

## **THE EFFECTIVENESS OF IMPLEMENTING BRAIN EXERCISES ON COGNITIVE FUNCTION IN ELDERLY WITH DEMENTIA AT KATSUREN HOSPITAL, JAPAN**

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### **ABSTRACT**

The process of aging and old age is experienced by everyone. Decline in cognitive function in the elderly also often occurs. In the long term, one of the impact of decreased cognitive function is dementia. Dementia is a decline in memory, thinking, behavior and ability to carry out daily activities. The purpose of this case study is to determine the effectiveness of applying brain exercises to elderly people with dementia. This type of research is descriptive using pre-test and post-test methods. The subject in this case study was an elderly patient with dementia in ward 8 of Katsuren Hospital. The result of the study indicate that the management of nursing care in dementia patients who carried out nursing action of brain exercises therapy for 3 days (10-15 minutes per day), obtained the results of an increase in the ability to remember from Mini Mental State Examination (MMSE) score 21 to 23. From these results it can be concluded that the action of brain exercises therapy is effective in elderly dementia with memory impairment.

Keywords: brain gym; cognitive; dementia

### **INTRODUCTION**

Elderly is a condition experienced in human life. The aging process is a natural process in humans starting from birth, childhood, adolescence, adulthood and finally becoming old. This process occurs naturally accompanied by a decline in physical, psychological and social conditions which are interrelated. Intellectual or cognitive decline in the elderly is something that cannot be avoided, and is caused by various factors such as disease, anxiety or depression. (Khasanah, 2018). One of the body systems that experiences decline is the cognitive or intellectual system, which is often called dementia. Dementia is a decline in the cognitive or intellectual system that commonly occurs at the age of 60 years and over or around 5-8%. (WHO, 2020) Dementia is a decline in memory, thinking, behavior and ability to carry out daily activities. Loss of intellectual capacity in dementia is not only in memory or recollection, but also in cognition and personality. (WHO, 2019). Dementia is a decline in intellectual function and memory that can cause dysfunction in daily life. Many countries are currently entering a period of aging which is characterized by increasing life expectancy and an increasing number of elderly people. In Indonesia in 2019 the number of elderly people was 25.9 million people (9.7%) and it is estimated that in 2035 it will increase to 48.2 million people (15.77%). The elderly population in Japan even reaches 30% of the total population.

Along with the increase in the number of elderly people, the occurrence of degenerative diseases and non-communicable diseases also increases. Apart from that, elderly people also experience social, psychological and cognitive problems such as dementia. (Indonesian Ministry of Health, 2019). The condition of dementia cases in Japan is currently very critical, because there are more than 4.6 million people suffering from dementia. The prevalence of dementia in Japan exceeded 3% in 2015 and is estimated to reach nearly 9% of the population in 2050, higher than other developed countries. (Office Cabinet of Japan (2019); Komala, Novitasari, Sugiharti, and Awaludin, (2021)). Nearly 60% of the 50 million people living with dementia worldwide live in

low- and middle-income countries. And nearly 10 million new cases occur every year. The decline in cognitive function which leads to dementia results in the elderly becoming unproductive, giving rise to health problems. The impact of dementia that often occurs is difficulty carrying out daily activities independently and social activities. Management of dementia is divided into pharmacological and non-pharmacological.

According to WHO (2023), pharmacological management of dementia, namely cholinesterase inhibitors such as donepezil are used to treat Alzheimer's disease: NMDA receptor antagonists such as memantine are used for severe Alzheimer's disease and vascular dementia, drugs to control blood pressure and cholesterol can prevent additional damage to the brain due to vascular dementia, selective serotonin reuptake inhibitors (SSRIs) can help treat symptoms of severe depression in people with dementia, but should not be the first choice. Meanwhile, non-pharmacological management of dementia includes occupational therapy, speech therapy, Reminiscence Therapy, Cognitive Stimulation Therapy, one of the activities of which is brain exercise. Brain exercise is one of the preventive measures to optimize stimulation, stimulate brain function to become increasingly relevant in the elderly, and improve blood flow to the brain. Brain exercises are easy to do because they require a fairly short time of at least 10 minutes, simple movements, and do not require special materials or places.

## **METHOD**

This type of research is descriptive using pre-test and post-test methods. The pre-test and post-test method used in this case study is the Mini Mental State Examination (MMSE) to measure the level of cognitive function in the elderly. The subject in this case study was an elderly patient with dementia in ward 8 of Katsuren Hospital.

## **RESULTS AND DISCUSSION**

The case study that was carried out on Mrs. H 87 years old with Alzheimer's dementia, female, was admitted to Katsuren Hospital on October 5 2023. Data sources were obtained from the patient's medical records, direct interviews with both patients and nurses, as well as the family in charge, namely Mr. A the patient's nephew. From the results of the assessment that has been carried out, the complaints experienced by Mrs. H is forgetfulness.

Based on the case review that has been carried out, in this discussion the author will discuss the problem that is the main focus in nursing diagnosis, namely memory disorders related to aging. Implementation of nursing care for 3 x 24 hours from April 12 2024 to April 14 2024 through several stages of the nursing process including assessment, formulation of diagnosis, intervention, implementation to the evaluation stage

## **ASSESSMENT**

Assessment is the initial stage of the nursing process which is carried out to obtain and collect data with the aim of confirming the disease situation, establishing nursing diagnoses, determining strengths and health promotion needs (Setianingrum, 2021). This stage is very important in determining the next stages. Comprehensive data will determine the determination of nursing diagnoses appropriately and correctly, which will then have an influence in determining nursing care planning. From the study data was obtained that Mrs. H was diagnosed with Alzheimer's dementia. Mrs. H often experiences forgetfulness and says that she is old so she forgets who she

has just talked to, forgets the day, date or month. The forgetfulness experienced by Mrs. H since 2018, the client and her husband were lost due to dementia, so their sister and nephew recommended that they be placed in an institution, but their husband did not agree. As a result, the relative's relationship deteriorated. On July 18 2023, the client and her husband who were at Nanzan Hospital contracted the corona virus and were transferred to Yuai Medical Center, but on August 26, the client's husband died, increasing the client's anxiety. Due to difficulties in being treated at the previous hospital, the client was transferred to Katsuren Hospital on October 5 2023.

## **NURSING DIAGNOSES**

A nursing diagnosis is a clinical assessment of the client's, family's or community's experiences regarding health problems, risks of health problems and life processes. (PPNI DPP SDKI Working Group Team, 2017). After going through the assessment and data collection process, the author formulated several nursing diagnoses and the main focus in this discussion is memory disorders related to aging. Memory impairment is the inability to remember certain information and behavior, and is also one of the consequences of decreased cognitive function in the elderly. The author confirms this nursing diagnosis because it is supported by subjective data, namely that the client said that because he was old he often forgot who he had just talked to, forgot the day, date or month, and forgot the activities he had just done. This can also be supported and proven by objective data, namely that the patient looks confused and does not know when asked about the activities he has just done, "Have you eaten?" The patient answered no, even though he had eaten. And this is also proven by the Mini Mental State Examination (MMSE), which is used to determine the level of cognitive function in the elderly, obtaining a score of 21, which means the possibility of experiencing impaired cognitive function.

## **NURSING INTERVENTIONS**

Nursing interventions are all forms of action provided by nurses based on science and clinical judgment to obtain specified results for clients, families and society. (SIKI DPP PPNI Working Group Team, 2017) From the nursing diagnosis that has been determined, the outcome that emerges is memory (L.09079) which after nursing action is carried out for 3x24 hours, it is hoped that the verbalization of the ability to remember will improve with the result criteria: the verbalization of the ability to remember factual information will increase. So a nursing plan or intervention has been prepared, namely memory training (I.06188). Memory training is teaching the ability to improve memory and actions that need to be taken include: planning teaching methods according to the patient's abilities, stimulating using memory about events that have just happened, facilitating recall of past events, teaching appropriate memory techniques (brain exercises ).

## **IMPLEMENTATION**

Nursing implementation is a therapeutic action carried out by a nurse in accordance with predetermined interventions. Implementation carried out for 3x24 hours, implementation of nursing care from April 12 2024 to April 14 2024 Day 1 (12 April 2024), namely: at 08.00 planning teaching methods according to the patient's abilities, measuring the patient's cognitive function abilities with the Mini Mental State Examination (MMSE) before doing brain exercises (pre-test), at 09.00 teaching brain exercises, and at 13.00 stimulate using memory on events that have just happened. Day 2 (13 April 2024), namely: 08.00 Stimulating using memory on events that have just happened, at 10.00 teaching proper memory techniques, teaching brain exercises, and at 14.00 stimulating using memory on events that have just happened. Day 3 (14 April 2024), namely: at

08.00 stimulate using memory on events that have just happened, at 09.00 teach appropriate memory techniques, teach brain exercises, and at 09.30 facilitate recalling past experiences, stimulate using memory on events that occurred recently occurred, measuring the patient's cognitive abilities with the Mini Mental State Examination (MMSE) after brain exercises (post-test).

## **EVALUATION**

Nursing evaluation is the result or assessment of a series of actions that have been carried out by the nurse and is the final stage in the process of fulfilling nursing care. If the results of nursing actions are not or have not been successful, a new appropriate plan needs to be prepared.

Evaluation on day 1:

S: The patient says he forgets easily because he is old, and asks if mealtime is over?

O: The patient seems cooperative when the procedure is carried out, but he forgets that he has eaten. The MMSE score before the action was carried out was 21, which means the possibility of experiencing impaired cognitive function.

A : The problem has not been resolved

P: Continue intervention: plan teaching methods according to the patient's abilities, stimulate using memory about events that have just happened, facilitate recall of past events, teach appropriate memory techniques (brain exercises)

Evaluation on day 2:

S: The patient doesn't know what day it is or what date it is

O: The patient is cooperative and enthusiastic when nursing actions are carried out, but when asked (what day and date it is, the patient answers he doesn't know and asks the staff on duty)

A : The problem has not been resolved

P: Continue intervention: plan teaching methods according to the patient's abilities, stimulate using memory about events that have just happened, facilitate recall of past events, teach appropriate memory techniques (brain exercises)

Evaluation on day 3:

S: The patient said he was happy when doing gymnastics movements

O: The patient looks cooperative and enthusiastic when doing brain exercises and when asked about things related to the past the patient can answer well and in accordance with the data obtained previously (what was his job when he was young, and where did he work), when asked what date he is now the patient can also answer correctly. The MMSE score after the brain exercise was carried out was 23. This shows an increase in the MMSE score and the effect of brain exercise on improving the cognitive function of the elderly.

A : The problem has not been resolved

P: Continue intervention: plan teaching methods according to the patient's abilities, stimulate using memory about events that have just happened, facilitate recall of past events, teach appropriate memory techniques (brain exercises)

## **CONCLUSION**

The action of brain exercises therapy is effective in elderly dementia with memory impairment.

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