



THE RELATIONSHIP BETWEEN SELF-MANAGEMENT HYPERTENSION WITH BLOOD PRESSURE IN ELDERLY: A CROSS SECTIONAL STUDY

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ABSTRACT

Hypertension is a serious degenerative disease because it affects the condition of the heart, brain, kidneys, and other organs. Hypertension management can be done by implementing hypertension self-management to control blood pressure and reduce morbidity and mortality rates. Lack of self-management in hypertensive patients can affect the severity of the disease and cause complications. This study aims to determine the relationship between hypertension self-management and blood pressure in the elderly in the working area of Jatinangor Community Health Center. This study is a quantitative study with a cross-sectional approach. The study respondents were elderly people with hypertension who were registered in seven Posbindu in the working area of Jatinangor Community Health Center and did not experience complications, totalling 133 respondents. Data were collected during Posbindu activities and home visits using a hypertension self-management questionnaire and blood pressure measurements using a digital sphygmomanometer. The data were analysed with Rasch Model to convert the scale into interval and then Spearman rank correlation test was conducted. This study showed no significant relationship between hypertension self-management and blood pressure in the elderly in the working area of Jatinangor Community Health Center with $P\text{-value}=0.319$ ($P>0.05$) on systolic blood pressure and $P\text{-value}=0.285$ ($P>0.05$) on diastolic blood pressure. Despite the absence of a significant relationship, there was a negative correlation between self-management and blood pressure. Thus, improved self-management was associated with decreased or normalized blood pressure among the elderly. This study serves as a valuable reference for future researchers interested in exploring hypertension self-management interventions specifically tailored to the elderly population.

Keywords: blood pressure; elderly; hypertension; self-management

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INTRODUCTION

The increase in the elderly population is increasing every year around the world, indicating an ageing population. The Ministry of Health of the Republic of Indonesia defines the elderly as starting when an individual is over 60 years old, with stages of pre-elderly (45-59 years), elderly (60-69 years), and high-risk elderly (>70 years) (Kemenkes, 2022). This population increase has led Indonesia to become a country with an ageing population. The ageing population is a success of development, especially when health development is able to increase life expectancy and reduce fertility rates. However, the increasing composition of the elderly population also requires special attention related to the continuity of the aging process because the aging process will cause physical, cognitive, emotional, social, and sexual changes (Azizah, 2011). One of the changes that can occur in the elderly is in the cardiovascular system which will be associated with other diseases such as hypertension,

coronary heart disease, pulmonary heart, cardiomyopathy, stroke, kidney failure (Fatmah, 2010).

Hypertension or usually known as high blood pressure is a state of blood pressure that reaches a limit of more than 140/90mmHg. High blood pressure occurs due to obstruction in the blood vessels, so the heart needs more strength to pump blood throughout the body (WHO, 2019). Hypertension is a serious degenerative disease because it affects the condition of the heart, brain, kidneys, and other organs. Hypertension is called a silent killer because people with hypertension often do not know the signs or symptoms that occur. Complications that can occur in people with hypertension include stroke, kidney failure, and cardiovascular disease. The severity of complications that can occur in someone with hypertension is influenced by various risk factors which are grouped into two groups, namely non-modifiable risk factors and modifiable risk factors. Unmodifiable factors include: age; gender; and heredity (genetic). Meanwhile, the modifiable factors are the lifestyle applied by the patient including: obesity; smoking; lack of physical activity; excessive salt consumption; dyslipidemia; excessive alcohol consumption; and stress (Kemenkes RI, 2013). Hypertension can be controlled if patients can carry out control of hypertension risk factors, but people often pay less attention to preventive behaviour, drug compliance, and management of hypertension factors (Hallberg, Ranerup, & Kjellgren, 2016).

Self-management or self-care management is a person's behaviour or ability to manage their health effectively (Lorig & Holman, 2003). Canadian Hypertension Education Programs (2014), states that prevention and management of hypertension through self-management can be applied by increasing physical activity, reducing body weight, not consuming alcohol, hypertension diet management, stress control, and smoking cessation. The success of this management depends on the self-management of hypertensive patients related to the patient's self-awareness in carrying out self-care and treatment (Zhang et al, 2020). However, Riskesdas (2018) states that there are various reasons for hypertension patients in Indonesia related to non-adherent behaviour in treatment such as hypertension patients feel healthy (59.8%), irregular visits to health facilities (31.3%), consuming traditional medicine (14.5%), other therapies (12.5%), forgetting to take medicine (11.5%), not being able to buy medicine (8.1%), fear of drug side effects (4.5%), and not available hypertension drugs in health facilities (2%). With these reasons, hypertension morbidity and mortality rates are expected to increase due to the lack of implementation of self-management in hypertensive patients.

Research conducted by Nofenisma, A (2018) entitled "The Relationship between Self Care Management and Blood Pressure of Elderly People with Hypertension in the Pancur Batu Health Centre Working Area" with a sample of 38 respondents showed no relationship between self care management and systolic blood pressure. However in the research of Lestari & Isnaini (2018) entitled "The Effect of Self Management on Blood Pressure of Elderly People with Hypertension" with a sample of 36 respondents indicated a very significant positive effect between self management and blood pressure, which mean that good self-management can reduce blood pressure in the elderly with hypertension. Supported by Alkautsar & Kartinah (2023) with a study entitled "The Relationship between Self Management and Blood Pressure in Hypertensive Elderly in the Kartasura Health Centre Region" conducted on 94 respondents showed that there was a relationship between self management and blood pressure of hypertensive elderly in the Kartasura Health Centre area. Of the three studies above, Nofenisma's research (2018) which showed no relationship between hypertension self-management and blood pressure used research instruments from Akhter (2010), while Lestari & Isnaini's research (2018) used the Hypertension Self

Management Behaviours Questionnaire (HSMBQ). However, the results of research related to the relationship between hypertension self-management and blood pressure are still contrasting. In this study, the instrument that will be used is the hypertension self-management questionnaire adapted by Sari et al (2022) from Akhter (2010) which has been adapted to the culture in Indonesia. This study also looked at the relationship of hypertension self-management with blood pressure in a different population, namely in Jatinangor District, Sumedang Regency.

Based on monthly record data at Puskesmas Jatinangor, visits of hypertensive patients from January to August 2023 with an age group of 59 years and over were 378 patients. Then, in the elderly register data at Posbindu, it was found that there were 133 elderly with hypertension who were recorded as regularly checking their health at Posbindu in seven villages in the Jatinangor Puskesmas working area. This figure indicates that hypertension is a major health problem in Jatinangor Sub-district because not all elderly with hypertension recorded in Posbindu conduct further examinations at the Jatinangor Health Centre. Based on field observations on 11 elderly people in Cileles Village, it was found that the high blood pressure measurement results with the categories of normal 120-129/80-84 mmHg (3 people), high-normal 130-139/85-89 mmHg (2 people), grade 1 hypertension 140-159/90-99 mmHg (6 people), grade 2 hypertension 160-179/100-109 mmHg (2 people), and grade 3 hypertension $\geq 180/\geq 110$ mmHg (2 people) the elderly not routinely take hypertension medication. Although efforts to control hypertension have been carried out with counseling by the Jatinangor Health Centre and each village Posbindu, in fact there are still many elderly people in the Jatinangor Health Centre working area who have not implemented hypertension self-management properly. In addition, there is no research that further identifies self-management related to blood pressure in the elderly, especially in West Java. Thus, the purpose of this study is to determine the relationship between hypertension self-management and blood pressure in the working area of the Jatinangor Community Health Centre.

METHOD

This study is a quantitative study with a cross-sectional approach. The population in this study were elderly people with hypertension recorded in the posbindu register data in the Jatinangor Puskesmas working area in October 2023. The sampling technique in this study used purposive sampling with the inclusion criteria being hypertensive elderly people who did not have complications of diseases such as stroke, kidney failure or heart failure. The sample in this study were 133 people. Data in this study were taken using a demographic questionnaire, hypertension self-management questionnaire and blood pressure measurements using an Omron branded sphygmomanometer. The self-management questionnaire used was a questionnaire adapted by Sari et al (2022) in a study with a quasi-experimental design. This instrument was adapted from Akhter (2010) by narrowing down the domain of self-management implementation adapted to the culture in Indonesia. This questionnaire consists of 38 question items and has been tested for validity with a value of 0.456-0.823. As for the reliability test with Cronbach's alpha value of 0.752.

The ethical feasibility test has been carried out at the Ethics Committee of 'Aisyiyah University with letter number 706/KEP. 01/UNISA-BANDUNG/I/2024. Data collection was carried out on 5-26 February 2024 by giving demographic questionnaires, hypertension self-management questionnaires and blood pressure measurements carried out in Posbindu seven villages in the working area of Jatinangor Community Health Center. Data analysis was conducted by univariate and bivariate analysis. Univariate analysis to describe the characteristics of the elderly, elderly blood pressure, and elderly self-management. On the

self-management variable, the analysis used the Rasch Model to convert the data to an interval scale with logit value units. Then bivariate analysis was conducted to determine the relationship between hypertension self-management and blood pressure in the elderly in the working area of Jatinangor Community Health Center. Bivariate analysis was performed using the Spearman rho test.

RESULTS

Table 1.
Respondent characteristics (n= 133)

Respondent characteristics	f	%
Village		
Cibeusi	15	11.3
Cikeruh	19	14.3
Cilayung	11	8.3
Cileles	7	5.3
Cipacing	46	34.6
Hegarmanah	18	13.5
Sayang	18	13.5
Gender		
Male	27	20.3
Female	106	79.7
Age		
Elderly (60-69 years old)	95	71.4
High risk elderly (>70 years old)	38	28.6
Employment		
Not working	98	73.7
Worker	6	4.5
Government employees	-	-
Private employees	1	0.8
Entrepreneur	8	6
Etc : retired or boarding house keeper	20	15
Educational Level		
Not in school	10	7.5
Primary school/equivalent	90	67.7
Junior High School/equivalent	17	12.8
High School/equivalent	11	8.3
College	5	3.8
Length of Hypertension		
< 1 year	48	36.1
1 – 5 years	43	32.3
> 5 years	42	31.6
Consumption of Hypertension Medication During Data Collection		
Yes	63	47.4
No	70	52.6

Table 1. shows that the respondents who participated in the study came from 7 villages in the working area of Jatinangor Community Health Center and almost half of the respondents came from Cipacing Village (34.6%). Most of the respondents were in the age range of 60-69 years (71.4%). Respondents in this study were predominantly female (79.7%). The majority of respondents not a workers (73.7%) and the most recent education level taken by respondents was elementary school (67.7%). All respondents had been diagnosed with hypertension by a doctor, but most respondents were not taking hypertension medication at the time of data collection (52.6%).

Table 2.
Blood Pressure (n= 133)

Blood Pressure (mmHg)	Min	Max	Mean	SD
Systole	116	217	158.38	± 18.32
Diastole	58	124	92.78	± 10.36

Table 2. shows the average systole blood pressure in respondents is 158.38 mmHg with a standard deviation of 18.32 mmHg. Furthermore, the average diastolic blood pressure in respondents was 92.78 mmHg with a standard deviation of 10.36 mmHg.

Table 3.
Self-Management Behavior (n= 133)

	Mean ± (SD)		Min	Max
	Person	Item		
Self-Management	0.16±0.36	-0.15±1.25	-0.83	1.18
Diet Management	-0.10±0.76	0.00±0.80	-2.69	3.10
Physical Activity	-0.49±1.52	0.00±1.91	-4.82	6.07
Stress Management	0.47±0.46	0.00±0.59	-0.33	2.42
Treatment Compliance	-0.59±1.11	0.00±0.59	-3.17	3.51
Lifestyle	0.72±0.73	-0.36±1.75	-1.31	3.78

Table 3 shows the overall distribution of hypertension self-management and its domains. The results showed that the minimum value of self-management in 133 respondents was -0.83, the maximum value was 1.18, the mean was 0.16, and the standard deviation was 0.36. The average self-management (0.16) of all respondents is greater than the average items measure (-0.15), it shows that respondents who have good self-management are more than respondents who have poor self-management.

Table 4.
The Relationship Between Self-Management Hypertension and Blood Pressure (n= 133)

	Blood Pressure			
	Systole		Diastole	
	Correlation Coefficient	P-value	Correlation Coefficient	P-value
<i>Self-Management</i>	-0.087	0.319	0.093	0.285
Diet Management	-0.014	0.874	0.039	0.654
Physical Activity	-0.197	0.023*	0.001	0.992
Stress Management	-0.151	0.082	-0.025	0.772
Treatment Compliance	-0.013	0.880	0.121	0.165
Lifestyle	-0.088	0.313	0.014	0.875

Table 4, the results of the analysis of the relationship between self-management of hypertension and systolic blood pressure obtained a correlation coefficient value of -0.087 and on dystolic blood pressure 0.093, which shows a negative and positive relationship, but means there is a very weak correlation between self-management and blood pressure in the elderly in the working area of Jatinangor Community Health Center. In addition, P-value=0.319 (P>0.05) and P-value=0.285 (P>0.05). So it can be concluded that there is no significant relationship between hypertension self-management and blood pressure in the elderly in the working area of Jatinangor Community Health Center.

DISCUSSION

Demographic Characteristics of the Elderly

This study involved elderly people who had a history of hypertension and had been diagnosed by a doctor previously related to hypertension to become respondents. The majority of elderly people suffering from hypertension have only been diagnosed for less than a year (36.1%).

From the results of the study it was also found that the education level of the majority of the elderly was only up to elementary school (67.7%). The detection of hypertension in the elderly should be done by screening for hypertension to determine the increase in blood pressure by measuring blood pressure regularly and enforcing the diagnosis of hypertension (Williams, et al., 2018). So, the impact caused is that blood pressure is not routinely measured and difficulties in receiving prescription drugs, so that blood pressure cannot be controlled to measure blood pressure (Guasti & Ambrosetti, 2022). This can be seen from the data of elderly people who do not take hypertension medication reaching (52.6%).

Elderly in Jatinangor who suffer from hypertension are dominated by female gender (79.7%). This is inversely proportional to the statement of the Indonesian Ministry of Health that the male gender has a higher risk of suffering from hypertension compared to women. This can be influenced by differences in blood pressure regulation in hormones between men and women (Maranon & Reckelhoff, 2013). However, the data collection process carried out at Posbindu can also be a factor because only a small proportion of elderly men (20.3%) who regularly check their health status at Posbindu. In addition, most respondents came from Cipacing Village (34.6%), this is because during data collection at Posbindu, Cipacing Village residents were the most active in checking their health at Posbindu.

Self-Management of Hypertension in Elderly

The results of research conducted on the elderly in the Jatinangor Puskesmas work area show that the average self-management of all respondents is greater than the average item measure ($0.16 > -0.15$), this indicates that respondents who have good self-management are more than respondents who have poor self-management. These results are in line with Salsabila's research (2023) which states 51 (52.65%) elderly people with hypertension at UPT Pasirjati Health Centre have good self-management. Based on the data found, the researcher assumes that the elderly in the working area of Jatinangor Community Health Centre have insufficient knowledge related to self-management.

The domains of self-management applied by the elderly are not yet in the good category as seen from the mean of each domain is still less than the mean item measure. In the diet management domain, the mean (-0.10 ± 0.76) $<$ item measure (0.00), meaning that more respondents have poor diet management. This happens because of the habits of some respondents who still often consume foods or snacks with high salt content. WHO (2019) also said that people with hypertension should limit salt consumption from 1,500 mg / day to 1,000 mg per day. This restriction of salt consumption needs to be applied to individuals suffering from hypertension because high salt intake can increase sodium in cells. In the physical activity domain, it is known that the mean (-0.49 ± 1.52) $<$ item measure (0.00), meaning that more respondents are lacking in physical activity. In the elderly, it is very natural for physical activity to be limited because it is influenced by decreased independence, decreased flexibility, decreased muscle and joint strength, and short and more easily wobbly steps (Sidik, 2021). Nevertheless, simple physical activity is recommended in the elderly to meet the needs of about 30 minutes per day a week, this can reduce sedentary behaviours (Owen, 2012).

In contrast to the two previous domains, the stress management domain shows a mean (0.47 ± 0.46) $>$ item measure (0.00), meaning that the majority of respondents have implemented stress management well. Although in fact, there are still elderly people in the Jatinangor Puskesmas working area who have not managed their stress well. In general, male respondents said they did not want to be open about the problems or feelings they felt. So, more often suppress emotions and choose to be silent when facing problems. In the treatment

compliance domain, it is known that the mean $(-0.59 \pm 1.11) < \text{item measure } (0.00)$, meaning that the majority of respondents still do not have good compliance in the treatment of hypertension. The majority of respondents do not have adherence to treatment, especially in taking anti-hypertensive drugs as recommended by the doctor. Hypertensive patients and families should take the initiative, perform self-management actions, and determination to adhere to the treatment regimen (Vrijens et al., 2017). In the lifestyle domain, it is known that the mean $(0.72 \pm 0.73) > \text{item measure } (-0.36)$, meaning that the majority of respondents have implemented a good lifestyle. Lifestyle factors are seen from smoking habits, alcohol consumption, and weight control. Smoking habits in respondents still occur in some respondents, especially men, but all respondents do not consume alcohol because all respondents are Muslims so it is forbidden to consume alcohol.

Knowledge about the disease and how to treat it is a factor an important role in self-management of hypertension, because knowledge can increase the awareness of patients in controlling their blood pressure. Without proper self-management, hypertension in the elderly can become severe and increase the risk of complications such as stroke, cardiovascular disease, and kidney disease (Igarashi, 2019). Effective management of hypertension including the provision of detailed medication information, home blood pressure checks, and telemedicine checks are needed in patients with hypertension, especially the elderly. This can be realised with good support between health workers and hypertensive patients to provide feedback to hypertensive patients so that hypertensive patients are enthusiastic and believe in self-management of hypertension (Shahaj, et al., 2019). However, the obstacles that occur often come from treatment compliance in people with hypertension. Therefore, evaluation of self-management compliance needs to be considered by health care facilities, especially in PROLANIS and Posbindu, so that patients can follow self-management therapy advice.

Blood Pressure of the Elderly

The normal value of blood pressure according to the ESC/ESH Hypertension Guidelines 2018 is 120-129/80-84 mmHg. However, in the elderly, blood pressure can generally increase above normal numbers because the elderly experience many changes, especially in their physiological conditions. One of the changes that can occur in the elderly is in the cardiovascular system related to blood pressure (Fatmah, 2010). According to the ESC/ESH Hypertension Guidelines 2018 the target blood pressure in the elderly with the age group 65-79 years is $<130/80$ mmHg, while for the elderly ≥ 80 years is $150/80$ mmHg (Beckett, et al., 2008). However, in this study the respondents included were elderly people ranging in age from 60 years to 97 years who had a history of hypertension. Based on the results of the study, it is known that the average blood pressure of 133 respondents is $158.38/92.78$ mmHg. This value is included in the category of grade 1 hypertension. According to Guasti and Gaudio (2023), in individuals who have entered old age, there will be progressive hardening of the arterial wall and arterial stiffness may occur. As a result, systolic blood pressure will increase, although diastolic blood pressure is more stable.

The Relationship Between Self-Management and Blood Pressure in the Elderly

The results of the analysis of the relationship between self-management of hypertension with systolic and diastolic blood pressure are known $P\text{-value}=0.319$ ($P>0.05$) and $P\text{-value}=0.285$ ($P>0.05$), it shows that there is no significant relationship between self-management of hypertension with blood pressure in the elderly in the working area of Jatinangor Community Health Centre. In this study, most of the degrees of hypertension in respondents were included in the category of grade 1 hypertension, although more than half of the respondents had adequate self-management. In line with the research of Nofenisma, A (2018), it shows that there is no relationship between hypertension self-management with systolic blood pressure

($p = 0.529 > 0.05$) and diastolic blood pressure ($p = 0.228 > 0.05$) in the Pancur Batu Puskesmas work area. Factors that influence self-management based on the Self-Management theory by Lin, et al (2008) are influenced by condition factors which include the willingness to manage self-medication, collaborate with health workers, and carry out activities related to preventive and therapeutic.

However, the results showed no relationship between hypertension self-management and blood pressure in the elderly, but there was a significant relationship between the physical activity domain and systolic blood pressure in the elderly with a P-value = 0.023 ($p < 0.05$) with a correlation coefficient of -0.197, which means that the better physical activity in the elderly, the more normal or lower blood pressure. Lack of physical activity can increase the risk of developing hypertension because it increases the likelihood of being overweight. Someone who is less active also tends to have a higher heart rate, which results in the heart having to work harder when contracting and the pressure on the arteries increases (Sapitri, 2016). Meanwhile, in other domains, no relationship with blood pressure was found. In principle, hypertensive patients who will implement self-management must have the motivation and ability to control themselves to remain consistent and compliant in hypertension control. When the elderly can be active and flexible in acting in accordance with the goals of hypertension self-management, then blood pressure can also be more stable. The success of self-management in patients with hypertension can be seen from increased adherence to self-care and improved health status with lower blood pressure, which will reduce the risk of complications of hypertension (Lestari & Isnaini, 2018).

CONCLUSION

Based on this study, it can be concluded that self-management of hypertension in the elderly in the is quite good. However, there was no significant relationship between hypertension self-management and blood pressure in the elderly in the working area of Jatinangor Community Health Centre.

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