group and eight in the intervention group, indicating that there were more female responders among the elderly in this study. Of the elderly in the control group, five were male (33.3%), while the remaining females had a ratio of 66.7%. Seven senior men and women comprise the intervention group; their percentages are 53.3% and 46.7%, respectively.

Eight older adults in the control group had an education status of 53.3%, meaning that the majority of the elderly in the intervention group also had an education status of 53.3%, meaning

they were primarily enrolled in elementary school. Two senior individuals (13.3%) did not go to school out of the control group. The number of older individuals with junior high school education was equal to three in the control group (20%) and two in the intervention group (13.3%). Moreover, the number of seniors with a high school education was 2 in the control group (13.3%) and 5 in the intervention group (33.3%).

The study involved elderly homemakers, of which 8 (53.3%) and 7 (46.7%) belonged to the control group and were the majority of the study's elderly participants. In the control group, three senior workers made up 20% of the workforce, but in the intervention group, there was only one elderly worker who made up 6.7%. In the control group, four older people were employed as employees, accounting for 26.7% of the total, compared to just one in the intervention group, percentage-wise. In contrast, the control and intervention groups had a combined employment status of 3 traders or 20% of both.

**Table 2. Distribution of cognitive function data of elderly *pretest-posttest* therapy playing *o'clock* puzzle in the control group (n = 30)**

Control Group Cognitive Function		Number of Seniors	Percentage (%)
<i>Pre-Test</i>	Intact Intellectual Functions	1	6,7%
	Light Intellectual Function	4	26,7%
	Moderate Intellectual Functions	6	40%
	Heavy Intellectual Function	4	26,7%
	Total	15 Seniors	100%
<i>Post-Test</i>	Intact Intellectual Functions	1	6,7%
	Light Intellectual Function	3	20%
	Moderate Intellectual Functions	5	33,3%
	Heavy Intellectual Function	6	40%
	Total	15 Seniors	100%

Table 2 presents the results of the previous assessment (Pre-Test), which indicated that most respondents (i.e., six older adults, or 40% of the sample) had moderate intellectual impairment. The control group did not receive therapy and instead played the o'clock puzzle seven times in two weeks. After the test (Post-Test), the majority of participants had severe intellectual impairment; six older adults, or 40% of the sample, reported that they had not received therapy to play the o'clock problem by the therapist when the researchers conducted the mental assessment.

**Table 3. Distribution of cognitive function data of elderly *pretest-posttest* therapy playing o'clock puzzle in the intervention group (n = 30)**

Control Group Cognitive Function		Number of Seniors	Percentage (%)
<i>Pre-Test</i>	Intact Intellectual Functions	1	6,7%
	Light Intellectual Function	3	20%
	Moderate Intellectual Functions	7	46,7%
	Heavy Intellectual Function	4	26,7%
	Total	15 Seniors	100%
<i>Post-Test</i>	Intact Intellectual Functions	4	26,7%
	Light Intellectual Function	6	40%
	Moderate Intellectual Functions	5	33,3%
	Heavy Intellectual Function	0	0
	Total	15 Seniors	100%

The findings presented in Table 4.3 indicate that most participants in the intervention group, which included seven individuals with a percentage of 46.7%, had moderate intellectual impairment when evaluated prior to (Pre-Test) the start of o'clock puzzle therapy seven times over two weeks. When the researchers conducted a mental assessment, the results of the "Post-Test," which involved the therapist giving puzzle-playing therapy at o'clock, showed that the majority of elderly patients (n = 6) had mild mental impairments (p = 40%). Four elderly patients (p = 26.7%) had intact intellectual functions.

**Table 4. Cross-tabulated data distribution of the effect of o'clock puzzle play therapy on cognitive function in the elderly *Pre-Test* and *Post-Test* in the control group and intervention group (n = 30)**

Control Group	Categorization of Cognitive Functions			
	Intact	Mild Cognitive	Moderate Cognitive	Cognitive Weight
<i>Pre-Test</i>	1 (6,7%)	4 (26,7%)	6 (40%)	4 (26,7%)
<i>Post-Test</i>	1 (6,7%)	3 (20%)	5 (33,3%)	6 (40%)

  

Intervention Group	Categorization of Cognitive Functions			
	Intact	Mild Cognitive	Moderate Cognitive	Cognitive Weight
<i>Pre-Test</i>	1 (6,7%)	3 (20%)	7 (46,7%)	4 (26,7%)
<i>Post-Test</i>	4 (26,7%)	6 (40%)	5 (33,3%)	0

Table 4 presents the results, which indicate that the elderly in the Pre-Test control group had the highest values of moderate cognitive function (6 elderly, or 40%), mild cognitive function (4 elderly, or 40%), and intact cognitive function (6 elderly, or 6.7%). The elderly with severe cognitive function comprised four elderly, followed by those with 26.7 and 26.7 points, respectively. Following a two-week period in which the therapist did not provide therapy, the

respondents with moderate cognitive impairments numbered five (33.3% of the total), and those with severe cognitive impairments numbered six (40%) of the total. This information was obtained during the researchers' mental assessment. Three older adults, with a 20% percentage, changed from mild cognitive to intact cognitive, which remained the same in one older adult, with a 6.7% percentage.

The group of elderly participants in the Pre-Test intervention had the highest percentage of participants with moderate cognitive function—seven of them, or 46.7%—followed by those with severe cognitive function—four of them, or 26.7 percent—mild cognitive function and intact cognitive function, one of whom, or 6.7%. Respondents with moderate cognitive decreased to 5 elderly (33.3%), those with mild cognitive increased to 6 elderly (40%), and those with intact cognitive changed to 4 elderly (26.7%) after receiving therapy to play the o'clock puzzle seven times in two weeks from therapists and during mental assessment by researchers.

**Bivariate Analysis**

**Normality Test**

**Table 5. Control group and intervention group normality test (n=30)**

	<b>Group</b>	<b>The Value of Significance</b>	<b>Information</b>
Cognitive Level	<i>Pre-Test</i> Control	0.311	Normal Distributed
	<i>Post-Test</i> Control	0.115	Normal Distributed
	<i>Pre-Test</i> Interventions	0.587	Normal Distributed
	<i>Post-Test</i> Interventions	0.078	Normal Distributed

The therapist provided the o'clock puzzle during the researcher's mental assessment, based on Table 5 above, which indicates the outcomes of the normality test during the Pre-Test and Post-Test therapy. Because the values were higher above the significance level of 0.05 (Sig >0.05), the control group's Pre-Test result was 0.311, and the Post-Test result was 0.115, indicating that both tests were legitimate. Because both test results were more significant than the significance level (Sig >0.05), they were deemed normal. The Pre-Test result for the intervention group was 0.587, while the Post-Test result for the control group was 0.078.

**Influence Test**

**Table 6. Test results of Marginal Homogeneity of control group and intervention group in nursing home region 3 Cirebon (n = 30)**

<i>Short Portable Mental Status Questionnaire (SPMSQ)</i>						
	Intact	Light	Keep	Heavy	Total	p value
<i>Pre Test</i> Control Group	1	4	6	4	15	
<i>Post Test</i> Control Group	1	3	5	6	15	
<i>Pre Test</i> Intervention Group	1	3	7	4	15	0.002
<i>Post Test</i> Intervention Group	4	6	5	0	15	
Total	7	16	23	14	60	

The Asymp value was derived for Table 6's impact test findings using the Marginal Homogeneity test. Asymptotic value, Sig. (2-tailed) = 0.002. Sig shows an Asymp in this study. With a significance level of less than 0.05, there is a significant variation in the value. There is an effect of playing o'clock puzzle therapy on the elderly in nursing homes area 3 Cirebon, according to the results of the study, which show that respondents with moderate, mild, and intact cognitive function increased and respondents with severe cognitive function decreased. This means that the hypothesis is accepted (Ha) and rejected (H0).

Predictably, the majority of respondents suffered from mild intellectual impairment because, like the control group, the majority of older adults did not attend school, had trouble recalling their birth year, and were hard to count. These findings were based on research conducted before the patients received therapy to solve the o'clock puzzle. However, because they have never had cognitive function training or education, the elderly exhibit confused expressions during the SPMSQ assessment, such as forgetting and trying to remember things (Riskiana & Mandagi, 2021). In the middle of these conditions, the elderly become easily forgotten during the assessment.

Because a deterioration in cognitive function can lead to a reduction in everyday social activities, making older people less productive and potentially harmful to the public's health, cognitive function is crucial for the well-being of the aged. According to Sijabat (2023), older adults who suffer from a deterioration in cognitive function may become dependent on others since they cannot live independently.

In order to prevent cognitive impairment in the elderly, Amaliah (2021) suggests that they continue to train their brains. This can be achieved by reading, playing games that improve

cognitive function, and engaging in other brainwork-related activities. Puzzles are one type of game that can boost cognitive function. Since a body's diminished capacity to perform different tasks leads to decreased life activity. The brain is among the bodily parts with diminished capacity. Puzzle games can activate specific brain regions in the occipital, temporal, parietal, mid-frontal, frontal, hippocampal, and entorhinal cortical regions.

To prevent further or chronic cognitive deterioration, individuals who are approaching old age must maintain their cognitive decline. Because a deterioration in cognitive function can lead to a decrease in everyday social activities, making older people less productive and perhaps posing health risks to the public, cognitive function is crucial for the welfare of the aged (Istanti & Dewi, 2023).

Older adults often forget things, and some things can lower their cognitive ability to remember things when using the SPMSQ for mental health assessments. Everyone, from young children to senior citizens, enjoys play therapy in the shape of o'clock puzzles. A means of intervention to enhance older adults' cognitive abilities. Nurses perform this task seven times a fortnight, lasting roughly half an hour each. Then, using SPMSQ, researchers will examine how well older adults' cognitive function is. The left and right hemispheres of the brain are both trained by puzzles. Puzzle training incorporates training of both cerebral regions. According to Sijabat (2023), brain cells grow more efficient and capable when exposed to constant stimulation.

## **CONCLUSION**

In a nursing home in Region 3 Cirebon, the elderly's cognitive function was assessed using the SPMSQ before therapy. Out of the 15 elderly in the intervention group, four older adults (or 26.7% of the total) had severe cognitive impairments. After o'clock puzzle therapy, the elderly's cognitive level was 26.7%, and they had normal intellectual function based on a mental assessment using the SPMSQ. Based on the Marginal Homogeneity test results with an Asymp value of Sig. (2-tailed) of 0.002, there is a relationship between older adults's cognitive performance and playing o'clock puzzle treatment in nursing homes in Region 3 Cirebon—asymptotic value. Sig shows an Asymp in this study. The value has a substantial difference, as indicated by the Sig value of less than 0.05.

## BIBLIOGRAPHY

- Amaliah, N. (2021). *Social Activity " Pojok Riang " By Playing Puzzles With The Elderly , In The Village Lok Baintan Banjarmasin , During The Pandemic Covid-19.* 752–756.
- Isnaini, N., & Komsin, N. K. (2020). Gambaran Fungsi Kognitif Pada Lansia. *Jurnal Human Care*, 5(4), 1060–1066.
- Istianti, D. W., & Dewi, E. U. (2023). *Modifikasi Puzzle untuk Pemeliharaan Fungsi Kognitif pada Lansia di.* 1(2), 149–157.
- Maghfuroh, L. D. (2023). *ASUHAN LANSIA: makna, identitas, transisi, dan manajemen kesehatan.* Kaizen Media Publishi.
- Pragholapati, A., Ardiana, F., & Nurlianawati, L. (2021). Gambaran Fungsi Kognitif Pada Lanjut Usia (Lansia). *Jurnal Mutiara Ners*, 4(1), 14–23. <https://doi.org/10.51544/jmn.v4i1.1269>
- Rini, S. S., Kuswardhani, T., & Aryana, S. (2018). *Faktor – Faktor yang Berhubungan dengan Gangguan Kognitif pada Lansia di Panti Sosial Tresna Werdha Wana Seraya Denpasar.*
- Riskiana, N. E. P. N., & Mandagi, A. M. (2021). Tingkat Pendidikan Dengan Fungsi Kognitif Pada Lansia Dalam Periode Aging Population. *Preventif: Jurnal Kesehatan Masyarakat*, 12(2), 256. <https://doi.org/10.22487/preventif.v12i2.194>
- Sijabat, F., Siregar, R., Purba, S. D., Mbaloto, F. R., Mua, E. L., Sekeon, R. A., Susanto, D., Yanriatuti, I., Tarigan, S., Emilia, N. L., Kosanke, R. M., Marcello, Aldo, S., Istianti, D. W., & Dewi, E. U. (2023). *Pengaruh latihan terhadap tingkat penyelesaian board game (puzzle) pada lansia di griya usia lanjut (the effect of practice level of board game (puzzle) completicion of elderly at nursing home.* 1(1), 14–21. <https://doi.org/10.25008/altifani.v3i4.440>
- Sri Sunarti. (2022). *Serba-Serbi Pelayanan Day Care untuk Lanjut Usi.* UB Press