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Knowledge as a Factor Associated with Lifestyle in Controlling Hypertension

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Abstract
Hypertension is also understood as the "silent killer" as the symptoms of hypertension are frequently not experienced by the sufferer, hence, the majority of hypertension patients are unaware that they suffer from hypertension. Uncontrolled hypertension can harm multiple organs. Hypertension cannot be cured; however, it can be managed such that blood pressure stays within normal limits. Changes in lifestyle and pharmacological therapy are employed to control hypertension. The objective of this study is to investigate the association between hypertension patients' characteristics and amount of awareness about lifestyle in controlling hypertension. A descriptive analytic design with a cross sectional approach was administered in this investigation. This study included all hypertension patients who visited the Cibubur Village Health Center. Purposive sampling was utilized in this study, yielding 115 respondents. The analysis technique involved the Chi-Square test. Results: There was a relationship between age and lifestyle (p=0.044), the last education and lifestyle (p = 0.017), and the level of knowledge with lifestyle (p=0.000). Meanwhile, gender, occupation, and family history of hypertension did not possess a significant relationship with lifestyle in controlling hypertension. Future studies are suggested to examine the role of external environmental support in influencing lifestyle to control hypertension.

Keywords: Hypertension, Knowledge Level, Lifestyle.

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1. INTRODUCTION

Hypertension or frequently recognized as high blood pressure is a disease affecting numerous people in the world (Baradaran, Nasri, & Rafieian-Kopaei, 2014). Hypertension is a serious health problem which owns the potential to cause the chance of stroke, coronary heart disease, and kidney failure (Aburto et al., 2013). Because hypertension symptoms are frequently not experienced by sufferers, the majority of people with hypertension are unaware that they suffer from the disease. As a result, hypertension has earned the nickname "silent killer" (Bell et al., 2015).

Hypertension is one of the prior risk factors for global death. It is estimated that 9.4 million people in the world have died from hypertension and 7% of the disease burden is calculated in the Disability Adjusted Life Year (DALY). The prevalence of hypertension in United States is 47% or nearly half of adults (World Health Organization, 2014). Data from basic research conducted in 2018 discovered that the prevalence of hypertension in accordance with the results of measuring blood pressure in people aged >18 years in Indonesia is 34.1%. The prevalence has escalated in comparison with the prevalence in 2013 with a figure of 25.8%.) (Kementerian Kesehatan Republik Indonesia, 2018).

The prevalence of hypertension by measurement in DKI Jakarta Province obtained 33.4% in 2018 (Kementerian Kesehatan Republik Indonesia, 2018). DKI Jakarta Province is one of Indonesia's major cities as well as the country's capital. The close competitiveness of living as the city with the most people might have an impact on the lifestyle of DKI Jakarta residents. In our modern and fast-paced lifestyle, lifestyle modifications might become less nutritious, such as the rise of high-sodium foods, foods containing preservatives, and fast food with a high fat content. DKI Jakarta people like to consume salty cuisine more than once a day, smoking is 22.9% daily with an average of 12.6 cigarettes per day, and residents who have less physical activity habits are 47.8% (Kementerian Kesehatan Republik Indonesia, 2019). This unhealthy way of living might lead to the emergence of noncommunicable diseases like hypertension.

The results of a study conducted by Ekaningrum (2021) associated with the incidence of hypertension in DKI Jakarta, respondents consuming sodium >2000 mg a day acquired 67.4%. Fat consumption >67 grams per day was 426 people (47.8%). The vast majority of responders (95.3%) reported no mental or emotional illnesses. The percentage of respondents who engaged in physical exercise in the low, medium, and high categories was about average. A total of 37.6% of respondents engaged in little or no physical activity. Sedentary behavior is practiced by 43.2% of respondents for 3-5.9 hours each day. Meanwhile, Musliana, & Meutia, (2022) claims that additional factors like sleep quality and caffeine use are correlated to uncontrolled blood pressure in hypertensive patients. If it is associated with the incidence of hypertension, there is a connection between age, gender, work status, and mental emotional illnesses. Socioeconomic level, fat intake, sodium intake, physical activity, and sentatory behavior were not observed to be correlated to the prevalence of hypertension in the DKI Jakarta population.

The research at the Cilincing Regional General Hospital, a primary referral hospital in North Jakarta, provides an example of medication adherence and control of hypertension patients. This study revealed a significant rate of non-adherence to hypertension treatment in polyclinic patients. More hypertensive individuals with hypertension degrees 2 and 3 present to the emergency department. In addition to having higher blood pressure than normal, hypertensive individuals who visit the ER have problems that require emergency attention. This occurrence demonstrates that these individuals are at a higher risk of noncompliance with treatment than patients who visit the polyclinic. There are, however, scientific limits in determining the relevant components (Darnindro & Sarwono, 2017).

Another study conducted by Emiliana et al. (2021) at the Pisangan Health Center in 2019, the factors influencing the compliance of hypertensive patients to come to control their disease encompass the category of blood pressure, ownership of health insurance, and comorbidities.

The objective of the hypertension control visit is to monitor blood pressure to maintain it under control and also to have the medication. Respondents who possess normal blood pressure tend to adhere to treatment and control their blood pressure to keep it normal. Respondents with health insurance have a 29% higher probability of receiving hypertension treatment than those without health insurance. Thus, having health insurance can assist hypertension patients in living healthy lives and adhering to health control. Respondents with comorbidities are more liable to be obedient to their doctor's control of their disease and are aware of the routine control functions to preserve their health status.

The success of hypertension treatment in addition to concern on routinely having medication, visiting health care providers to control health, also requires be accompanied by lifestyle modifications to control hypertension. In accordance with the guidelines issued by the International Society of Hypertension (ISH), treatment of hypertension is performed for life, both with drug consumption and lifestyle modification. Lifestyle modification possesses several activities incorporating decreasing salt consumption, selecting healthy foods and beverages, reducing alcohol consumption, controlling body weight to stay ideal, not smoking, performing regular physical activities, managing stress, employing complementary/alternative medicine, and decreasing pollution exposure air (Unger et al., 2020).

The significance of lifestyle modification for hypertension patients is also affected by several factors (Murray et al., 2012). Lifestyle in controlling hypertension is influenced by the level of knowledge, gender, and age. Research administered by Qodir (2020) presents that knowledge owns the highest relationship strength to lifestyle modification (OR = 4.9; IK 2.1-11.5) in comparison with other factors that affect lifestyle such as gender, age, and education level. Research conducted by Wahyuni & Susilowati, (2018) demonstrates that there is a relationship between the level of knowledge and the level of hypertension (p = 0.001). Individuals with a low level of knowledge have more hypertension than hypertensive patients with a high level of knowledge.

Nurses perform roles such as counselors and nursing researchers as part of their nursing practice. Nurses, as counselors and health educators, educate hypertension patients about their disease and the attempts made to stay healthy. Providing appropriate information by nurses can help hypertension patients understand how to live a healthy lifestyle (Masi & Silolonga, 2018). It is in accordance with the results of research performed by Sumah (2019) in which nurses who provide education affect the decrease in systolic and diastolic blood pressure in hypertension patients (p = 0.000). In compliance with the regulations and professional ethics, nurses as researchers are entitled to use hypertension patients as research subjects (Nelson et al., 2014). Thus, the objective of this study is to identify a relationship between the level of knowledge about hypertension and a lifestyle which can control hypertension.

2. RESEARCH METHOD

This type of research is quantitative with a descriptive analytic research design with a cross sectional approach. The objective of this study is to identify the relationship between the level of knowledge, characteristic and lifestyle in controlling hypertension. This research was conducted at the Cibubur Village Health Center. The technique of selecting sampling was with non-probability with purposive sampling, as many as 115 respondents. Sample inclusion criteria in this study encompass; hypertension patient diagnosed by a doctor, lives in the working area of the Cibubur Village Health Center, agrees or signs the informed consent, is able to read and write.

The independent variables in this study were the level of knowledge and characteristics of hypertensive patients, while lifestyle was the dependent variable. The level of knowledge is

the extent to which hypertensive patients recognize their disease. The independent variable was calculated by employing an instrument in the form of an adapted HK-LS (Hypertension Knowledge-Level Scale) questionnaire.

The validity and reliability test of the questionnaire were administered on 30 respondents of hypertension patients at Jatijajar Health Center. Content validity test by employing a comparison of the correlation values obtained with table r with a significance level (α) and degrees of freedom. In the HK-LS knowledge questionnaire (Erkoc et al., 2012) which has been modified, there are several invalid questions with the results of -0.086 - 0.867 and a reliable value of 0.688. The modified lifestyle questionnaire (Saraswati et al. 2018) obtained an R value of 0.054 – 0.682 and a Cronbach Alpha value of 0.712. Invalid questions were sentence structure modified and re-tested until they were considered valid and reliable. R count 0.367-0.651 or greater than R table (0.361) and Cronbach's Alpha score = 0.844 in the knowledge questionnaire. The Lifestyle Questionnaire seems to have a R value of 0.363-0.641, which was greater than the R table value of 0.361, and a Cronbach's Alpha score of 0.650. Univariate and bivariate data analysis was employed in research. The characteristics of each variable were explained utilizing univariate analysis. Bivariate analysis was utilized to examine the relationship between two variables. Chi-Square analysis was implemented in the statistical test. This research has received ethical approval from the Health Research Ethics Committee of the Health Polytechnic Jakarta III No.LB.02.02/KEPK/024/2022.

3. RESULTS AND DISCUSSION

Table 1. Distribution of respondents' characteristics based on age, gender, occupation, education and family history of hypertension (n=115).

Characteristics	Frequency	Percentage
Age		
21-60 years	50	43.5
>60 years	65	56.5
Gender		
Male	67	58.3
Female	48	41.7
Occupation		
Working	14	12.2
Not working	101	87.8
Education		
Higher education	50	43.5
Low education	65	56.5
Family history of hypertension		
Yes	45	39.1
No	70	60.9

Table 1 demonstrates that the majority of respondents' characteristics in the category of old age (>60 years) are 65 people (56.5%), female are 67 people (58.3%), not working are 101 people 87.8%, educated 65 people (56.5%) and did not possess history of hypertension in the family of 70 people (60.9%).

Table 2. Distribution of respondents by knowledge and lifestyle in hypertension patients (n=115).

Variable	Frequency	Percentage
Knowledge		
Sufficient	59	51.3
Less	56	48.7
Lifestyle		
Good	59	51.3
Not good	56	48.7

Table 2 reveals that the majority of respondents in the category of sufficient knowledge level are 59 people with a percentage of 51.3%, while a good lifestyle category are 59 people with a percentage of 51.3%.

Table 3. The relationship between respondent characteristics and lifestyle in hypertension patients (n=115).

Independent Variable	Dependent Variable						*p- value*	Nilai OR CI 95%
	Lifestyle				Total			
	Good	%	Not good	%	n	%		
Age								
21-60 years	31	62.0	19	38.0	50	100	0.044	2.155 (1.015-4.578)
>60 years	28	43.1	37	56.9	65	100		
Gender								
Female	39	58.2	28	41.8	67	100	0.080	1.950 (0.920-4.135)
Male	20	41.7	28	58.3	48	100		
Occupation								
Working	9	64.3	5	35.7	14	100	0.300	1.836 (0.575-5.861)
Not working	50	49.5	51	50.5	101	100		
Education								
Higher education	32	64.0	18	36.0	50	100	0.017	0.400 (0.187-0.854)
Low education	27	41.5	38	58.5	65	100		
Family history of hypertension								
Yes	25	55.6	20	44.4	45	100	0.465	1.324 (0.624-2.807)
No	34	48.6	36	51.4	70	100		
Total	59	51.3	56	48.7	115	100		

Table 3 demonstrated that the chi-square analysis test obtained a p-value = 0.044 (p <0.05) or it is understood that there is a relationship between age and lifestyle where the OR value = 2.156 which indicates that respondents with adult age possess a 2.156 times greater chance of possessing a good lifestyle than with older respondents.

There are 28 genders (41.8%) and 28 men (58.3%) who own an unfavorable lifestyle. The results of the bivariate chi-square test obtain p value = 0.080 (p>0.05) OR = 1.950 which implies there is no significant relationship between gender and lifestyle in controlling hypertension and male sex possesses a 1.950 times greater chance to lead an unfavorable lifestyle compared to female.

A bad lifestyle is performed by 51 people (50.5%) who are not working, while 5 people who work (35.7%). The results of the chi square test obtain p value = 0.300 (p>0.05) OR = 1.836 or there is no relationship between work and lifestyle in controlling hypertension and people who are not working possess 1.836 times greater possibility of living a bad lifestyle than respondents working.

Respondents who possess a bad lifestyle with low education category are 38 people (58.5%) and 18 people are in the higher education category (38.0%). The results of the chi-square test revealed that p value = 0.017 (p <0.05) OR = 0.400 which can be considered to be a relationship between recent education and lifestyle in controlling hypertension and respondents with low education possessing 0.4 times greater risk of having lifestyle which is not good than with a highly educated.

For respondents who lead an unfavorable lifestyle, 20 people (44.4%) possess a family history of hypertension and 36 people (51.4%) own no family history of hypertension. The results of the chi-square test obtained a p value = 0.465 (p>0.05) OR 1.324 or it can be indicated that there is no association between a family history of hypertension and lifestyle in controlling hypertension, and those with no family history of hypertension are 1.324 times more likely to engage in a terrible lifestyle than respondents with a family history of hypertension.

Table 4. The relationship between respondent knowledge and lifestyle in hypertension patients (n=115).

Independent Variable	**Dependent Variable**						***p- value***	**Nilai OR CI 95%**
	Lifestyle				**Total**			
	Good	**%**	**Not good**	**%**	**n**	**%**		
Knowledge								
Sufficient	46	78.0	13	22.0	59	100	0.000	11.704 (4.884-28.028)
Less	13	23.2	43	76.8	56	100		
Total	59	51.3	56	48.7	115	100		

Table 4 demonstrates that there are results of the analysis of the relationship between the variable level of knowledge and lifestyle. The results of the Chi-Square test obtained p value = 0.000 (p <0.05) OR = 11.704 indicating that there is a relationship between the level of knowledge and lifestyle in controlling hypertension and people with sufficient knowledge possess 11.704 times greater possibility of possessing a good lifestyle than those who own a level of knowledge in the less category. World Health Organization, (2014) explains the social determinants that are the main contributing factors to high blood pressure and its complications, namely aging, income, and education.

In accordance with the results of the analysis in the previous chapter, it was uncovered that the majority of adult respondents possessed a good lifestyle. The majority of respondents who are older possess a bad lifestyle. The results of the chi square test obtained p value = 0.044 (p <0.05) indicating that there is a relationship between age and lifestyle in controlling hypertension. Akbarpour et al., (2018) conducted research which revealed that the age ranges from adult to the elderly possesses a significant relationship to the healthy lifestyle of hypertensive patients.

This study is not in accordance with research performed by Qodir, (2020) in which age does not possess a significant relationship with lifestyle modification adherence in hypertension patients, and hypertension patients with the elderly category own a greater chance of non-adherence. This study possesses similarities with this study, in which hypertension patients who are in the old category experience a greater possibility of possessing a bad lifestyle. Yang et al., (2017) in their study also discovered that age produced a significant relationship with the success or failure of patients in controlling hypertension.

The results of this study are in accordance with the results of research conducted by Nurhidayati et al., (2019) in which the age group owns a relationship with adherence to hypertension treatment. The value of the prevalence ratio between the categories of adults and the elderly is 81.4%: 59.5%. It is implied that respondents in the category of the adult age group possess a higher adherence rate than the elderly in medication adherence. Adherence to treatment is part of controlling hypertension.

The majority of hypertension patients in this study were elderly or older than 60 years. There is a decline in the elderly's ability to receive and process information, as well as a decline in memory to remember. Meanwhile, age can have an impact on knowledge (Sunarti & Patimah, 2019).

The majority of hypertension patients in the adult age group live a healthier lifestyle than hypertension patients in the elderly age group. According to researchers, it occurs because hypertension patients in their golden years begin to age, resulting in a decline in physical, biological, psychological, and social conditions. Older hypertension patients require family assistance in their daily lives, including managing and processing food, reminding them to take medicine, or accompanying them when visiting health facilities.

The results of this study are in accordance with the study Qodir, (2020) in which gender does not possess relationship with lifestyle modification adherence in hypertensive patients and women own a higher chance of not complying with lifestyle modifications. This research is not in accordance with the statement from (Notoatmodjo, 2012) where gender influences individual behavior patterns when sick, with women attempting to treat themselves more than men. Gender plays a crucial role in the lives of both men and women in society. The theory is consistent with the findings of this study. It demonstrates that the majority of female hypertensive patients maintain a healthy lifestyle in order to control their hypertension. According to the researcher, it occurs because female hypertensive patients have positive social interactions with other hypertensive patients and health professionals. Women must also manage their diets at home in order to implement an appropriate diet, which is one method of controlling hypertension. Women, as opposed to men, do not smoke or consume alcoholic beverages. In this study, the majority of male hypertension patients performed a bad lifestyle.

The results of this study are not in accordance with research conducted by (Pratiwi & Harfiani, 2020) which revealed that socioeconomic possesses a relationship with hypertension medication adherence. It happens as hypertension patients require to perform routine control and to consume hypertension drugs regularly which costs money to have the treatment. The results of this study are also not associated with (Rasajati, Raharjo & Ningrum, 2015) in which work owns a relationship with hypertension medication adherence. (Notoatmodjo, 2012) asserted that people who work do not possess enough time to visit health facilities.

In this study, the majority of hypertension patients who are working owned a good lifestyle than those who did not work. According to researchers, it occurs as hypertension patients who are working tend to care more about their health, hence, they are able to work optimally. Hypertensive patients who work are also able to fulfil the necessities that corroborate a lifestyle that can control hypertension such as purchasing good food for controlling hypertension and drugs or utilizing health insurance.

In this study, the majority of hypertensive patients with low education category performed a bad lifestyle. Meanwhile, the majority of hypertensive patients who are in the category of highly educated possess a good lifestyle. The results of the chi square test obtained p value = 0.017 ($p < 0.05$) implying that there is a relationship between recent education and lifestyle in controlling hypertension, and hypertension patients with higher education categories possess a greater possibility of possessing a good lifestyle.

The results of this study are in accordance with the research of (Pratiwi & Harfiani, 2020) in which the latest education owns a relationship with adherence to treatment for hypertension. The results of this study are also associated with research by (Novian, 2014) in which the level of education possesses a relationship with adherence to the hypertension diet. Adherence to medication and diet is an appropriate effort in controlling hypertension.

The results of this study are not in accordance with the research of (Rasajati, Raharjo & Ningrum, 2015) which discovered that formal education does not possess a significant relationship with medication adherence. The majority of hypertension patients with low education did not work and adhered to treatment in this study as they had time to obtain treatment at the public health center and received hypertension health education.

In this study, the majority of hypertension patients owned low education. Associated with the efforts made by individuals, (Nurhidayati et al., 2019) asserted that someone who possesses a higher education is able to produce decisions and create the right efforts to maintain their health in comparison with people who possess low education. This statement is in accordance with this study in which the majority of hypertension patients who possess low education own a bad lifestyle. Meanwhile, the majority of hypertension patients with high education possess a good lifestyle in controlling hypertension.

According to researchers, hypertension patients with higher education have better abilities in processing information, analyzing information, and determining how to make lifestyle changes that can control hypertension. Based on the results of the previous chapter's analysis, the chi square test yielded a p value of 0.465, indicating that there is no relationship between a family history of hypertension and a healthy lifestyle in terms of controlling hypertension. These result differs from those of Zaenurrohmah, & Rachmayanti, (2017), who discovered a correlation between a family history of hypertension and hypertension control measures in the elderly. The results of this study also differ from those of Indriani et al (2021), who discovered a connection between genetic factors and controlled hypertension. In this study, hypertension patients were dominated by the participants who did not possess a family history of hypertension. Zaenurrohmah & Rachmayanti, (2017) discovered that hypertension patients who own a family history of hypertension tend to have taken blood pressure control measures for generations.

It habituates hypertension patients to maintaining normal blood pressure levels. This statement is consistent with the findings of this study, which discovered that hypertension patients with a family history of hypertension have a good lifestyle for controlling hypertension. According to researchers, hypertensive patients with a family history of hypertension tend to encounter family support to both maintain their lifestyle and control their hypertension. According to the results of the previous chapter's analysis, the majority of respondents with a high level of knowledge led a healthy lifestyle. The results of the chi square analysis test demonstrated that the value of $p = 0.000$ ($p < 0.05$) implies that the level of knowledge possesses a relationship with lifestyle in controlling hypertension. Abu et al., (2018) in their study revealed that patients with a low level of knowledge about hypertension are less likely to reduce their salt intake and consume foods that do not help them lose weight than patients with a high level of knowledge.

The results of the study are different from those obtained by Zaenurrohmah & Rachmayanti, (2017) with the results of knowledge not producing a relationship with hypertension control measures in the elderly. In this study, the majority of the elderly underwent good control measures, even though they owned good knowledge categories and sufficient knowledge categories. It occurs as the elderly have taken control actions consciously or unconsciously.

This research is in accordance with the research of Sunarti & Patimah, (2019) who uncovered that the level of knowledge possesses a relationship with blood pressure control

efforts. This study is also in accordance with the results of research administered by Herawati, (2020) with the results that there is a relationship between knowledge and efforts to control hypertension. The study conducted by Qodir, (2020) is also associated with this study in which the level of knowledge has a relationship with lifestyle modification compliance in hypertension patients and hypertension patients who possess high knowledge tend to be more obedient.

A person's behavior is constructed by knowledge, which forms values and attitudes. Unconsciously, knowledge and attitudes will shape behavior and actions. Continuously performed actions will become a habit. This theory is supported by the findings of this study, which demonstrate that the majority of hypertension patients have adequate knowledge and lead a healthy lifestyle. According to researchers, it can happen to hypertension patients who already understand how to regulate their blood pressure. Health workers, health cadres, and other sources of information can provide information on hypertension. This knowledge has a positive impact on hypertension patients, encouraging them to make lifestyle changes that will help them control their blood pressure (Saraswaty, Abdurrahmat & Novianti, 2018).

4. CONCLUSION

According to the results of the study, there is a correlation between age, last education, and knowledge of lifestyle and hypertension control. Researchers can conduct lifestyle research in the context of hypertension control. It is expected that they will investigate external factors influencing lifestyle, such as the role of health workers, family support, or support from health cadres.

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