Relationship of Fiber Intake, Stress Level, Physical Activity with Blood Pressure of Pre Elderly and Elderly in Lubang Buaya and Kampung Tengah

Hubungan Asupan Serat, Tingkat Stres,dan Aktivitas Fisik dengan Tekanan Darah Pada Pralansia dan Lansia di Lubang Buaya dan Kampung Tengah

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ABSTRACT

High blood pressure is defined as systolic blood pressure that is equal to or above 140 mm Hg or diastolic blood pressure equal to or above 90 mm Hg (JNC VIII, 2013). In 2018, the prevalence of hypertension in Indonesia is based on the characteristics of the age 45-75 years and above with an average of 58.33% (Riskesdas, 2018). The aimed of this study was to determine of fiber intake, stress levels, and physical activity with blood pressure in pre elderly and elderly at RW 03 Lubang Buaya and RW 09 Kampung Tengah, East Jakarta. This research method is observational with cross sectional approach followed by 80 respondents with simple random sampling technique Data collection was taken, namely blood pressure measurement using a Sphygmomanometer, fiber intake using the Food Recall form 2 x 24 hours (Weekend and Weekday), stress levels with the DASS-14 questionnaire, and physical activity with the Baecke questionnaire. Data processing was analyzed by univariate and bivariate using Chi-Square test. The results of bivariate analysis with chi-square test showed a significant relationship between fiber intake (p value = 0.007), stress level (p value = 0,000), and physical activity (p value = 0.022) with blood pressure. There is a relationship between fiber intake, stress level, and physical activity with blood pressure in the elderly and elderly in Lubang Buaya and Kampung Tengah

Keywords— Blood Pressure, Fiber Intake, Physical Activity, Stress Level

ABSTRAK

Tekanan darah tinggi didefinisikan sebagai tekanan darah sistolik yang sama dengan atau di atas 140 mm Hg atau tekanan darah diastolik sama dengan atau di atas 90 mm Hg (JNC VIII, 2013). *Pada tahun 2018, prevalensi hipertensi di Indonesia berdasarkan karakteriktik umur 45-75 tahun keatas dengan rata-rata sebesar 58,33 %* (Riskesdas, 2018). *Penelitian ini bertujuan untuk menganalisis hubungan asupan serat, tingkat stress, dan aktivitas fisik dengan tekanan darah pada pralansia dan lansia di RW 03 Lubang Buaya dan RW 09 Kampung Tengah, Jakarta Timur. Metode penelitian ini bersifat observasional dengan pendekatan cross sectional diikuti oleh 80 responden dengan teknik simple random sampling. Pengumpulan data yang diambil, yaitu pengukuran tekanan darah menggunakan Sphygmomanometer, asupan serat menggunakan formulir Food Recall 2 x 24 jam (Weekend dan Weekday), tingkat stress dengan kuesioner DASS-14,dan aktivitas fisik dengan kuesioner Baecke. Pengolahan data dianalisis secara univariat dan bivariat dengan menggunakan uji Chi-Square.Hasil analisis bivariat dengan uji chi-square menujukkan adanya hubungan yang signifikan antara asupan serat (p value = 0,007), tingkat stres (p value = 0,000), dan aktivitas fisik (p value = 0,022) dengan tekanan darah. Kesimpulan penelitian ini, yaitu ada hubungan antara asupan serat, tingkat stres, dan aktivitas fisik dengan tekanan darah pada pada pralansia dan lansia di Lubang Buaya dan Kampung Tengah*

Kata kunci— *Asupan Serat, Aktivitas Fisik, Tekanan Darah, Tingkat Stres*

INTRODUCTION

High blood pressure or hypertension is defined as systolic blood pressure which is equal to or above 140 mm Hg or diastolic blood pressure equal to or above 90 mm Hg .Blood pressure values increase with age. Hypertension is known as a "silent killer" because it usually does not have warning signs or symptoms, and many people do not know that they have hypertension (JNC VIII, 2013)

Based on data from the WHO (World Health Organization) in 2013, the prevalence of hypertension in the Southeast Asian region reached 36% (WHO, 2013) .In 2018 an increase, where the prevalence of hypertension in Indonesia based on the results of measurements in the population aged ≥18 years to 34.11%, where in the province of DKI Jakarta at 33.43%.

While the prevalence of hypertension according to the characteristics of the ages 45-75 years and over with an average of 58.33% (Riskesdas, 2018). Based on the results of preliminary studies that have been carried out from each kelurahan, in RW 03 Lubang Buaya Kelurahan, with a number of pre elderly and elderly as many as 212 people, and those suffering from hypertension as many as 118 people (55.66%), while those who are not hypertensive are 94 people (44.34%), while in RW 09 Kampung Tengah Village with 174 elderly and elderly people, 88 people suffer from hypertension (50.57%), while 86 people do not have hypertension (49.43%). Many various factors can increase the risk or tendency of high blood pressure, where these factors do not stand alone but together affect each other. One factor that affects high blood pressure is fiber intake. Low fiber intake can have an impact on fat and bile acids are less excreted through feces, so much cholesterol is reabsorbed from the residual results. The amount of cholesterol circulating in the blood vessels, the accumulation of fat in the blood vessels also increases and causes blood flow to be obstructed, thus affecting the increase in blood pressure (Sari et al., 2016)

In addition, factors that influence blood pressure, namely stress. If it occurs in a prolonged period of time, it will be dangerous especially for those who already suffer from hypertension that will cause complications. (Triyanto, 2014).

Reduced physical activity affects controlling appetite to be unstable or unbalanced, which results in increased appetite, increased energy consumption, causes weight gain, and ultimately results in obesity. If a person experiences weight gain, then the blood volume will certainly increase, resulting in an increased heart load in pumping blood. Increasing heart burden will aggravate the heart's work in pumping blood throughout the body, resulting in peripheral pressure and cardiac output will increase, which can then cause hypertension.

The purpose of this study was to determine the relationship of fiber intake, stress levels, and physical activity with blood pressure in pra-elderly and elderly in Lubang Buaya and Kampung Tengah, East Jakarta.

METHODS

This research was conducted in April 2020 until May 2020, due to the covid-19

pandemic, where the research was conducted at RW 03, Lubang Buaya and RW 09, Kampung Tengah, East Jakarta by door to door. This research is an observational research with cross sectional research design. The number of samples in this study were 80 respondents.

The sampling technique uses simple random sampling technique. The instruments used were Sphygmomanometer to measure blood pressure, Food Recall Form 2 x 24 hours to see total fiber intake, DASS-14 Questionnaire to measure respondents 'stress levels, and Baecke Questionnaire to measure respondents' physical activity levels. Data from univariate analysis results for variables such as respondent characteristics such as gender and age, depiction of fiber intake, depiction of stress level, depiction of physical activity, anddepiction of blood pressure. Bivariate analysis was performed using the chi-square test.

RESULTS AND DISCUSSIONS

Univariate Analysis Results

The univariate analysis in this study was used to describe the frequency and percentage distribution based on gender and age group, as well as each of the variables studied. The dependent variable in this study is blood pressure while the independent variables are fiber intake, stress level, and physical activity.

General Characteristics of Respondents

There are two characteristics of the respondents observed in this study, namely gender, and age. Sex characteristics are divided into two, namely male and female. Age is divided into pralansia, namely age 45-59 years, and elderly is age 60-70 years based on WHO and Ministry of Health in 2014. Following is an overview of the distribution of characteristics of pralansia and elderly in Lubang Buaya and Kampung Tengah, East Jakarta

Table 1. Characteristics of Respondents

Variable	n	(%)
Gender		
Male	23	28,7
Female	57	71,3
Total	80	100
Age		
45-59	34	42,5
60-70	46	57,5
Total	80	100

In the fiber intake variable, it shows that most respondents with less fiber intake are 59 respondents (73.8%). In the stress level variable, it shows that most of the stress respondents are 42 respondents (52.5%). In the physical activity variable, it shows that most respondents with simple physical activity are 49 respondents (61.3%). Whereas the blood pressure variable, showed that most of the respondents were hypertension, that is 45 respondents (56.2%).

Table 2. Distribution of Variabels

Variable	n	(%)
Fiber Intake		
Less	59	73,8
Enough	21	26,3
Total	80	100
Stress Level		
Stress	42	52,5
No Stress	38	47,5
Total	80	100
Physical Activity		
Simple	49	61,3
Moderate	31	38,8
Total	80	100
Blood Pressure		
Hypertension	45	56,2
No Hypertension	35	43,8
Total	80	100

a. Overview of Fiber Intake

Based on table 20 above, In the fiber intake variable, it shows that most respondents with less

fiber intake are 59 respondents (73.8%). This number is in line with research conducted by (Yuriah et al., 2019) in 53 hypertensive patients at the Gondoksuman I Public Health Center in Yogyakarta, which showed that some respondents (88.7%) were classified as having less fiber intake. The results obtained through interviews and recall 2x24 hours, showed that the majority of respondents with less fiber intake, this is because most respondents rarely consume foods that contain lots of fiber from vegetables and fruits.

b. Overview of Stress Level

Based on table 20 above, that the stress level variable, it shows that most of the stress respondents are 42 respondents (52.5%). This number, in line with research conducted by (Seke et al., 2016) which found that the majority of respondents (80%) in the stress category.

Several other respondents also said that if they were feeling stressed, it was felt that it would affect their emotions too much and cause more stressful responses than the number of respondents who were not stressed on measurements using the DASS-14 questionnaire.

c. Overview of Physical Activity

Based on table 20 above, the physical activity variable, it shows that most respondents with simple physical activity are 49 respondents (61.3%).The results of this study are in line with research conducted by (Atun et al., 2014) which shows that the majority of respondents (84%) are in the category of simple physical activity.

Some respondents said they were lazy to do physical activities, and most felt tired quickly when doing physical activities. Only a small minority claim to exercise such as walking, and others prefer to relax. Because respondents are pra-elderly and elderly, many feel tired quickly when doing sports, and most are not working so physical activity is rarely done because there is too much time at home to relax compared to outside the home

d. Overview of Blood Pressure

Most of the respondents in the study were 45 people with hypertension (56.2%), while those without hypertension were 35 people (43.8%).Distribution of respondents who experience hypertension more than respondents who are not hypertensive. This has the understanding that the number of respondents who are hypertensive is greater than the number of respondents who are not hypertensive. The results of this study are in line with research conducted by (Anggraini et al., 2018) which shows that the majority of respondents (62.89%) are in the category of hypertension.

Bivariate Analysis Results

In this study, bivariate analysis was performed to determine the relationship between fiber intake, stress level, and physical activity (as an independent variable) with blood pressure (as a dependent variable). Blood pressure in this study was categorized as hypertension (systolic blood pressure ≥140 mmHg, or diatolic blood pressure ≥90 mmHg), And no hypertension (systolic blood pressure <140 mmHg, or diatolic blood pressure <90 mmHg).

Table 3. Bivariate Analysis Results

Variable	Blood Pressure				*p value*
	Hypertension		No Hypertension		
	n	(%)	n	(%)	
Fiber Intake					
Less (<25 gram)	39	66,1	20	33,9	
Enough (≥25 gram)	6	28,6	15	71,4	0,007
Stress Level					
Stress (≥14)	39	92,9	3	7,1	
No Stress (<14)	6	15,8	32	84,2	0,000
Physical Activity					
Simple (<9,75)	33	67,3	16	32,7	
Moderate (≥9,75)	12	38,7	19	61,3	0,022

a. Relationship of Fiber Intake with Blood Pressure

Based on table 3 above it is known from a total of 59 respondents whose less fiber intake there are 39 respondents (66.1%) who have hypertension, and 20 respondents (33.9%) have no hypertension. While from a total of 21 respondents whose enough fiber intake there were 6 respondents (28.6%) suffering from hypertension and 15 respondents (71.4%) did not suffer from hypertension.

Based on the bivariate test conducted, from the Continuity Correction value obtained p-value of 0.007. Based on the bivariate test conducted, from the Continuity Correction value obtained p-value of 0.007. These results indicate that, there is a significant relationship (p <0.05) between fiber intake and blood pressure in pralansia and the elderly in Lubang Buaya and Kampung Tengah, East Jakarta. This is supported by various studies that show that there is a significant relationship between fiber intake and the incidence of hypertension (Sitorus, Yuriah et al., 2019). The relationship between fiber intake and blood pressure with this study, one of which is influenced by the magnitude of the description of respondents who have high fiber intake is not high. Based on the results of interviews and recall 2x24 hours, showed that most respondents in the category of lack of fiber intake, this is suspected because most respondents rarely consume foods that contain a lot of fiber from vegetables and fruits.

Low fiber intake can result in less bile acids excreted by feces, so that cholesterol is reabsorbed from the rest of the bile. With the amount of cholesterol circulating in the blood vessels, resulting in obstruction of blood flow which results in an increase in blood pressure (Yuriah et al., 2019).

b. Relationship between Stress Level and Blood Pressure

Based on table 3 above it is known from a total of 42 respondents with stress that there are 39 respondents (92.9%) who have hypertension, and 3 respondents (7.1%) have no hypertension. While of the total 38 respondents who were not stressed there were 6 respondents (15.8%) suffering from hypertension and 32 respondents (84.2%) did not suffer from hypertension. Based on the bivariate test conducted, the Fisher's Exact Test value obtained a p-value of 0,000. These results indicate that, there is a significant relationship (p <0.05) between stress levels and blood pressure in pralansia and elderly in RW 03 Lubang Buaya and RW 09 Kampung Tengah, East Jakarta.

The relationship between stress levels and blood pressure with this study, one of which is influenced by the magnitude of the description of respondents who have high stress. Physiological response from stress will increase the frequency

of pulse, blood pressure, respiration, and arrhythmia. Hormones released during stress are epinephrine or adrenaline. The release of the hormone adrenaline as a result of stress will cause blood pressure to rise and increase blood viscosity, accelerate heart rate and narrow coronary arteries. Stress can have an impact on raising blood pressure for some time (Nuraini, 2015)

c. Relationship between Physical Activity and Blood Pressure

Based on table 3 above, it is known that from a total of 49 respondents whose physical activity was simple, 33 respondents (67.3%) had hypertension, and 16 respondents (32.7%) did not have hypertension. Meanwhile, from a total of 31 respondents who had moderate physical activity, 12 respondents (38.7%) had hypertension and 19 respondents (61.3%) did not have hypertension. Based on the bivariate test conducted, the value of Continuity Correction obtained p-value of 0.022. These results indicate that, there is a significant relationship (p <0.05) between physical activity and blood pressure in pra-elderly and elderly in RW 03 Lubang Buaya and RW 09 Kampung Tengah, East Jakarta. The results of physical activity measurements in this study were obtained by measuring the respondent's physical activity at work, leisure, and how often to exercise. Based on the results of interviews conducted, it is known that the physical activity of working respondents more often sitting, rarely standing, rarely walking, and rarely lifting heavy objects. The most frequent sports activities carried out by respondents are walking (low intensity), gymnastics (moderate intensity), both of which are carried out with a frequency of once a week for 1-2 hours. And finally, during leisure time, respondents rarely do physical activities, such as biking or walking

If physical activity is rarely carried out, it certainly will tend to have a higher heart rate. Resulting in heart muscle working harder than normal at each contraction. Thus increasing peripheral resistance which causes an increase in blood pressure, and blood vessels receive blood pressure that is higher pressure than usual (Rihiantoro & Widodo, 2017)). Conversely, regular physical activity can increase endurance of the heart and lungs, and reduce blood vessel stiffness, so that it can reduce blood pressure (Anggraini et al., 2018).

CONCLUSION AND SUGGESTION

It can be concluded that most of the respondents in this study were 57 women (71.3%), compared to 23 male respondents (28.7%). In the intake category, the majority of respondents with less fiber category were 59 people (73.8%), while the stress category was 42 people with a percentage of 52.5%, and the category of simple physical activity was 49 people with a percentage of 61.3 %. Most of the respondents in the study were 45 people with hypertension (56.2%). Bivariate test results indicate that there is a relationship between fiber intake (p value = 0.007), stress level (p value = 0,000), physical activity (p value = 0.022) with blood pressure in pra-elderly and elderly in RW 03 Lubang Buaya and RW 09 Kampung Tengah, East Jakarta.

Suggestions that researchers can do after conducting research among the community are expected to be able to increase awareness of research respondents will need enough fiber, control stress levels, and carry out routine physical activity, and carry out blood pressure checks in health centers, clinics or the posbindu to be supported further complication problems.

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