



THE EFFECT OF UNO BLOCK PLAYING THERAPY ON IMPROVING COGNITIVE FUNCTION IN ELDERLY PEOPLE WITH DEMENTIA

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ABSTRACT

Elderly individuals with dementia experience a decline in cognitive function, which affects their independence and daily quality of life. Uno Block play therapy is a form of cognitive and social stimulation that involves arranging and moving numbered and colored blocks according to specific rules. This activity stimulates memory, attention, fine motor coordination, and social interaction. This study aims to analyze the effect of Uno Block play therapy on the cognitive function of elderly patients with dementia at PSTW Budi Mulia 3 Jakarta. Method: The study used a quasi-experimental design with a pretest–posttest control group involving 32 elderly participants. They were selected using purposive sampling based on the following inclusion criteria. Participants were divided into an intervention group (n = 16) and a control group (n = 16). Cognitive function was measured using the Mini-Mental State Examination (MMSE), and data were analyzed using the Wilcoxon test for non-normally distributed paired data. The results showed a significant difference in cognitive function scores before and after the intervention in the intervention group ($p = 0.005$), while no significant difference was observed in the control group ($p = 0.157$). It can be concluded that Uno Block play therapy has a significant effect on improving the cognitive function of elderly individuals with dementia.

Keywords: cognitive function; dementia; play therapy; uno block

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INTRODUCTION

Dementia is one of the major health problems in the elderly population which is characterized by a decline in cognitive functions, including memory, attention, language skills, and executive functions (MD et al., 2018). The impact of dementia in the elderly can lead to a progressive decline in cognitive function, disrupting memory, thinking ability, and behavior, which can disrupt the daily life activities of the elderly (Afifah & Luawo, 2020). As life expectancy increases, the prevalence of dementia is expected to continue to rise, necessitating effective, safe, and easily implemented interventions to slow cognitive decline.

Data shows that nearly 10 million new cases of dementia occur each year. In 2021, 57 million people worldwide were living with dementia, with over 60% living in low- and middle-income countries, and this proportion is expected to continue to increase. Each year, there are nearly 10 million new cases (WHO, 2025). Dementia, which is expected to affect 153 million people by 2050. Every 3 seconds, someone in the world develops dementia. More than 55 million people worldwide are living with dementia, and this number is projected to increase to 78 million by 2030 and 139 million by 2050 (Kementrian Kesehatan, 2025).

In Indonesia, dementia data shows a high prevalence, with approximately 27.9%, or more than 4.2 million people, suffering from dementia. This figure is projected to increase dramatically to 4-7.5 million by 2050, with Alzheimer's disease predominating. Key risk factors include advanced age (especially over 65 years), women, low education, smoking, hypertension, and diabetes, while public awareness remains low (Nazifah & Liem, 2025).

Dementia is a public health problem, especially for the elderly, which will slowly make sufferers increasingly dependent on others to carry out daily activities (Nurlan & Eny, 2021). Dementia is the seventh leading cause of death worldwide and one of the leading causes of disability and dependency in the elderly (Sa'diyah et al., 2024). In Indonesia, dementia is a health problem for the elderly, with a relatively high prevalence of cognitive impairment in various regions, including in social service facilities such as the Tresna Werdha Social Care Center.

Dementia is a leading cause of disability and dependency among older adults worldwide. This can be extremely burdensome, not only for people with dementia but also for their caregivers and families, who globally provide the majority of care and support. There is often a lack of awareness and understanding of dementia, resulting in stigmatization and barriers to diagnosis and treatment. The impact of dementia on caregivers, families, and the wider community can be physical, psychological, social, and economic. (Nurhayanti et al., 2025).

The results of a preliminary study obtained data at the Budi Mulia 3 PSTW indicate that the majority of elderly people experience mild to severe cognitive impairment, requiring ongoing intervention to maintain and improve their cognitive function. In the Budi Mulia 3 PSTW environment, some elderly people show a decline in cognitive function that impacts daily activities and social interactions. Existing therapy activities do not fully accommodate the need for cognitive stimulation in a structured and engaging manner, so innovative interventions are needed to increase elderly engagement. Non-pharmacological therapies such as play therapy, cognitive training, and board games have been reported to improve cognitive function, social interactions, and quality of life for elderly people (Nurhayanti et al., 2025). One form of cognitive stimulation that is gaining popularity is play therapy, which combines light physical activity with cognitive stimulation. Uno Blocks, a game involving color identification, numbers, decision-making, working memory, and motor coordination, is considered capable of activating various aspects of brain function relevant to seniors with dementia (Cantika et al., 2023).

Uno Blocks (Uno Stacko) is a block-stacking game with colors and numbers that requires players to remember rules, match colors/numbers, maintain balance, and interact with other players. Several studies of board game therapy and Uno Blocks have shown significant improvements in cognitive function scores in older adults after intervention. Therefore, implementing Uno Blocks play therapy is a potential alternative to improve cognitive function through simple, fun activities that are easily adapted by nursing home staff (Saputri et al., 2021). Based on this, this study is crucial to analyze the effect of Uno Blocks game therapy on improving cognitive function in elderly people with dementia at the Budi Mulia 3 Social Welfare Home (PSTW). The results are expected to form the basis for developing a more effective, standardized, and sustainable cognitive stimulation program to improve the quality of life for elderly people in social care settings.

METHOD

This study employed a quantitative quasi-experimental design with a pre- and posttest with a control group. The sample consisted of 32 elderly people living at the Budi Mulia 3 Social Welfare Home (PSTW). They were selected using purposive sampling based on the following inclusion criteria: elderly people ≥ 60 years old, experiencing cognitive impairment (MMSE score < 27), willing to participate, and cooperative; while exclusion criteria included elderly people with normal cognitive function, color blindness or severe visual impairment, upper limb disabilities, and chronic diseases that limit mobility. Respondents were divided into two groups: 16 individuals in the intervention group who received Uno Blocks therapy and 16 individuals in the control group who did not receive any intervention during the study period. The research instruments included an informed consent form, a respondent characteristics questionnaire, the MMSE to measure cognitive function, a Standard Operating Procedure (SOP) for the Uno Block game, and an observation sheet on aspects of participation during therapy. In general, the MMSE sensitivity score ranges from 70–90%, and the specificity ranges from 70–95%. The MMSE Cronbach's alpha value is 0,82.

The Uno Block game therapy intervention was conducted in the intervention group for four sessions per week, each lasting approximately 45 minutes, in a small group setting in a safe and comfortable space. Cognitive function measurements were conducted before the intervention (pretest) and after all intervention sessions were completed (posttest) in both groups. Data analysis included univariate analysis to describe respondent characteristics and the distribution of cognitive function levels, and bivariate analysis using the Wilcoxon Signed Rank Test to compare pre- and post-test cognitive function scores in each group due to the non-normal distribution of the data based on the Shapiro–Wilk test. A p-value of <0.05 was set as the threshold for statistical significance.

RESULT

Table 1.
Distribution of Respondent Age Characteristics

Characteristic	Category	n	%
Age	60-74	23	71,9
	75-90	8	25,0
	>90	1	3,1
Level of education	No Schooling	17	53,1
	Elementary School	6	18,8
	Middle School	4	12,5
	High School	5	15,6

Table 1, the age distribution of respondents shows that the majority of respondents (71.9%) were between 60 and 74 years old (23 people). The distribution of respondents' education showed that the majority (53.1%) of respondents (17 people) had no education or were not attending school.

Table 2.
Cognitive Levels of the Intervention and Control Group Pre-Test and Post-Test

Group	Category	Cognitive Levels			
		Pre-Test		Post-test	
		n	%	n	%
Intervention Group	Normal	0	0	1	6,3
	Mild	6	37,5	7	43,8
	Moderate	5	31,3	8	50,0
	Severe	5	31,3	0	0
Control Group	Normal	0	0	0	0
	Mild	6	37,5	5	31,3
	Moderate	8	50,0	8	50,0
	Severe	2	12,5	3	18,8

Table 2, the distribution of dementia levels in the elderly at the Tresna Wherdha Budi Mulia 3 social care home in the intervention group was found to be mild cognitive impairment during the pre-test. Post-test results for the intervention group, after receiving UNO block therapy, showed that 50% (8) suffered from moderate cognitive impairment, with none suffering from severe cognitive impairment. The distribution of dementia levels in the control group was found to be moderate cognitive impairment during the pre-test. The post-test results showed that 50% (8) suffered from moderate cognitive impairment. The results for the control group remained largely unchanged, but one respondent increased to a severe cognitive impairment category, from 2 (12.5) to 3 (18.8%).

Table 3, 68.8% of elderly people were able to stack blocks independently. 93.8% were able to move blocks according to color/number sequence, and 6.3% needed help from a friend to move the blocks. It can be seen that all elderly people were cooperative during play. 93.8% played and socialized with their playmates. 93.8% of elderly people followed the nurse's instructions well, while the remaining 6.3% were less cooperative. 81.3% of elderly people participated in the activity until the end, while the remaining 18.8% only played until the middle. The results indicate that 100% of elderly people who participated in this play therapy enjoyed playing.

Table 3.

Additional Assessment Aspects of Block Stacking in the Elderly

Additional Assessment Aspects	Category	f	%
Stacking blocks independently	Yes	11	68,8
	No	5	31,3
Moving blocks according to color/number sequence	Yes	15	93,8
	No	1	6,3
Cooperating during play	Yes	16	100,0
	No	0	0
Socializing with playmates	Yes	15	93,8
	No	1	6,3
Following nurse's directions	Yes	15	93,8
	No	1	6,3
Following activities to the end	Yes	13	81,3
	No	3	18,8
Feeling happy after play therapy	Yes	16	100,0
	No	00	

Table 4.

Wilcoxon Test Results for Intervention and Control Groups

Grup	Cognitive Levels	Std Deviation	Pre-Test		Post-Test		P	Z
			min	max	min	max		
Intervention	Pre-Test	0.854	1	3	0	2	0.005	-2.828
	Post-Test	0.629						
Control	Pre-Test	0.683	1	3	1	3	0.157	-1.414
	Post-Test	0.719						

Table 4 shows a p-value of 0.005, which is less than $\alpha = 0.05$. This indicates a statistically significant difference between the pre-test and post-test results in the intervention group. In other words, the intervention successfully improved respondents' cognitive function. A negative Z-value (-2.828) indicates a decrease in the post-test ranking score. In this measurement context, a lower score indicates better cognitive function, indicating cognitive improvement after the intervention. The Wilcoxon test results for the control group showed a P-value of 0.157, which is greater than $\alpha = 0.05$. This finding indicates no statistically significant difference between the pre-test and post-test scores in that group. In other words, there was no significant improvement in cognitive function in the control group respondents during the study period. A Z-value of -1.414 suggests a change in the ranking score, but this change was not statistically significant. Overall, these results indicate that the absence of the intervention had no impact on the cognitive abilities of respondents in the control group.

DISCUSSION

The study results showed that the majority of elderly people with dementia at the Budi Mulia 3 Community Rehabilitation Center (PSTW) were aged 60–74 years (71.9%). This finding aligns with the theory that the risk of cognitive decline increases with age, particularly after entering early old age (Irawani & Nuryawati, 2019). In this age range, degenerative processes such as decreased speed of thought processes, short-term memory impairment, and slowing of executive functions are more frequently found, so that cognitive stimulation interventions are needed in a structured and consistent manner (Yadika et al., 2019).

Furthermore, the majority of respondents had a low level of education, with 53.1% having never received formal education. Low levels of education impact an individual's cognitive reserve. Elderly individuals with low levels of education tend to have a lower cognitive adaptive capacity, which can lead to faster and more severe dementia symptoms than those with higher education. This situation reinforces the importance of providing therapy that is easy to understand, visual, concrete, and does not require advanced literacy skills (Riskiana & Mandagi, 2021).

In this context, Uno Blocks play therapy is a relevant approach to improving cognitive function in the elderly. This game provides multisensory stimulation combining colors, shapes, simple rules,

and social interaction, which can stimulate memory, attention, concentration, and problem-solving skills. The fun nature of play therapy can also increase the elderly's motivation to actively participate, thus optimizing the effects of cognitive stimulation (Diansari et al., 2024). Given the characteristics of the respondents, who were mostly elderly and had low levels of education, the use of Uno Blocks game therapy was highly appropriate because it did not require academic skills and offered simple instructions. Therefore, the results of this study support the idea that game-based cognitive stimulation can be an effective strategy for maintaining and improving the cognitive function of elderly people with dementia, especially in populations with low education and a high risk of cognitive decline.

The results showed that Uno Blocks game therapy resulted in changes in the level of cognitive impairment in elderly people with dementia at the Budi Mulia 3 Child Protection Center (PSTW). In the intervention group, before therapy (pre-test), most respondents were in the mild cognitive impairment category (37.5%). However, after the intervention, there was a shift in the distribution of dementia levels, with the majority (50%) having moderate cognitive impairment, and no more elderly with severe cognitive impairment were found. This increase in the proportion of the moderate category indicates that elderly people are able to improve their cognitive scores, shifting from more severe levels to milder or more stable levels in certain domains of cognitive function.

This change aligns with the concept of neuroplasticity in the elderly, which states that the brain remains capable of forming new connections through regular mental stimulation. Uno Blocks play therapy provides cognitive stimulation through activities that promote color recognition, shape recognition, game rules recognition, decision-making, concentration, and short-term memory. These activities stimulate executive and basic cognitive functions, which are important for older adults with dementia, thus helping to slow the progression of cognitive decline and even improve certain abilities. The fun and interactive nature of the game also increases participants' motivation to engage, which, according to activity theory, plays a crucial role in maintaining older adults' cognitive capacity (Cantika et al., 2023).

In contrast, in the control group, the level of cognitive impairment remained relatively stable. At the pre-test, 50% of respondents experienced moderate cognitive impairment, and this result remained the same at the post-test. In fact, the number of respondents with severe cognitive impairment increased from 12.5% to 18.8%. This situation illustrates that without structured cognitive stimulation, elderly people with dementia tend to experience progressive functional decline in line with the nature of the degenerative disease. This supports the literature stating that elderly people who do not receive regular cognitive activities are at greater risk of experiencing rapid functional decline (MD et al., 2018).

The difference in results between the intervention and control groups indicates that Uno Blocks play therapy is effective in improving and maintaining cognitive function in the elderly. This simple game-based intervention is highly suitable for use in elderly populations in social care facilities because it does not require academic skills, is easy to understand, and provides multisensory stimulation. Therefore, this study confirms that Uno Blocks play therapy can be an alternative non-pharmacological intervention that can help improve cognitive function in elderly people with dementia and prevent the progression of cognitive decline.

The results showed that Uno Blocks play therapy had a significant effect on improving cognitive function in elderly people with dementia at the Budi Mulia 3 PSTW. The Wilcoxon test in the intervention group showed a p-value of 0.005, which is smaller than $\alpha = 0.05$, thus concluding that there was a significant difference between pre-test and post-test scores after the intervention. The negative Z-value (-2.828) indicates a decrease in the post-test ranking score, which in the context of this instrument indicates improvement in cognitive function—as lower scores indicate better

cognitive performance. These findings confirm that Uno Blocks game therapy can provide effective cognitive stimulation for seniors with dementia.

The success of this therapy can be explained by the multisensory stimulation mechanism inherent in Uno Blocks. Activities that involve recognizing colors, shapes, game rules, and social interaction stimulate areas of memory, attention, visual-spatial abilities, and executive function. According to neuroplasticity theory, the brain of seniors still has the ability to adapt through repeated cognitive training, so this intervention can slow cognitive decline and even improve certain abilities. Furthermore, the game approach also has a motivational aspect that encourages active involvement in seniors, resulting in more optimal and sustainable stimulation effects (Saputri et al., 2021).

In contrast, the Wilcoxon test results for the control group showed a p-value of 0.157, which is greater than $\alpha = 0.05$. This indicates no significant difference between the pre-test and post-test scores in the group that did not receive the intervention. Although a Z-value of -1.414 indicates a slight change in the score ranking, the change was not large enough to be considered significant. This finding is consistent with the characteristics of dementia as a progressive degenerative disease, where without targeted stimulation, the cognitive function of older adults tends to stagnate or decline.

The difference in results between the intervention and control groups confirms that Uno Blocks game therapy has the potential to be an effective non-pharmacological intervention in improving and maintaining cognitive function in older adults. With its simple, fun nature, low academic requirements, and cognitive stimulation, this game is well-suited for implementation in social care settings. Overall, this study supports the use of Uno Blocks game therapy as an alternative strategy in dementia management to optimize the cognitive abilities of older adults (Cantika et al., 2023).

CONCLUSION

Uno Blocks game therapy significantly improved the cognitive function of elderly people with dementia at the Budi Mulia 3 Community Learning Center (PSTW), as demonstrated by the difference in pre- and posttest MMSE scores in the intervention group (p-value 0.005), while the control group experienced no significant change. In addition to improving cognitive function, this therapy also increased participation, social interaction, and positive emotional responses in elderly people during activities.

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