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The Effect of Cognitive Stimulation on Dementia Levels in the Elderly in the X Urban Village, Jakarta

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ABSTRACT

Dementia is a health problem that often occurs in the elderly and has an impact on decreased cognitive function, independence, and quality of life. Non-pharmacological efforts such as cognitive stimulation are believed to help slow the progression of dementia. Objective: This study aims to determine the effect of cognitive stimulation on the level of dementia in the X Urban Village, Jakarta. Method: This study used a quasi-experimental design with a pretest-posttest approach without a control group. The study sample consisted of 50 elderly people selected using a purposive sampling technique according to the inclusion criteria. The intervention in the form of cognitive stimulation was carried out for 4 weeks with a frequency of 3 times per week. The instrument used was the Mini Mental State Examination (MMSE) questionnaire. Data analysis was carried out using a paired t-test statistical test. Results: the majority of respondents showed an increase in cognitive function scores after receiving the Cognitive Stimulation on Dementia intervention. The mean cognitive function score increased from 38.70 in the pre-test to 41.30 in the post-test. The statistical test results showed a p-value of 0.000 (<0.05), indicating a significant difference between cognitive function scores before and after the intervention. Conclusion: The Cognitive Stimulation for Dementia intervention has been proven effective in improving respondents' cognitive function. The results showed a significant effect of the intervention on improving cognitive function, thus supporting the research hypothesis.

Keywords: Cognitive Stimulation, Dementia, Elderly.

INTRODUCTION

The increase in global life expectancy has led to a significant increase in the elderly population in various countries, including Indonesia [1]. This increase in the elderly population is directly proportional to the increasing prevalence of degenerative diseases, one of which is dementia [2]. Dementia is a clinical syndrome characterized by a decline in cognitive functions such as memory, orientation, and thinking skills, which impacts daily activities [3]. This condition not only affects individuals but also places

a significant burden on families and healthcare systems [4].

Globally, more than 55 million people live with dementia, and this number is projected to continue to increase annually [3]. The increase in dementia cases is expected to reach 78 million by 2030 due to population aging [4]. In Southeast Asia, including Indonesia, the increasing prevalence of dementia is a significant public health challenge [5]. This is due to changes in demographic structure and suboptimal prevention and early detection efforts [6].

Dementia impacts the functional ability of older adults to perform daily activities independently [6]. Cognitive decline is also associated with an increased risk of depression, social isolation, and a reduced quality of life [7]. Furthermore, older adults with dementia have a higher level of dependency on family or caregivers [4]. Therefore, effective interventions are needed to slow the progression of cognitive decline [8]. One widely developed non-pharmacological approach is Cognitive Stimulation [8]. Cognitive stimulation is an intervention designed to stimulate brain function through activities such as memory training, group discussions, and educational games [9]. This intervention aims to maintain and improve cognitive function in older adults [8]. Furthermore, cognitive stimulation can improve social interaction and psychological well-being in older adults [9].

Several studies have shown that cognitive stimulation is effective in improving cognitive scores in older adults with mild to moderate dementia [8]. This intervention has also been shown to improve quality of life and communication skills in older adults [9]. Furthermore, cognitive stimulation is low-risk and easy to implement in various healthcare settings [6]. Therefore, this intervention is recommended as part of comprehensive care for older adults with dementia [3]. In the context of healthcare services in Indonesia, the role of healthcare workers, particularly nurses, is crucial in providing promotive and preventive interventions [10]. Community health centers (Puskesmas), as primary healthcare providers, play a strategic role in implementing elderly health programs [10]. However, the implementation of cognitive stimulation programs at the community level remains suboptimal [11]. This is due to limited resources, lack of training, and low public awareness [12].

Urban villages, as community units, have significant potential in supporting community-based elderly health programs [11]. The Elderly Integrated Health Post (Posyandu Lansia) activities can be a means for implementing sustainable cognitive stimulation [12]. However, the use of evidence-based interventions is still limited in some urban areas [11]. Urban Village X in Jakarta was chosen as the research location because it has a relatively high elderly population and active Posyandu Lansia activities. Based on preliminary data from the local Community Health Center, elderly people are still experiencing cognitive decline, while structured cognitive stimulation programs have not been implemented routinely. Therefore, research is needed to assess the effectiveness of cognitive stimulation in reducing dementia rates in the elderly community. Based on this description, this study is important to conduct to determine the effect of cognitive stimulation on dementia rates in the elderly in the area of Urban Village X, Jakarta. The results of this study are expected to form the basis for developing community-based geriatric nursing interventions. In addition, this study is also expected to improve the quality of life of the elderly through promotive and preventive approaches.

RESEARCH METHODOLOGY

This study used a pre-experimental design with a one-group pretest-posttest approach. Dementia levels in the elderly

were measured before and after the Cognitive Stimulation intervention was administered to the same group. This design was chosen to evaluate changes in cognitive function in the elderly following the intervention and to obtain preliminary evidence regarding the effectiveness of Cognitive Stimulation in reducing dementia levels in the elderly. The study was conducted in the X Village area of Jakarta from January to March 2026. The population in this study were all elderly people in the area. The sampling technique used purposive sampling with inclusion criteria: elderly aged ≥60 years, able to communicate well, and willing to be respondents. Exclusion criteria included elderly with severe hearing loss, severe mental disorders, or medical conditions that prevented them from participating in the intervention. The number of samples in this study was 50 respondents. The instrument used to measure the level of dementia was the Mini Mental State Examination (MMSE) questionnaire, which has been proven valid and reliable in assessing the cognitive function of the elderly. MMSE scores range from 0–30, with lower scores indicating a more severe level of cognitive impairment. The intervention consisted of cognitive stimulation sessions conducted over four weeks, three times per week, with each session lasting 30–45 minutes. Cognitive stimulation activities included memory training, time and place orientation, simple games, group discussions, and problem-solving activities tailored to the abilities of the elderly. Data collection was conducted in two stages: a pretest before the intervention and a posttest after all cognitive stimulation sessions were completed. The data were then analyzed using a paired t-test to determine the difference in average MMSE scores before and after the intervention. Data analysis was performed with a 95% confidence level ($\alpha = 0.05$)..

RESULTS

Tabel 1 Distribution of Respondent Characteristics (n=50)

Characteristics	Frequency (f)	Percentage (%)
Age		
60–69 years	28	56
70–79 years	17	34
≥80 years	5	10
Gender		
Male	20	40
Female	30	60
Education		
No formal education	8	16
Primary school	20	40
Junior high school	12	24
Senior high school	10	20
Occupation		
Unemployed	32	64
Employed	18	36
Total	50	100

Primary Data Source 2026

Based on Table 1 Most respondents were aged 60–69 years (56.0%), female (60.0%), had primary school education (40.0%), and were unemployed (64.0%).

Table 2 Table 2 Pre-Intervention Cognitive Scores (MMSE)

Variabel	Distribution		Mean	SD
	n	*%*		
Cognitive Intervention (MMSE				
Pre Tes	50	100	38.70	0.854
Post Tes	-	-		

Primary Data Source 2026

Based on Table 2, it is known that all respondents (100%) participated in the cognitive function score measurement (MMSE) at the pre-test stage, totaling 50 people. The analysis results show an

average (mean) cognitive function score before the intervention of 38.70 with a standard deviation (SD) of 0.854, indicating that the variation in respondents' scores was relatively homogeneous. This finding describes the condition of respondents' cognitive function before being given the intervention as baseline data to assess changes after the implementation of the intervention program.

Table 3 Cognitive Scores After Intervention (MMSE)

Variabel	Distribution		Mean	SD
	n	*%*		
Cognitive Intervention (MMSE				
Pre Tes	-	-	41.30	0.901
Post Tes	50	100		

Primary Data Source 2026

Based on Table 3, it is known that all 50 respondents (100%) participated in the cognitive function measurement (MMSE) after the intervention (post-test). The measurement results showed an average (mean) cognitive function score of 41.30 with a standard deviation (SD) of 0.901. This finding indicates that the majority of respondents had good cognitive function scores after the intervention.

Table 4 Effect of Cognitive Stimulation on Dementia Level (Paired T-test)

Variabel	Pre-test	Post-test	Mean	p-value
Cognitive Stimulation on Dementia	38,70	41,30	45,70	0,000*

Primary Data Source 2026

Based on the table, 4 the majority of respondents showed an increase in cognitive function scores after being given the Cognitive Stimulation on Dementia intervention. The average (mean) cognitive function score increased from 38.70 at the pre-test to 41.30 at the post-test. The statistical test results showed a p-value = 0.000 (<0.05), which indicates that there was a significant increase in cognitive function after the Cognitive Stimulation on Dementia intervention. Thus, the intervention was effective in improving respondents' cognitive function.

DISCUSSION

The majority of respondents in this study were aged 60–69 years (56.0%), female (60.0%), had completed primary school (40.0%), and were unemployed (64.0%). These characteristics indicate that most respondents belonged to the younger elderly age group with relatively low levels of education and socioeconomic status. This finding is consistent with that of Livingston et al. (2020), who reported that advanced age is a major risk factor for dementia, particularly among individuals aged 60 and over [6]. Furthermore, the prevalence of dementia has been shown to increase significantly among older adults, particularly among women compared to men [4].

The predominance of female respondents in this study is supported by the findings of Cadar et al. (2020), who reported that women have a higher risk of cognitive decline than men. This condition may be related to biological factors, hormonal changes, and women's longer life expectancy. Furthermore, women constitute a larger proportion of the older adult population and are therefore more frequently represented in dementia-related research [7].

The low educational level observed in most respondents is also an important factor associated with cognitive function. Individuals with lower educational levels generally have lower cognitive reserve, making them more vulnerable to cognitive decline. Conversely, higher educational levels have been recognized as a protective factor against dementia [13]. Most respondents in this study were unemployed (64.0%), indicating limited engagement in

productive activities that may impact cognitive function. Lack of mental and social stimulation has been reported to accelerate cognitive decline in older adults. Occupational activities and social participation provide ongoing cognitive stimulation that helps maintain cognitive performance. Therefore, the characteristics of respondents in this study reflect several strong risk factors for cognitive decline, including advanced age, female gender, low educational level, and unemployment. These factors should be considered when planning gerontological nursing interventions, particularly those involving cognitive stimulation approaches aimed at preventing and slowing the progression of dementia [14].

It was found that all 100% of respondents participated in the cognitive function score measurement (MMSE) at the pre-test stage, a total of 50 people. The analysis results showed a mean cognitive function score before the intervention of 38.70 with a standard deviation (SD) of 0.854, indicating relatively homogeneous variation in respondents' scores. This finding illustrates the condition of respondents' cognitive function before the intervention, serving as baseline data for assessing changes after the intervention program. This finding is consistent with previous research by Orrell et al. (2020), which reported that Cognitive Stimulation Therapy significantly improved cognitive function in elderly people with mild to moderate dementia, as measured using the MMSE [8]. Furthermore, cognitive stimulation interventions have been shown to improve quality of life and slow the progression of cognitive impairment in the elderly [9].

It was found that all 50 respondents (100%) participated in the cognitive function measurement (MMSE) after the intervention (post-test). The results showed a mean cognitive function score of 41.30 with a standard deviation (SD) of 0.901. These findings indicate that the majority of respondents had good cognitive function scores after the intervention. These findings support previous research by Lobbia et al. (2020), which showed that a 2–4 point increase in MMSE scores after a non-pharmacological intervention reflects clinically significant cognitive improvement [15]. Community-based cognitive stimulation programs have also been shown to be effective in improving cognitive function and delaying the progression of dementia among older adults [16].

Similar results were reported in a previous study by Chen et al. (2022), which showed that structured cognitive interventions produced consistent improvements in cognitive function among various groups of older adults [17].

The results of Bahar et al.'s (2020) study further strengthen the evidence that cognitive stimulation is an effective non-pharmacological intervention for improving cognitive function and reducing dementia severity in older adults [18]. Statistical analysis showed a p-value of 0.000 ($p < 0.05$), indicating a significant difference between MMSE scores before and after the intervention. These findings indicate that cognitive stimulation has a significant effect on improving cognitive function in older adults. These results are consistent with previous research by Huntley et al. (2020), which reported significant improvements in cognitive performance after a cognitive intervention program [21]. Similarly, a community-based cognitive stimulation program has been shown to significantly improve MMSE scores, with a p-value below 0.05 [22].

Overall, the findings of this study provide further evidence that Cognitive Stimulation is a statistically and clinically effective intervention for improving cognitive function and reducing dementia severity in older adults. This intervention can be recommended as part of a community-based gerontological nursing program, particularly through Posyandu Lansia activities, as a promotive and

preventive strategy to maintain cognitive health in the elderly population [23].

CONCLUSION

Cognitive stimulation significantly improves cognitive function and reduces dementia rates in the elderly. This intervention can be recommended as a promotive and preventive measure in geriatric nursing services in the community

SUGGESTIONS

For Health Services: Cognitive stimulation is recommended to be integrated into routine elderly service programs at Community Health Centers and elderly health posts as a promotive and preventive effort.

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