

The Relationship Between Controlled Hypertension And Uncontrolled Hypertension With Quality Of Life In Cognitive Aspects In The Elderly

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ABSTRACT

Backgrounds: One of the cardiovascular diseases that often causes death is hypertension. If hypertension, especially in the elderly, becomes uncontrolled, it can cause a decrease in quality of life, one of which is the cognitive aspect. **Objective:** Determine the frequency distribution of gender, hypertension status, quality of life in cognitive aspects, quality of life in cognitive aspects in each hypertension status, as well as the relationship between controlled hypertension and uncontrolled hypertension with quality of life in cognitive aspects in elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City. **Methods:** This research is an observational analytic study with a cross-sectional approach using a consecutive sampling technique with the correlation coefficient formula to determine the minimum sample, which resulted in the minimum of 12 samples. Patient data obtained from medical records and met the inclusion and exclusion criteria were interviewed using the Six-item Cognitive Impairment Test (6CIT). The data was then analyzed using Chi-square and Fisher's Exact test. **Results:** From 42 elderly people with hypertension, the patients were predominantly male (57.1%), had uncontrolled hypertension (59.5%), and had normal cognitive function (47.6%). Patients with controlled hypertension dominantly had normal cognitive function (26.2%), while patients with uncontrolled hypertension dominantly had mild cognitive impairment (23.8%). The results of statistical analysis of hypertension status, namely blood pressure control, with quality of life in the cognitive aspect obtained a significant value (p) of 0.245 ($p > 0.05$). **Conclusion:** With this significant value (p), it can be concluded that controlling blood pressure in elderly people with hypertension has no significant relationship with quality of life in the cognitive aspect.

Keywords: Hypertension, controlled hypertension, uncontrolled hypertension, cognitive, elderly

INTRODUCTION

Hypertension is a cardiovascular disease characterized by an increase in blood pressure which is divided into 2 stages, namely stage 1 hypertension characterized by systolic pressure of 140-159 mmHg or diastolic 90-99 mmHg and stage 2 hypertension characterized by systolic pressure ≥ 160 mmHg or diastolic ≥ 100 mmHg (James, et al., 2014). According to Unger, et al. (2020), hypertension is the leading cause of death globally with 10.4 million deaths per year. This is caused by public ignorance of several symptoms of hypertension that do not always occur, including headaches in the morning, irregular heart rhythms, ringing in the ears, and even chest pain in severe hypertensive conditions (WHO, 2021). In addition, severe hypertensive conditions can also cause abnormalities in other organs,

such as the heart, blood vessels, kidneys, eyes, and brain. The brain itself is an organ that functions in terms of intelligence which if there is a disorder will affect it. This is known as interference with cognitive function (Anto, *et al.*, 2019). Canavan & O'Donnell (2022) stated that this can occur due to endothelial dysfunction and *Blood-Brain Barrier* (BBB) disorders, causing cerebral ischemic and triggering neuroinflammation. In addition to the manifestations of certain diseases, cognitive function decline can also be influenced by age, education, gender, and body mass index (Riasari, *et al.*, 2022). This decline in cognitive function can be characterized by impaired memory, orientation, and attention, resulting in the quality of life of patients (CDC, 2011).

Based on the Ministry of Health of the Republic of Indonesia (2014, 2016), hypertension is the most common disease in Indonesia suffered by the elderly (elderly) with a prevalence of 57.6%, followed by arthritis (51.9%) and stroke (46.1%) %, and dominated by women with an incidence rate of 37% compared to men (28%). The prevalence of elderly hypertension in Indonesia reaches 55.2% at the age of 55-64 years, 63.2% at the age of 65-74 years, and is increasing at 69.5% at the age of over 75 years (Ministry of Health of the Republic of Indonesia, 2019). The increase in age that occurs contributes to cognitive function decline due to changes in small and large blood vessels found in the brain, resulting in changes in the cerebral substantia alba (Hay, *et al.*, 2020; Tadic, *et al.*, 2016). Research by Tzourio, *et al.* in 1999 in France with 1,373 subjects aged 59-71 years for 4 years, found an increased risk of cognitive function decline by 2.8 times in patients with hypertension. In addition, the risk of cognitive decline in patients with hypertension increases by 4.3 times in patients without therapy and 1.9 times in patients with therapy (Aronow, 2017). The prevalence of cognitive function decline in the elderly due to hypertension in Indonesia is currently unclear due to the absence of official data. However, the relationship between hypertension and cognitive function decline has been studied several times in several areas, one of which is a study conducted by Pratiwi (2017) at Putri Hijau Hospital Medan which found 60 out of 67 (89.6%) subjects with hypertension experienced a decline in cognitive function. In addition, research conducted at the Wana Seraya Nursing Home in Denpasar also stated that there is a relationship between hypertension and decreased cognitive function. This is evidenced by the presence of 18 out of 46 (39%) subjects with hypertension who also experience cognitive function decline (Sari, *et al.*, 2019).

Based on this explanation, researchers are interested in conducting this study because there has been no research on the relationship between the incidence of hypertension, both controlled hypertension and uncontrolled hypertension, with cognitive function decline in Surabaya, especially at the Mojo District Health Center, Gubeng District, with subjects aged 60-70 years. This study was conducted in the area because in 2018 in Surabaya, the prevalence of hypertension at the age of >18 years reached 31.13% of 1,283,119 residents who measured blood pressure with the incidence of hypertension at the Mojo District Health Center, Gubeng District, amounting to 13,817 residents (Surabaya Health Office, 2019). This figure makes Mojo Village the village with the third highest hypertension cases in Surabaya after Gading Village with 15,008 cases and East Perak Village with 14,080 patients, with the lowest service coverage rate, which is 6.43% of the number of patients compared to Gading Village (13.26%) and East Perak Village (21.01%) in the January-November 2018 period. This research is expected to provide knowledge to the community, especially at the Mojo District Health Center, Gubeng District, Surabaya City, about the importance of controlling blood pressure so that hypertension can be controlled to minimize the decline in cognitive aspects in the elderly so as to improve the quality of life.

MATERIALS & METHODS

Type and Design of Research

This study was conducted using an observational analytical research design with a cross-sectional method to determine the relationship between controlled hypertension and uncontrolled hypertension with quality of life in cognitive aspects in the elderly.

Population and Research Sample

Research Population

The population coverage used in this study was elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City.

Research Sample

The sample of this study was elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City who met the inclusion and exclusion criteria.

Research Technique

Research sampling is carried out by consecutive sampling, namely the selection of samples that meet the criteria in the subject of research until it meets the large number of samples that have been determined.

Inclusion and Exclusion

a. Inclusion criteria

1. Willing to become a research subject by signing an informed consent sheet
2. 60-70 years old
3. Is a person with hypertension
4. Have good hearing and are able to speak Indonesian

b. Exclusion criteria

1. Have a history of severe head trauma
2. Have a history of or are suffering from brain tumors
3. Have a history of or are suffering from CNS infections and/or HIV/AIDS, such as neurocysticercosis (NCC) and HIV-Associated Neurocognitive Disorder (HAND)
4. Have metabolic and hormonal disorders, such as DM, hypoglycemia, and Cushing's syndrome
5. Have been diagnosed with another neurodegenerative disease
6. Have been diagnosed with a mental disorder or psychological problem
7. Taking drugs that affect cognitive function, such as psychotropic substances (codeine, pethidine/meperidine) and glucocorticoids

Sample Size

The sample size in this study was calculated using the correlation coefficient formula, which is as follows:

$$n \geq \left(\frac{Z_{1-\alpha/2} - Z_{1-\beta}}{\frac{1}{2} \log_e \frac{1+r}{1-r}} \right)^2 + 3$$

n: number of samples

a: 0.05

b: 0.2

r: correlation coefficient (from literature by Pratiwi (2017) of 0.8)

The minimum number of samples needed is 10 people. Taking into account the occurrence of drop outs, the number of subject calculated is:

$$n' = \frac{n}{1-f}$$

n': the number of subjects calculated

N: Minimum sample count

F: Drop Out Proportions (10%)

$$n' = \frac{10}{1-0,1} = 11,11 \approx 12$$

So, the minimum number of samples needed in this study is 12 people.

RESULTS

Research Overview

This research was conducted from October 2021 to December 2022 from licensing to data collections. Data collection was carried out by taking secondary data in the form of medical records of elderly patients with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City, US well as primary data in the form of questionnaire interview. The number of patients who have been contacted by researchers is 209 patients with 127 patients unresponsive, 12 patients with incorrect numbers, 12 patients with diabetes, 11 patients not willing to be the subject of research, and 5 patients died. Therefore, the large sample used in this study was 42 patients who had been interviewed. All data from this study were analyzed using IBM SPSS application version 26.

Univariate Analysis of Research Subject Characteristics

The characteristics of the study subjects included gender, hypertensive status, and cognitive status of patients. Univariate analysis was performed using frequency analysis on IBM SPSS version 26.

Gender frequency distribution of elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Table 1 Gender Frequency Distribution of Elderly People with Hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Gender	Frequency	Percentage (%)
Man	24	57,1
Woman	18	42,9
Total	42	100.0

Frequency distribution of hypertensive status of elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Table 2 Frequency Distribution of Hypertensive Status of Elderly People with Hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Hypertensive Status	Frequency	Percentage (%)
Controlled	17	40.5
Uncontrolled	25	59.5
Total	42	100.0

Age frequency distribution of elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Table 3 Age Frequency Distribution of Elderly People with Hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Age	Frequency	Percentage (%)
Young elderly	36	85.7
Intermediate elderly	6	14,3
Total	42	100.0

Frequency distribution of cognitive status of elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Table 4 Frequency Distribution of Cognitive Status of Elderly People with Hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Cognitive Status	Frequency	Percentage (%)
Normal	20	47,6
Mild cognitive impairments	14	33,3
Severe cognitive impairments	8	19.0
Total	42	100.0

Cognitive domain affected in elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Table 5 Number of Patients Experiencing Impairment at Each Question Point 6CIT

Question No. (topics)	Number of Patients (n=42)	Cognitive Status		
		Normal (n=20)	Mild cognitive impairment (n=14)	Severe cognitive impairment (n=8)
1 (determining the current year)	0	0	0	0
2 (determining the current month)	0	0	0	0
3 (remembering and renaming the 5 components of the address)	42	20	14	8
4 (determining the current time)	0	0	0	0
5 (countdown 20 to 1)	11	2	2	7
6 (mentioning the name of the month in 1 year in reverse)	41	19	14	8

Of the six question points on the 6CIT questionnaire, it was found that patients limit the most problems in question number 3 regarding "remembering and renaming the 5 components of the address" (42 people), followed by question number 6 concerns "mentioning the name of the month in 1 year in reverse" (41 people). Meanwhile, there were no patients who experienced interference in questions number 1 (determining the current year), 2 (determining the current month), and 4 (determining the current time).

Table 6 Cognitive Domain Affected in Elderly People with Hypertension at the Mojo District Health Center, Gubeng District, Surabaya City

Cognitive Domains (question no.)	Number of Patients (n=42)	Cognitive Status		
		Normal (n=20)	Mild cognitive impairment (n=14)	Severe cognitive impairment (n=8)
Orientations (1, 2, 4)	0 (0%)	0	0	0
Memories (3)	42 (100%)	20	14	8
Calculations (5, 6)	42 (100%)	20	14	8

Based on the table, it was found that all patients experienced disturbances in the domain of memory and calculation, which was many as 42 people (100%). on the other hand, there were no patients who experienced disturbances in the orientation domain.

Bivariate Analysis of the Relationship between Controlled Hypertension and Uncontrolled Hypertension with Cognitive Aspects in the Elderly at the Mojo District Health Center, Gubeng District, Surabaya City

The bivariate analysis conducted in this study was to look for the relationship between controlled hypertension and uncontrolled hypertension with cognitive aspects in the elderly. Bivariate analysis was performed using the Chi-square test and Fisher's Exact.

Table 7 Analysis of the Relationship between Controlled Hypertension and Uncontrolled Hypertension with Cognitive Aspects

Hypertensive Status	Cognitive Status						Total		P-value
	Normal		Mild cognitive impairment		Severe cognitive impairment				
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	
Controlled	11	26,2	4	9,5	2	4,8	17	40,5	0.245
Uncontrolled	9	21,4	10	23,8	6	14,3	25	59,5	
Total	20	47,6	14	33,3	8	19,0	42	100	

Based on the bivariate analysis in the table above it can be concluded that there is no relationship between controlled hypertension and uncontrolled hypertension with cognitive aspects in the elderly at the Mojo District Health Center, Gubeng District, Surabaya City. This is due to the result of the value on the Fisher's Exact test of 0.245 ($p > 0.05$).

DISCUSSION

General Characteristics of Research Sample

The data in this study were taken from primary and secondary data. Primary data are in the form of interview results related to indications of cognitive impairment in patients using questionnaires *the Six-items Cognitive Impairment Test* (6CIT), while secondary data in the form of medical records of elderly patients with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City. A total of 42 medicals records and interview results that met the inclusions and exclusion criteria were used in this study, from a minimum sample of 12 subjects. Then, the data is processed using IBM SPSS application version 26. The number of samples used in this study is quite different from the study by Wei, et al. (2018) in China which used 6,732 subjects. Differences in the numbers of different samples can occur based on the length of time the research is being conducted.

Based on the results of univariate analysis of this study, male hypertension sufferers were more found, namely as many as 24 people (57.1%), while female hypertension sufferers many as 18 people (42.9%). This can be attributed to research by Bantas & Gayatri (2019) which states that men have a higher risk of hypertension compared to women. This can happen because men have lower levels of estrogen hormones and higher testosterone hormone so that it relatively induces atherogenic insulin and lipid resistance that can cause atherosclerosis in blood vessels. Atherosclerosis in blood vessels that occurs will cause hypertension. However, Tasic, et al. (2022) explains that the condition applies in reproductive age, when women are in the premenopausal phase. Meanwhile, there is a postmenopausal phase, the risk of hypertension in women will increase due to falling estrogen levels. This explanation is in line with the research of Choi, et al. (2017) of 27,887 subjects aged ≥ 30 years in Korea who found the prevalence of hypertension was more prevalent in men (34.6%) than women (30.8%), then compared to reversed at the age of > 60 years.

Hypertension Characteristics of Research Sample

In this study, only 17 subjects (40.5%) with controlled hypertension were found, while 25 others subjects (59.5%) had uncontrolled hypertension. The large number of people with uncontrolled hypertension can be caused by inefficient antihypertensive disease due to non-adherence to taking drugs, high stage of hypertension, and errors use of antihypertensive drugs (Upoyo, et al., 2021). This is supported by Ministry of Health of the Republic of Indonesia (2019) which states that the reason for the large number of people with hypertension in Indonesia is the non-compliance of people with hypertension taking drugs because patients feel healthy, irregular visits to health care facilities, taking traditional medicine, using other therapies, forgetting to take medicine, not being able to afford medications, drug side effects, and hypertension medications are not available in health care facilities.

All subjects in this study were known to have made visits to health services and taken antihypertensive drugs.

The results of this research are in line with research conducted by Rumbo (2022) on 30 people in Taniuge, Parigi Moutong, which found more people with uncontrolled hypertension, namely 24 people (80%), than patients with controlled hypertension, namely 6 people (20%). In the study it was mentioned that uncontrolled hypertension had a significant relationship with lifestyle with value on the Chi-square test of 0.029 ($p < 0.05$), but there was no significant association with health services with a value of $p = 0.5$ ($p > 0.05$). However, research at the Gamping 1 Health Center in Sleman on 191 hypertensives patients showed that there was a relationship between health services and the occurrence of uncontrolled hypertension with a value of $p = 0.000$ ($p < 0.05$) in the *Chi-square* test and supported by the results of a double logistic regression test which states that visits to health services that are not routinely have risk factors 5,339 times for uncontrolled hypertension (aOR=5,339; 95%CI; (2,452-11,624)) (Darussalam & Warseno, 2017).

Visits of people with hypertension to health care facilities are very important to do because they can monitor the development of hypertension experienced, lifestyle changes by maintaining diet and physical activity, and adherence in taking antihypertensive drugs (Ministry of Health of the Republic of Indonesia, 2019). Sung, et al. (2018) mentions several other lifestyle-related risk factors that can affect hypertension including waist circumference, BMI, smoking history, alcohol consumption, and physical activity.

Cognitive Characteristics of Research Samples

After conducting interviews using the 6CIT questionnaire in this study, it was found that the cognitive status of hypertensive patients was dominated by a group of patients who did not experience impaired cognitive function, namely A total of 20 people (47.6%), then followed by the group of patients with mild cognitive impairments and severe cognitive impairment, with the number of 14 people (33.3%) and 8 people (19%) respectively. This is different from the research conducted by Anto, et al. (2019) in 57 elderly people with hypertension in Medan, dominated by a group of patients with severe cognitive impairment, namely 31 people (54.4%), followed by a group of patients who did not experienced impaired cognitive function with 19 people (33.3%), and the least was the group of patients with mild cognitive impairment with 7 people (12.3%).

Cognitive gangs that occur can be caused by structurally decreased and functional integrity of brain blood vessels and BBB due to uncontrolled hypertension (Santisteban, et al., 2022). In addition, the CDC (2011) states that there are several other factors that can also affect cognitive function, including old age, family history, education level, damage to the brain, exposure to pesticides and toxins, physical inactivity, and other chronic conditions, such as Parkinson's disease, heart disease, stroke, and diabetes. In this study, there were several risk factors that had been included in the exclusion criteria, such as events that could cause damage to the brain and some chronic conditions that can affect cognitive function so that it can be ascertained that all subjects involved in this study are not experiencing or have a related history such as risk factors. However, there are also some unstudied risk factors that may affect the results of the study.

Some signs that is often seen in someone with impaired cognitive function, including experiencing memory decline, talking or asking a topic that is repetitive, can not remember familiar people or frequently visited places, difficulty in making decisions during emergencies, changes in mood and behavior, vision problems, and difficulty planning or doing things that are commonly done (CDC, 2011). Harvey (2019) states that the sign occurs according to the domain of impaired cognitive function and can be known by carrying out neuropsychological tests that can measure one or more abilities.

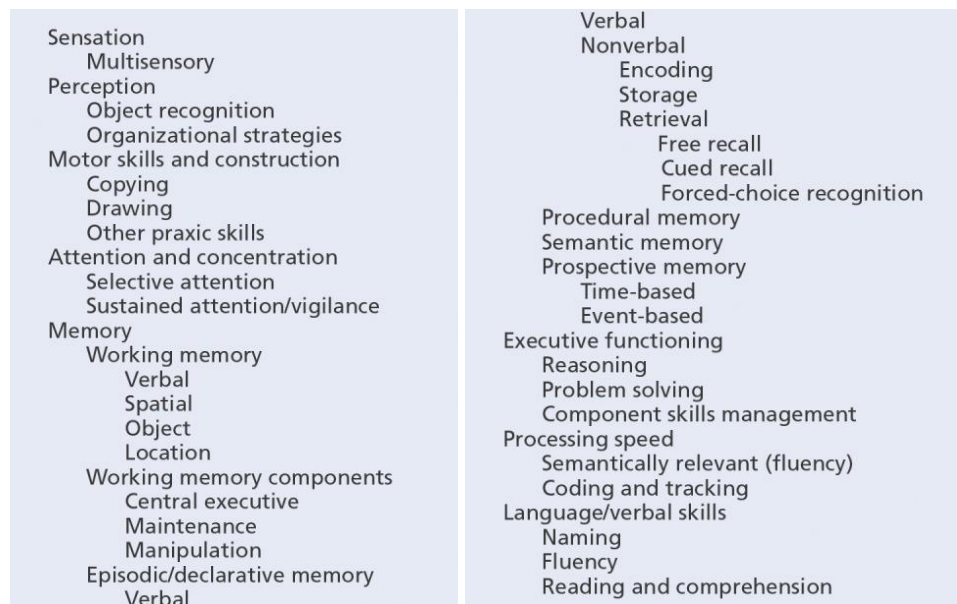


Figure 1 Cognitive Function Domains.
 Source: Harvey (2019)

The 6CIT the questionnaire used in this study can evaluate 3 domains, namely orientation, memory, and calculation. Orientation is a fundamental mental function that processes relationships between a person and space (place), time (events), and with other people (Peer, et al.,2015). In 6CIT, the function of this domain can be known through questions number1, 2, and 4, namely by determining the current year, month, and time. Temporary memory, Harvey (2019) explains that it is the most complex and multifaceted cognitive domain associated with the ability to store information in consciousness, both derived from sensory, verbal, and nonverbal modalities. One component of memory is information preservation which is memory for verbal, spatial, and other information, including emotions. This visuals and auditory storage has a limited duration and capacity so that the processing of new information can lead to loss of existing memory. In 6CIT, the function of this domain can be known through question number 3, which is to remember the five components of the address and mention the components again after all questions 6CIT answered. For the calculation domain, Rabin, et al. (2015) states that what this domain includes is basic calculation and arithmetic. In 6CIT, the function of this domain can be known through questions number 5 and 6, namely by counting down the numbers 20 to1and mentioning the name of the month in 1 year in reverse. In this study, it was found that all patients involved in interviews using the 6CIT questionnaire experienced disturbances in the memory and calculation domains, which were 42 people each (100%) and none of the patients experienced disturbances in the orientation domain.

The Relationship of Controlled Hypertension and Uncontrolled Hypertension with Cognitive Aspects

From the results of the 6CIT interview, researchers found that in the group of patients with controlled hypertension, there were 17 people (40.5%), there were 11 people (26.2%) with normal cognitive status, 4 people (9.5%) experienced mild cognitive impairment, and 2 people (4.8%) experienced severe cognitive impairment. In the group of patients with uncontrolled hypertension, there were 25 people (59.5%), there were 9 people (21.4%) with normal cognitive status, 10 people (23.8%) experienced mild cognitive impairment, and 6 people (14.3%) experienced severe cognitive impairment. With this description, researchers found that there was no significant relationship between controlled hypertension and uncontrolled hypertension with quality of life in cognitive aspects in the elderly at the Mojo District Health Center, Gubeng District, Surabaya City. This can be concluded because it was found that the value of $p = 0.245$ ($p > 0.05$) in the Fisher's Exact test.

The results in this study are in line with the research conducted by Putri, et al. (2017) of 28 subjects who stated that controlled and uncontrolled hypertension had a meaningless relationship with cognitive function with a value of $p = 0.354$ ($p > 0.05$) on the Fisher's Exact test. However, this is different from the research conducted by Bao, et al. (2022) in China with 1,171 elderly subjects. In the study stated that there was significant relationship between hypertension and cognitive function decline with a value of $p = 0.013$ ($p < 0.05$). This can happen because it is influenced by the degree and duration of hypertension which in this study was not further investigated in relation to cognitive function decline. This statement is supported by research conducted by Anto, et al. (2019) which states that there is a significant relationship between hypertension severity and cognitive function decline with a value of $p = 0.027$ ($p < 0.05$) and research by Apsari, et al. (2020) which states that there is a significant relationship between the duration of hypertension and decreased cognitive function in the elderly with a value of $p = 0.009$ ($p < 0.05$). Similar results were also found in a study by Rahmayanti (2018) which stated that the duration of suffering from hypertension can affect the cognitive decline of patients with a value of $p = 0.035$ ($p < 0.05$).

The incidence of retention that remains high for more than 5 years is said to have a high risk of cognitive function decline. This is associated with the occurrence of brain lesions in the subcortical part triggered by high hypertension which then causes atherosclerosis. Atherosclerosis that occurs will cause thickening of the walls of arteries and a decrease in the permeability of blood vessel walls, triggering lipoprotein transport in blood vessels. If this happens for a long time, it will cause endothelial damage and brain blood vessel flow to experience insufficiency so that damage to the brain tissue can occur (Apsari, et al., 2020).

Research Limitations

Some limitations of this study includes the Mojo District Health Center, Gubeng District, Surabaya City which is less cooperative when researchers collect data through medical records and there are many numbers of The patients phone in the medical record is no longer active, making it difficult to contact the patient for an interview. This is one of the reasons the number of subjects taken in this study is small, besides that the small number of subjects is also influenced by limited time and place research.

Another limitation of research experienced by researchers is that there are many confounding factors that can affect cognitive function, including routine in taking drugs and making visits to health care facilities, the patient's daily lifestyle (diet, physical activity, alcohol consumption, cigarette use), family cognitive history, aging process, education levels, and the degree and duration of hypertension were not further studied.

CONCLUSION

Based on the objectives and results of the study, the conclusions of this study are as follows:

1. Elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City are mostly male patients with 24 patients (57.1%), while female patients are 18 patients (42.9%).
2. Many elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City were uncontrolled, namely as many as 25 patients (59.5%), while patients with controlled hypertension amounted to 17 patients (40.5%).
3. Elderly people with hypertension at the Mojo District Health Center, Gubeng District, Surabaya City predominantly have normal cognitive function, namely as many as 20 patients (47.6%), others experience mild cognitive impairment, which is as many as 14 patients (33.3%), and severe cognitive impairment, which was as many as 8 patients (19.0%).
4. All 42 patients suffered from impairment at the Mojo District Health Center, Gubeng District, Surabaya City a total of 42 patients experienced impairments in the cognitive domain of memory and calculation (100%), but none of the patients experienced impairments in the orientation domain (0%).
5. In the elderly with uncontrolled hypertension at the Mojo District Health Center, Gubeng District, Surabaya City, many were found who experienced mild cognitive impairment, namely as many as

- 10 patients (23.8%), while others had normal cognitive function, which was as many as 9 patients (21.4 %), and experienced severe cognitive impairment, namely A total of 6 patients (14.3 %).
6. In the elderly with controlled hypertension at the Mojo District Health Center, Gubeng District, Surabaya City was dominated by patients who had normal cognitive function, namely as many as 11 patients (26.2%), while others experienced mild cognitive disorders, which is as many as 4 patients (9.5%), and experiencing severe cognitive impairment, which is as many as 2 patients (4.8%).
 7. Both elderly people with controlled and uncontrolled hypertension at the Mojo District Health Center, Gubeng District, Surabaya City do not have a significant relationship with quality of life in cognitive aspects.

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