

## Case Report

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# Application Of Brain Gym Exercise to Improve Cognitive Function of Elderly at Risk of Dementia in Nursing Home West Sumatera: Case Report



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### Abstract

As they get older, the elderly experience many changes, both physically, psychologically and socially caused by various types of decline in body cells. A common complaint in people who have reached old age is memory loss or cognitive decline. One of the interventions that can be carried out by nurses in an effort to inhibit cognitive function decline and improve cognitive function in the elderly is Brain Gym Exercise which is a series of simple movements aimed at expediting the flow of blood and oxygen to the brain. The purpose of this final scientific work is to provide an overview of the implementation of comprehensive nursing care for the elderly who have decreased cognitive function, used the case study method and provided nursing care using the nursing process approach. Based on the results of the study, the main nursing diagnosis was established in the elderly with decreased cognitive function, namely memory impairment with memory training nursing interventions (*Brain Gym Exercise*). The result of providing nursing care is an increase in cognitive function in the elderly after being given nursing intervention for 5 days as evidenced by an increase in the MMSE score from 19 to 21. It is hoped that this final scientific work can be used as a reference and information material in the field of nursing and health services at PSTW so that comprehensive nursing care can be carried out with the application of Brain Gym Exercise to improve cognitive function decline in the elderly with decreased cognitive function.

**Keywords:** Elderly; Decreased cognitive function; Brain gym exercise

### Introduction

Aging Process is a lifelong process that not only begins at a specific time but begins early in life [1]. Aging or growing old is a process of changing functions including the body including biological, physiological, mental and psychological that takes place scientifically due to increasing age and can affect human health status [2].

WHO (2022) says that it is estimated that at least 1 in 6 people in the world will be 60 years or older by 2030. Indonesia is the country with the highest growth in the elderly population (414% in the period 1990-2010) and the fourth country with an elderly population (old structure). According to the Central Statistics Agency (BPS), the number of elderly people increased from 18 million people (7.6%) in 2010 to 27 million people (10%) in 2020. The number is expected to continue to rise to 40 million people

(13.8%) by 2035 [3]. West Sumatra is included in the list of 8 provinces in Indonesia with an elderly [ population. Based on data from the Directorate General of Population and Civil Registration (Dukcapil) of the Ministry of Home Affairs, the population of West Sumatra was 5.62 million people in June 2022, 10.79% of whom were over 60 years old [4].

As we get older, the elderly experience many changes both physically, psychologically and socially. Such changes are caused by a decrease in body cells, which weakens the body's function and resistance, as well as increases risk factors for disease. Health problems that are often experienced by the elderly are malnutrition, balance disorders, sudden confusion, and others. A common complaint in people who have reached old age is memory decline or cognitive decline [5].

Cognitive function is a human mental process that includes attention, perception, thinking processes, knowledge and memory [6]. According to the Indonesian Ministry of Health, in 2016 the mildest decline in cognitive function was complained by 39% of the elderly aged 50-59 years then increased to 8.03% at the age of more than 80 years [7]. Decline in cognitive function is usually accompanied and sometimes preceded by changes in mood, emotional control, behavior, or motivation (Alzheimer's Indonesia, 2019).

In Indonesia, cognitive decline in the elderly is often considered common, so there are no specific programs or interventions provided by the government or health workers for this problem [9]. But when viewed from the impact, the decline in cognitive function in the elderly can have an impact on the quality of life of the elderly themselves. The impact of cognitive impairment on the elderly will cause a shift in the role of the elderly in social involuntary in society and in the family. This is supported by the attitude of the elderly who tend to be selfish and reluctant to listen to the opinions of others, so that it will cause the elderly to feel socially alienated which in the end feels isolated and feels useless [10].

One effort to inhibit cognitive decline due to aging and as a form of stimulation to improve brain ability is with exercise or *Brain Gym Exercise* [10-12]. *Brain Gym* is a series of simple motion exercises and is an alternative therapy that aims to facilitate the flow of blood and oxygen to the brain and stimulate both hemispheres to work Denisson in [13].

*Brain gym* or *Brain Gym Exercise* It can bring benefits such as reduced emotional stress and a cleaner or clearer mind, interpersonal relationships and a more relaxed and happy learning or work atmosphere [14]. *Brain Gym Exercise* It is also very easy to do because anyone can do it anytime and anywhere. The correct portion of exercise is about 10-15 minutes, 2-3 times a day.

Based on the results of research conducted by Al-Finatunnimah & Nurhidayati [10]. It was found that *Brain Gym Exercise* can improve cognitive function in the elderly with dementia indicated by an increase in MMSE scores in both study subjects. These results are in line with research conducted by Wulandari et al. (2020) In 25 elderly people with dementia, it was found that *Brain Gym Exercise* has a significant effect in reducing the rate of dementia in the elderly.

Based on the description above, the author is interested in doing nursing care for the elderly with the application of *brain gym exercise* in improving the cognitive function of the elderly with cognitive function decline at the Sabai Nan Aluih Siring Nursing Social Institution, Padang Pariaman Regency, West Sumatra.

### Research Methods

The method used is a case study on elderly 70-year-old female who suffers from mild cognitive function impairment with an

MMSE score of 19. This nursing care is carried out at the Tresna Werdha Sabai Nan Aluih Social Institution from 04 to 08 April 2023. The author provides nursing care ranging from assessment, diagnosis, intervention, implementation to nursing evaluation. The main nursing diagnosis that is established is memory impairment (D.0062) and other diagnoses, namely sleep pattern disturbances (D.0055) and risk of falls (D. 0143). The planned intervention is Memory exercise (I.06188) with application *Brain Gym Exercise*. Implementation in implementing *Evidence Based Nursing* carried out for 5 consecutive days within  $\pm 15$  minutes. Before applying EBN, the authors first performed memory exercises in accordance with the interventions that had been prepared. Then the author shows the video of the implementation *Brain Gym Exercise*, encourage clients to pray, wear loose clothing, and drink water to clients. The author practices the movement first *Brain Gym Exercise* then re-demonstrated by the client. The results of the implementation are evaluated daily based on SOAP. On the last day, an evaluation is carried out in accordance with the output and result criteria that have been set.

### Results and Discussion

After the intervention of memory training with the application of *Brain Gym Exercise* for 5 days, it was found that there was an increase in MMSE scores in clients from 19 to 21. This proves that the application of *Brain Gym Exercise* In the elderly with decreased cognitive function has a positive impact on the improvement of cognitive function in the elderly.

*Brain Gym Exercise* Or brain gymnastics is a collection of simple movements and aims to connect or unite the mind and body. *Brain Gym Exercise* can facilitate the flow of blood and oxygen to the brain, and also stimulate both sides of the brain to work. Light movements with games through hand and foot exercises can provide stimulation or stimulus to the brain [5].

Based on the results of the study, Mrs. D said that since she was in PSTW she was very forgetful, she often repeated the same questions in the near future, Mrs. D also sometimes answered the same questions with changing answers. When asked by the nanny, the nanny said that Mrs. D often forgot what she had done. Mrs. D also said that she finds it difficult to run new things so that this can affect the quality of life of the elderly. This is in line with the theory that the main complaint in the elderly who suffer from cognitive function decline is memory decline (easy forgetfulness). Eni & Safitri [9] said that the decline in cognitive function in the elderly has an impact on the quality of life of the elderly themselves.

After the assessment and data analysis process, two nursing diagnoses were established based on the Indonesian Nursing Diagnosis Standard (IDHS), including the first diagnosis, namely "Memory Disorders" associated with the aging process. Memory impairment is a diagnosis in IDHS which is defined as the inability to remember some information or behavior (PPNI, 2017). This is in line with research conducted by [15] who conducted a study

related to nursing care in three elderly people with decreased cognitive function. From the study, it was found that memory impairment is the main diagnosis established in the elderly with decreased cognitive function. Similar to previous research, Doni Damara also conducted a nursing care study on the elderly who have cognitive function decline problems (dementia) it was also found that the main diagnosis that was established was memory impairment [16].

From the nursing diagnosis that has been established in Mrs. D's case, the main nursing action plan was prepared based on the Indonesian Nursing Intervention Standard (SIKI), namely memory training. Memory training is an act of teaching abilities that aim to improve memory (PPNI, 2017). In line with research conducted by [15] that memory training is the main intervention given to the elderly with nursing problems memory impairment.

Implementation is carried out as an effort to improve cognitive function in clients, namely by applying *Brain Gym Exercise*. Based on research conducted by Ardiyanti et al. (2022). It was found that there was a significant influence related to implementation. *Brain Gym Exercise* on improving cognitive function in the elderly. This is also in line with research conducted by Uman et al. [17]. It was found that *Brain Gym Exercise* has a good influence on the elderly with dementia.

Before committing *Brain Gym Exercise* the author first encourages clients to pray, wear loose clothing, drink water and perform deep breath relaxation techniques. This is so that the exercises carried out can produce optimal results. This is in line with the theory that water consumption and prayer are important elements to do before doing physical exercise [18].

Before teaching techniques *Brain Gym Exercise* the author also first shows the video *Brain Gym Exercise* which is accompanied by music that aims to make it easier for clients to remember the movements in *Brain Gym Exercise*. This is in line with the theory that says that the use of video media is a positive thing as a learning medium for the elderly [19].

The evaluation process is carried out every day after implementation. Evaluation is carried out by paying attention to SOAP, where subjective evaluation is carried out by asking the client's feelings after interacting with the nurse and objective evaluation is carried out by observing the client's behavior and response during and after the interaction [20].

The evaluation of the results was carried out in accordance with theoretical nursing care referring to SLKI, namely memory with increased expectations, with verbalization indicators of the ability to learn new things quite increased where Mrs. D said that she was able to do *Brain Gym Exercise movements*. Indicators of verbalization of the ability to remember factual information were quite increased where Mrs. D when evaluated using MMSE

was able to be time oriented. Indicators of verbalization of the ability to remember certain behaviors that have been performed are quite increased and verbalization of the ability to remember events is quite increased.

### Conclusion

Based on the results of the study, it was found that the client said that since living at PSWT he often and easily forgets. At the time of measurement of MMSE scores, the client's MMSE score was 19 which resulted in the client experiencing mild cognitive impairment. The main nursing diagnosis that is established is memory impairment and other diagnoses are sleep pattern disorders and the risk of falls. The nursing intervention provided is memory training with the application of *Brain Gym Exercise*. Implementation is carried out in accordance with the interventions that have been compiled and carried out for 5 consecutive days. Nursing evaluations on clients show that the application of *Brain Gym Exercise* on clients has a positive impact as evidenced by an increase in MMSE scores from 19 to 21.

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