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HE EFFECT OF EDUCATION ON SODIUM CONSUMPTION AND PHYSICAL ACTIVITY IN HYPERTENSIVE PATIENTS AT UPTD PUSKESMAS BULELENG III

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ABSTRACT

Abstract: High sodium consumption can cause high blood pressure because sodium has the ability to retain water. A person who has more sodium intake is at 25 times the risk of developing hypertension compared to those who consume enough or not excess sodium. One of the management of hypertension is exercising. Regular physical activity or exercise will result in increased efficiency of the heart's performance. Someone who regularly exercises will have lower blood pressure and avoid the risk of developing high blood pressure. This research aims to determine the effect of education on sodium consumption and exercise activity in hypertensive patients at UPTD Puskesmas Buleleng III. This research was conducted at UPTD Puskesmas Buleleng III with one group pre test-post test research design. The population in this study were hypertensive patients at UPTD Puskesmas Buleleng III with non probability sampling. The result of this research was a significant effect between DASH (Dietary Approaches to Stop Hypertension) diet education and sample sodium consumption (p value = 0.001) and there is also significant influence between education and physical activity (p value = 0.001).
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Keywords: DASH education; hypertensive; sodium consumption; physical activity;

Introduction

High sodium consumption is able to cause high blood pressure because sodium has the ability to retain water, thus consuming too much sodium can increase blood pressure (Hasiando et al., 2019). Person with more sodium intake have 25 times more risk of developing hypertension compared to those who consume enough or not excess sodium (Putri et al., 2023). According to research (Imelda et al., 2020) at the Air Dingin Lubuk Minturun Health Center, it shows that the level of sodium intake is related to the prevalence of hypertension, with the highest sodium intake having the highest prevalence of pre- hypertension, namely 64.7%. This is in line with research conducted (Yasril & Rahmadani, 2020), which found a significant relationship between sodium intake and hypertension, thus the results showed that most people with hypertension were accompanied by high sodium consumption as many as 37 respondents (48.7%).

Physical activity or exercise causes the burning of energy and the expenditure of energy in the body. Regular exercise will result in increased efficiency of the heart's performance. Someone who regularly exercises will have lower blood pressure and avoid the risk of developing high blood pressure.

Previous research on the effect of elderly gymnastics on blood pressure was conducted by Rahmiati in 2020 in Darussalam District, the results of which showed that elderly gymnastics can be used as an alternative in non-pharmacological management of hypertension.

Research Method

This research was conducted at UPTD Puskesmas Buleleng III. The type of research is a pseudo experiment with the research design used is one group pre test-post test design. The population in this study was hypertensive patients at UPTD Puskesmas Buleleng III, Buleleng Regency. The sampling technique used in this study was non probability method. Data analysis used were univariate and bivariate analysis. Bivariate analysis was used to analyze two variables. Data normality test using Wilcoxon signed rank to determine data distribution.

Results and Discussions

Sample Characteristics

The characteristics of the subjects including gender and age can be seen in Table 1 below.

Table 1. Distribution of Sample Characteristics

No.	Variable Number	Total	
		n	%
1.	Gender		
	Male	31	73,8
	Female	11	26,2
	Total	42	100
2.	Age (years)		
	19 – 44	24	57,14
	45 – 59	13	30,95
	>60	5	11,91
	Total	42	100

Table 1 shows that of the 42 research samples, most of the samples were male as many as 31 samples (73.8%), and female samples as many as 11 samples (26.2%). Sample characteristics based on age are categorized into three based on the Minister of Health Regulation No. 25 of 2016 concerning the National Action Plan for Elderly Health in 2016-2019, namely 19-44 years of age (adult), 45-59 years of age (pre elderly), and >60 years of age (elderly). The distribution of samples based on age shows that most samples in the adult category aged 19 - 44 years were 24 samples with a percentage of 57.14%, samples in the pre-elderly category with an age range of 45 - 59 years were 13 samples with a percentag of 30.95%, and samples in the elderly category whose age was >60 years were 5 samples with a percentage of 11.91%.

Sodium Consumption

Based on the research result, the sodium consumption before and after intervention can be seen in table 2.

Table 2. Distribution of sodium consumption before and after intervention

Sodium Consumption	Before Intervention		After Intervention	
	n	%	n	%
Adequate (≤ 2300 mg/day)	19	45,2	33	78,6
High (> 2300 mg/day)	23	54,8	9	21,4
Total	42	100,0	42	100,0

According to table 2 above, it shows that sodium consumption in the sample before the intervention was 19 samples (45.2%) known to have sufficient sodium consumption, but after the intervention there was an increase in adequate consumption to 33 samples (78.6%). 23 samples (54.8%) were known to have high sodium consumption, after the intervention there was a decrease to 9 samples (21.4%) who consumed high sodium.

Table 3. Analysis of Sodium Consumption Before and After Intervention

Sodium Consumption	n	Before Intervention	After Intervention	p
		Mean±SD	Mean±SD	
	42	2.390,0 ± 335,4	2.054,8 ± 292,6	0,001

*Wilcoxon signed rank

Sports Activity

The distribution of the sample by frequency, time, and type of physical activity before and after the intervention can be seen in the table below.

Table 4. Distribution of Physical Activity Before and After Intervention

Physical Activity		Before Intervention		After Intervention		p value
		n	%	n	%	
Frequency	Never	11	26,2	0	0	
	<3 times	11	26,2	11	26,2	
	3 – 5 times	13	30,9	12	28,6	
	>5 times	7	16,6	19	45,2	
	Total	42	100	42	100	0,001
Time	Never	11	26,2	0	0	
	<20 minutes	6	14,3	13	30,9	
	20 – 30 minutes	8	19,1	8	19,1	
	>30 minutes	17	40,4	21	50	
	Total	**42**	**100**	**42**	**100**	
Type	Not exercising	11	26,2	0	0	
	Aerobic	21	50	27	64,28	
	Anaerobic	10	23,8	15	35,72	
	Total	42	100	42	100	

Based on the results of the study, before the intervention the samples were categorized based on the frequency of physical activity or exercise categorized into four, namely never exercising, exercising
< 3 times per week, exercising 3 - 5 times per week, and exercising > 5 times per week. Most samples exercised 3 - 5 times a week, which was 13 samples with a percentage of 30.9%, never exercised as many as 11 samples with a percentage of 26.2%, exercised < 3 times per week as many as 11 samples with a percentage of 26.2%, and exercised > 5 times per week as many as 7 samples with a percentage of 16.6%. While the distribution of sample exercise frequency after the intervention was mostly exercising
> 5 times a week, namely there were 19 samples with a percentage of 45.2%, exercising < 3 times per week as many as 12 samples with a percentage of 28.6%, there were no samples who did not exercise. Furthermore, the distribution of samples before the intervention based on the time spent exercising was categorized into four, namely never exercising, exercising for <20 minutes, exercising for 20 - 30 minutes, and exercising for >30 minutes. The distribution of the most samples exercising for >30 minutes was 17 samples with a percentage of 40.4%, never exercising was 11 samples with a percentage of 26.1%, exercising <20 minutes was 6 samples with a percentage of 14.3%, and exercising 20 - 30 minutes was 8 samples with a percentage of 19.1%. Meanwhile, after the intervention, most samples exercised for >30 minutes as many as 21 samples with a percentage of 5%, exercised <20 minutes as many as 13 samples with a percentage of 30.9%, and exercised 20 - 30 minutes as many as 8 samples
with a percentage of 19.1%, and no one did not exercise.
The he distribution of samples before the intervention based on the type of exercise performed was categorized into two, namely aerobic and anaerobic. The distribution of the most samples doing aerobic exercise was 21 samples with a percentage of 50% and 10 samples doing anaerobic exercise with a percentage of 23.8%. Whereas after the intervention, the samples doing aerobic exercise were 27 samples with a percentage of 64.28% and samples doing anaerobic exercise were 15 samples with a percentage of 35.72%. The results of data analysis on physical activity using the Wilcoxon test with a p value of 0.001 ($p < 0.05$) which means that the hypothesis in this study is accepted. Where there is an effect of providing education on changes in physical activity before and after intervention**.**

Discussion

Research on sodium consumption, based on the results obtained before giving education, 23 samples had high sodium consumption and 19 samples had sufficient sodium consumption. From the results of the interview, it was found that the average sodium consumption of the sample was obtained from excessive consumption of flavoring spices and consuming preserved foods such as salted fish and *pindang*. In addition, most of the samples did not know which high sodium food ingredients to avoid or limit before the intervention. Most patients understood that hypertension only required salt restriction, but not other high-sodium foods. After the intervention, the sample understood the limit of the amount of sodium that should be consumed per day according to the degree of hypertension and knew which foods contained high sodium to reduce sodium intake. The results of the study after the intervention showed changes in sodium consumption in the sample, namely 33 samples (78.6%) were known to have sufficient sodium consumption and 9 samples (21.3%) had high sodium consumption, so the difference in the average sodium consumption score before and after the intervention was 336 mg from 2,390 mg to 2,054.8 mg of sodium consumption in a day.

The results of the data analysis using the Wilcoxon test with a p-value of 0.001 showed that there was a significant influence between education on the sodium consumption of the sample after being given DASH diet education. This study is in line with the findings of previous research (Nurmayanti et al., 2022) which showed differences in sodium intake between treatment groups that received additional intervention in the form of counseling on the DASH diet. Similar results were also found in a study (Astuti et al., 2021) which showed significant differences in sodium intake before and after the provision of the DASH diet intervention.

Hypertension does not only focus on drugs, but healthy lifestyle changes are also needed to support the success of treatment in hypertensive patients. Change in lifestyle to a healthy one in hypertensive patients is important, an education is needed that helps hypertensive patients to be aware of their health problems. The application of a healthy lifestyle that can be done to support the success of treatment in hypertensive patients is by exercising regularly and reducing smoking habits.

The physical activity referred to here can be aerobic or anaerobic exercise with an ideal frequency of 3 - 5 times a week for approximately 30 minutes. Sports activity data were collected using a questionnaire. Based on the results of the questionnaire conducted on 42 samples before the nutrition education intervention was given, there were 11 samples who had never done physical activities or exercise. After being given an educational intervention there was an increase where 42 samples (100%) had done sports activities. The results of data analysis on physical activity using the Wilcoxon test with a p value of 0.001 ($p < 0.05$) which means that the hypothesis in this study is accepted. Where there is an effect of providing education on changes in physical activity before and after intervention.

This is due to the contribution of providing education to changes in sports activities, in line with other research conducted by Mardiono, et al (2023) regarding the effect of elderly gymnastics on blood pressure in hypertensive elderly at the Kayu Agung Hospital with a p value = 0.001. In addition, there is research conducted by Helinida, et al (2023) which shows the effect of healthy heart exercises on lowering blood pressure in the elderly at Graha Residen Senior Karya Kasih in 2023 with the results of the paired t-test, obtained a p value = 0.0001.

Exercise affects the cardiovascular (circulatory) system to improve its ability. More blood vessels are formed in active tissues to improve the supply of food and oxygen, and exercise burns off excessive fat in the system and inhibits fat content in the vessels, thus reducing the risk of thrombosis (Hardjana, 2000). Exercise also helps the body to stay fit and fresh as it keeps the bones strong, encourages the heart to work optimally, and helps lower blood pressure.

Pregnancies in adolescents should be considered high-risk pregnancies. Adolescent mothers often feel unprepared for the challenges of parenthood, and may need extra support and guidance. Social support, positive partner relationships, and education and employment might become protective factors for the adolescent mothers'.

Conclusion

Based on the research that has been carried out, it can be concluded ie ;

1. There is a significant effect between DASH diet education and sample sodium consumption characterized by the value of the results of p value = 0.001 (p value <0.05). Therefore, education is effective in reducing sodium consumption in hypertensive patients at UPTD Puskesmas Buleleng III.
2. There is a significant influence between education and exercise activity

characterized by a p value =

0.001 (p value <0.05). Therefore, education has an effective effect on changes in exercise activity in hypertension patients at UPTD Puskesmas Buleleng III.

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