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The Effectiveness of Education Using the Guidebook Healthy Lifestyle to Overcome Hypertension on Changes in Knowledge and Lifestyles Women of Child-Bearing Age

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Abstract

Risk factors for hypertension are becoming increasingly prevalent. This study aims to evaluate the effectiveness of education using the guidebook Healthy lifestyle to overcome hypertension on changes in knowledge and lifestyles women of child-bearing age in Pematangsiantar and Godean. This type of research is quasi experiment with pretest and posttest designs. The sample size in each group of research locations with purposive sampling amounted to 60 people to obtain knowledge and life style data from questionnaires, Food Frequency Questionnaire (FFQ) and physical activity sheets. The intervention was carried out by providing the guidebook healthy lifestyle to overcome hypertension. After more than 2 months, a pretest was done and a posttest was carried out in both groups. To find out the difference in the effectiveness of education using a guidebook in the case group and the control group at the two locations compared to knowledge and lifestyle before being given treatment and after treatment using the independent t test. The results of the analysis obtained all dietary variables and knowledge p value < 0.05 in both locations except for physical activity in Godean, p value > 0.05. Education is effective in increasing knowledge, can change the lifestyle for the better and can lower blood pressure in women of child-bearing age.

Keywords: Education; Diet; Lifestyle; Women of Child-bearing age. ‘

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1. Introduction

Data from the World Health Organization (WHO) in 2015 showed that around 1.13 billion people in the world have hypertension, meaning that one in three adults worldwide has raised blood pressure. The number of people with hypertension continues to increase every year, it is estimated that by 2025 there will be 1.5 billion people who experience hypertension, and it is estimated that every year 9.4 million people die from hypertension and its complications. The percentage of hypertension in Indonesia occurs at childbearing age 28.2% of the number of hypertension sufferers in Indonesia [1]. A woman of childbearing age is a woman whose reproductive organs are functioning properly, between the ages of 15-49 years old, regardless of their marital status. Hypertension is a disorder of the blood vessels that causes oxygen and nutrients to be circulated through the blood to be blocked to the tissues that need them [2]. Hypertension is a deadly disease without previous complaints and symptoms. Hypertension can make the heart work harder to pump blood [3]. The triggers for hypertension can be divided into those that cannot be controlled, such as family history, gender and age. Controllable conditions, such as lack of physical activity, smoking behavior, consuming unhealthy diets as diet containing sodium and saturated fat [4]. The trigger for an increase in blood pressure is due to a diet that prefers fast-paced, instant foods to healthy fresh foods [5]. Instant food tends to use preservatives, such as sodium benzoate and flavorings such as monosodium glutamate (MSG). This type of food contains high enough sodium and excess sodium will cause blood pressure to increase due to fluid retention and increased blood volume [6]. When excess sodium intake, the body can get rid of it through urine, but this process can be hampered due to consumption of water, excess body weight or inactivity. Excess weight causes the heart to work harder to pump blood. Family eating habits and the arrangement of dishes are one of the manifestations of family culture which is called lifestyle. Lifestyle is a condensation from the interaction of various social, cultural and environmental factors [7]. Factors that constitute input for the formation of a family lifestyle: stage, education, urban or rural environment, family composition, occupation, ethnicity, beliefs and religions, opinions on health, nutritional knowledge, food production, distribution system, and many other associated socio-political factors [8]. Certain ethnic groups have a tendency to consume foods with a distinctive taste, such as the Javanese who prefer sweet foods and the Batak people who prefer to eat salty foods.[5] noted that knowledge about hypertension is related to efforts to control blood pressure. The pattern of consuming more fruits and vegetables, also low in potassium and fat, is recommended for a healthy lifestyle in order to maintain normal blood pressure [9, 10]. The dietary approach to preventing and treating hypertension is an important part of the lifestyle changes needed to control blood pressure [11, 12]. Hypertension prevalence data based on blood pressure measurements has increased from 25.8% in 2013 to 34.1% in 2018. This is triggered by changes in people's lifestyle patterns towards unhealthy lifestyles, such as lack of physical activity, less consumption. vegetables and fruit, smoking, alcohol consumption, and others. The Indonesian government has issued Presidential Instruction Number 1 of 2017 concerning the Healthy Living Community Movement (GERMAS). GERMAS is a movement initiated by the government to foster and increase awareness of healthy living habits among Indonesians. The main focus of the program is to do regular exercise, consume vegetables and fruit, and check your health regularly. Hypertension is the most prevalent chronic disease worldwide. Lifestyle behaviors for its prevention and control are recommended within worldwide guidelines [13]. Certain tribes have a tendency to have different food consumption patterns, in particular the Javanese and the Batak tribes so that the researcher wants to do research

in Godean (Yogyakarta) representing the Javanese and in Pematangsiantar representing the Batak tribe.

2. Materials and Method

This type of research is a quasi experiment with pretest and posttest designs. The sample size in each study location group with purposive sampling in accordance with the inclusion criteria was 60 people divided into 2 groups, namely 30 cases group and 30 control group. For the case group, data collection began with distributing questionnaires to mothers to obtain knowledge data as a pretest. Followed by distributing the FFQ and physical activity sheets to obtain information about lifestyle prior to education using guidebooks. Hypertension data were obtained from the results of measurements of maternal blood pressure which were carried out directly at the time of the study. Furthermore, the researcher intervened by giving the guidebook Healthy Lifestyle to Overcome Hypertension and also carried out counseling. The same treatment was given to the control group but not given a manual. Furthermore, after more than 2 months after the pretest was carried out, it was followed by posttesting in both groups by distributing knowledge questionnaires, as well as FFQ and physical activity sheets to obtain information about life styles and blood pressure measurements.

3. Result and Discussion

3.1. Result

To determine the effectiveness of education using a guide to a healthy lifestyle to overcome hypertension, it is compared to lifestyle, knowledge and blood pressure before and after education. The difference in lifestyle and knowledge was measured by using the paired t test with the results in Table 1.

Based on Table 1, it is known that all variables in the case group experienced an increase, except for the frequency of eating staple foods. Physical activity increased 0.133 with a value of $p = 0.043$ ($p < 0.05$). Likewise, an increase in knowledge was 8.667 with a value of $p = 0.000$. Blood pressure decreased after intervention by 0.800 with a p value <0.05.

Table 1: Differences in Lifestyles, Knowledge and Blood Pressure of Woman of child-bearing in Pematangsiantar

Variable		Mean	SD	Mean Difference	p
Amount of food	Before	3,37	0,490	0,300	0,001
	After	3,67	0,479		
Type of food	Before	1,50	0,682	1,067	0,000
	After	2,57	0,504		
Frequency of eating vegetables	Before	3,17	0,531	0,600	0,000
	After	3,77	0,430		
Frequency of eating fruits	Before	2,77	0,504	0,700	0,000
	After	3,47	0,571		
Frequency of eating fish	Before	2,10	0,481	0,867	0,000
	After	2,97	0,615		
Frequency of eating meat	Before	1,73	1,081	1,133	0,000
	After	2,87	0,730		
Frequency of eating staple foods	Before	4,00	0,000	0,000	1,000
	After	4,00	0,000		
Food processing	Before	1,20	0,407	0,567	0,000
	After	1,77	0,430		
Physical activity	Before	1,97	0,490	0,133	0,043
	After	2,10	0,305		
Knowledge	Before	6,60	1,694	8,667	0,000
	After	15,27	2,100		
Blood pressure	Before	2,40	0,621	0,800	0,000
	After	3,20	0,551		

Based on Table 2, almost all variables in the case group experienced an increase. The dietary pattern obtained p value <0.05. Physical activity with p value > 0.05, it can be concluded that education using a healthy lifestyle guide book Increasing knowledge of p value < 0.05, it can be concluded that education using a healthy lifestyle guide book to overcome hypertension is effective in increasing knowledge of women of child-bearing age in Godean. Likewise, blood pressure decreased blood pressure after intervention of 1.167 with a p value < 0.05, it can be concluded that education using guide book is effective in reducing blood pressure by women of child-bearing age in Godean.

Table 2: Differences in Lifestyle, Knowledge and Blood Pressure of Woman of Child-bearing in Godean

Variable		Mean	SD	Mean Difference	p
Amount of food	Before	3,33	0,479	0,400	0,001
	After	3,73	0,450		
Type of food	Before	1,60	0,724	1,033	0,000
	After	2,63	0,490		
Frequency of eating vegetables	Before	3,23	0,568	0,200	0,012
	After	3,43	0,568		
Frequency of eating fruits	Before	2,80	0,551	0,367	0,000
	After	3,17	0,648		
Frequency of eating fish	Before	2,27	0,521	0,533	0,000
	After	2,80	0,407		
Frequency of eating meat	Before	1,87	1,042	1,033	0,000
	After	2,90	0,712		
Frequency of eating staple foods	Before	4,00	0,000	0,000	1,000
	After	4,00	0,000		
Food processing	Before	1,17	0,379	0,633	0,000
	After	1,80	0,407		
Physical activity	Before	2,20	0,610	0,167	0,057
	After	2,37	0,490		
Knowledge	Before	7,50	2,345	8,800	0,000
	After	16,30	2,037		
Blood pressure	Before	2,23	0,679	1,167	0,000
	After	3,40	0,563		

It is known that the dietary variable value p <0.05 in both groups in both locations, which means that education using a healthy lifestyle guide book to overcome hypertension is effective in increasing the variables of the amount of food, type of food, frequency of eating vegetables, frequency of eating fruit, frequency of eating fish, food processing, knowledge and blood pressure of women of child-bearing age in Pematangsiantar and Godean. Frequency of eating meat in Pematang Siantar (p = 0.155), frequency of eating staple food in Pematang Siantar and Godean (p = 1,000), physical activity in Godean (p = 0.302). The p value > 0.05 means that education using a guidebook for a healthy lifestyle to overcome hypertension is not effective in increasing the frequency of eating meat in Pematang Siantar, the frequency of eating staple foods in Pematang Siantar and Godean and physical activity in Godean.

Table 3: Frequency Distribution of Average Lifestyles Differences, Knowledge and Blood Pressure Before and After Treatment with Education Using Guidebook in Pematangsiantar and Godean

Variable	Location	Group	Mean	SD	p
Amount of food	Pematangsiantar	Case	0,30	0,466	0,001
		Control	0,00	0,000	
	Godean	Case	0,40	0,498	0,000
		Control	0,03	0,183	
Type of food	Pematangsiantar	Case	1,07	0,521	0,000
		Control	0,00	0,000	
	Godean	Case	1,03	0,718	0,000
		Control	0,10	0,403	
Frequency of eating vegetables	Pematangsiantar	Case	0,60	0,563	0,000
		Control	0,03	0,183	
	Godean	Case	0,20	0,407	0,045
		Control	0,03	0,183	
Frequency of eating fruits	Pematangsiantar	Case	0,70	0,535	0,000
		Control	0,10	0,305	
	Godean	Case	0,37	0,490	0,025
		Control	0,10	0,403	
Frequency of eating fish	Pematangsiantar	Case	0,87	0,507	0,000
		Control	0,20	0,407	
	Godean	Case	0,53	0,507	0,000
		Control	0,07	0,254	
Frequency of eating meat	Pematangsiantar	Case	0,07	0,254	0,155
		Control	0,00	0,000	
	Godean	Case	0,23	0,430	0,003
		Control	0,00	0,000	
Frequency of eating staple foods	Pematangsiantar	Case	0,000	0,000	1,000
		Control	0,000	0,000	
	Godean	Case	0,000	0,000	1,000
		Control	0,000	0,000	
Food processing	Pematangsiantar	Case	0,57	0,504	0,000
		Control	0,00	0,000	
	Godean	Case	0,63	0,490	0,000
		Control	0,00	0,000	
Physical activity	Pematangsiantar	Case	0,13	0,346	0,039
		Control	0,00	0,000	
	Godean	Case	0,63	0,490	0,302
		Control	0,00	0,000	
Knowledge	Pematangsiantar	Case	8,67	2,040	0,000
		Control	0,77	1,633	
	Godean	Case	8,80	2,384	0,000
		Control	0,80	1,234	
Blood pressure	Pematangsiantar	Case	0,80	0,610	0,000
		Control	0,0	0,000	
	Godean	Case	1,17	0,531	0,000
		Control	0,07	0,254	

3.2. Discussion

Knowledge of women of child-bearing age

Increased knowledge occurred after intervention with education using guidebooks, it was known that respondents' knowledge increased through existing materials. The statement that experienced an increase of more than 50.0% in the case group in Pematangsiantar contained in the statement that eating a lot of salty food can increase the risk of developing high blood pressure (63.3%). Excess sodium intake will increase extracellular blood volume which results in the emergence of hypertension [12]. Often eating fried/ oily foods can increase the risk of developing high blood pressure (53.3%), legumes (food sources that contain lots of Magnesium) are good for people with hypertension (53.3%), Foods that contain Potassium such as bananas, orange juice, corn, and broccoli are good for people with hypertension (66.7%). Foods that are rich in preservatives and seasonings can increase blood pressure (53.3%), Canned drinks can increase blood pressure (56.7%), consuming brown rice and whole wheat bread is good for people with high blood pressure (56.7%). A significant increase in the case group in Godean. According to Palmer & William, hypertension is associated with a combination of lifestyle factors such as inactivity and diet [14]. Before the treatment was carried out with education using a healthy lifestyle book to overcome hypertension in Pematangsiantar and Godean, it was known that most of the respondents' food was in the medium category, the type of food was not good, the frequency of eating vegetables once a day, the frequency of eating fruit once a day, the frequency of eating fish 4 - 6 times a week, frequency of eating meat and frequency of eating staple foods more than once a day. In addition, most of them process food using cooking oil/ coconut milk, the physical activity carried out is also in the moderate category and poor knowledge with a percentage of 76.7% in the case and control group in Pematangsiantar, 63.3% in the case group in Godean and 60, 0% in the control group in Godean. Between the two groups, both the case group and the control group in the two study locations did not have a significant difference. Based on the results of the study, it is known that the variables of the amount of food, type of food, frequency of eating vegetables, frequency of eating fruit, frequency of eating fish, food processing, knowledge and blood pressure have a p value <0.05 in both groups in both locations which means that education using book as guidelines for a healthy lifestyle to overcome hypertension are effective in increasing the variables of the amount of food, type of food, frequency of eating vegetables, frequency of eating fruit, frequency of eating fish, food processing, knowledge and blood pressure of woman of childbearing. Meanwhile, the frequency of eating meat in Pematangsiantar (p = 0.155), the frequency of eating staple foods in Pematangsiantar and Godean (p = 1,000), physical activity in Godean (p = 0.302). It is assumed that the people in Pematangsiantar have a habit of eating meat, especially when there is a customary event that always provides meat so that it becomes a habit / tradition that cannot be ruled out. Likewise, there are difficulties in changing the habits and tendencies of eating relatively large amounts of rice as staple food. Based on the results of the study, it was also known that before the intervention, both cases and controls in both locations, most of them had blood pressure in the Pre Hypertension and Level I Hypertension categories and none of the respondents had normal blood pressure. In the control group at both locations there were no significant changes. Whereas in the case group, after intervention with education using a guidebook for a healthy lifestyle to overcome hypertension, there was a decrease in blood pressure and most of the respondents had blood pressure in the hypertension category I with a percentage of 66.7% in Pematangsiantar and 53.3% in Godean. Respondents who had normal blood pressure at

the time of posttest were 26.7% in Pematangsiantar and 43.3% in Godean. There are differences between the case groups in Pematangsiantar and Godean due to different diets. In Pematangsiantar most people consume foods that tend to be salty while in Godean they consume foods that tend to be sweet. A person with hypertension must reduce the salt content in all foods eaten [15, 16-18]. Fat intake must also be limited because it will cause obesity and will affect blood pressure [15,19]. Most mothers do not have other diseases but have habits that lead to hypertension, namely not exercising. Doing regular exercise not only maintains body shape and weight, but also can lower blood pressure [19]. Types of exercise that can control blood pressure are walking, cycling, swimming, and aerobics [14]. After the intervention, it was seen that physical activity at both locations, especially in the case group, showed an increase. The results showed that more than half of the respondents at both locations were overweight. Body weight and Body Mass Index (BMI) have a direct correlation with blood pressure, especially systolic blood pressure. The relative risk of suffering from hypertension in obese people is 5 times higher than that of normal weight people. Patients with hypertension are found to be around 20% -30% overweight.

Blood Pressure of Women of child-bearing age

The results showed that the blood pressure before the intervention in both the case and control groups at both locations most of the respondents had blood pressure in the Pre Hypertension and Level I Hypertension categories and none had normal blood pressure. In the control group at both locations there were no significant changes. Whereas in the case group, after intervention with education using a guidebook for a healthy lifestyle to overcome hypertension, there was a decrease in blood pressure. Changes in blood pressure in women of child-bearing age in Pematangsiantar and Godean were caused respondents had changed their diet and lifestyle in line with changes in knowledge obtained through education using a healthy living guidebook to treat hypertension. Successful lifestyle modifications and exercise in this group have been reported to demonstrate better blood pressure control

4. Conclusion

Diet and lifestyle consisting of the amount of food, type of food, frequency of food and food processing as well as physical activity changes after education using the guidebook Healthy Lifestyle to Overcome Hypertension. Blood pressure of women of child-bearing age in Pematangsiantar and Godean prior to education using the guidebook Healthy Lifestyle to Overcome Hypertension, most of the categories of hypertension level 1 and pre hypertension and none with normal blood pressure. After the intervention, the blood pressure decreased to normal and the pre hypertension category. Education using the guidebook Healthy Lifestyle Overcoming Hypertension effectively increases knowledge, and can change diet and lifestyle for the better and can reduce blood pressure measurements in women of child-bearing age in Pematangsiantar and Godean [20].

5. Recommendations

It is hoped that health workers routinely provide information about the incidence of hypertension and the factors that cause it in their work area For mothers (especially women of child-bearing age) to carry out routine checks

at least 2 times a week to find out blood pressure and also apply a diet with a low salt and high diet fiber to reach blood pressure close to normal to prevent complications from other diseases.

6. Limitation of Research

- The minimum sample size has not been able to review the same conditions in large number of respondents.

- Using s questionnare where as sometimes the answers given by respondents do not show reality.

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References

[1]. Kemenkes RI. Basic Health Research Report. Indonesia Jakarta : Research and Development Agency for Health Ministry of Health RI. 2018

[2]. Anowie F., Darkwa S. (Jan, 2016). "The Knowledge, Attitudes and Lifestyle Practices of Hypertensive Patients in the Cape Coast Metropolis-Ghana". Journal of Scientific Research & Reports. 8(7):1-15

[3]. Lowe S.A., Brown M.A., Dekker G.A, et al. (June, 2009). " Guidelines for the management of hypertensive disorders of pregnancy". A NZ J Obstet Gynaecol. 42:242–246.

[4]. Hackam D.G., et al. (May, 2010). "The 2010 Canadian Hypertension Education Program recommendations for the management of hypertension: part 2 – therapy". 26(5):249-58.

[5]. Fuhrman, M.D. (Sept-Oct, 2018) "The Hidden Dangers of Fast and Processed Food". Am J Lifestyle Med. 12(5): 375–381.

[6]. Grillo A., Salvi L., Coruzzi P., Salvi P., Parati G. (Aug, 2019)."Sodium Intake and Hypertension Nutritions". 11(9): 1970, 2019.

[7]. Roudsari A.H., Vedadhir A., Amiri P., Kalantari N., Omidvar N., Eini-Zinab H., Sadati S.M.H. (Oct, 2017). "Psycho-Socio-Cultural Determinants of Food Choice: A Qualitative Study on Adults in Social and Cultural Context of Iran". Iran J Psychiatry. 12(4): 241–250.

[8]. Chen P.J., Antonelli M. (Dec, 2020). "Review Conceptual Models of Food Choice: Influential Factors Related to Foods, Individual Differences, and Society Foods". 9, 1898.

[9]. Yang M.H., Kang S.Y., Lee J.A., Kim Y.S., Sung E.J., Lee K.Y., Kim J.S, Oh H.J., Kang H.C., Lee S.Y. (Jul, 2017)."The Effect of Lifestyle Changes on Blood Pressure Control among Hypertensive Patients". Korean J Fam Med; 38(4): 173-180.

[10]. Vooradi S., Mateti U.V. (Feb, 2016)."A systemic Review on Lifestyle Interventions to Reduce Blood Pressure. Journal of Health Research and Reviews (in Developing Countries)". 3(1) : 1-5.

[11]. Arjmand G., Shahraki M., Rahati S., Shahrak. (June, 2016)."Food Patterns, Lifestyle and Hypertension". Zahedan J Res Med Sci; 18 (7).

[12]. Li J., Zheng H., Du H.,Tian X., Jiang Y., Zhang S., Kang Y. (Aug, 2014). "The Multiple Lifestyle

Modification for Patients with Prehypertension and Hypertension Patients: ASystematic Review Protocol". The Journal of NeuroInterventional Surgery (JNIS). BMJ Open. 14; 4 (8).

[13]. Lelong H, Galan P, Guyot, EK, Fezeu L, Hercberg S, Blacher J. (Jul, 2019). "Relationship Between Nutrition and Blood Pressure: A Cross-Sectional Analysis from the NutriNet-Santé Study, a French Web-based Cohort Study". American Journal of Hypertension. 28 (3).

[14]. Palmer A. & William B.(Sept 1, 2005). Blood Pressure (Simple Guides). CSF Medical Communications Ltd.

[15]. Sacks, F.M., Campos H. (Jun, 2010)."Dietary Therapy in Hypertension". N Engl J Med; 362: 2102-12.

[16]. Cecelja M., Chowienczyk P. (Jul, 2012). "Role of Arterial Stiffness in Cardiovascular Disease". JRSM Cardiovasc Dis; 1(4).

[17]. Oliveira E.P., Camargo K.F., Castanho G.K.F., Nicola M., Portero-McLellan KC, Burini RC. (Mar, 2012). "Dietary Variety is a Protective Factor for Elevated Systolic Blood Pressure". Arq Bras Cardio: Brazil; 98 (4).

[18]. Burini R.C., Kano H.T., Nakagaki M.S., Nunes C.N.M., Burini F.H.P. (May, 2017). "The Lifestyle Modification Effectiveness in Reducing Hypertension in a Brazilian Community: From The Epigenetic Basis of Ancestral Survival to the Contemporary Lifestyle and Public Health Initiatives". Ann Clin Hypertens; 1: 010-031.

[19]. Kaplan N.M. (May, 2007). "Lifestyle Modifications for Prevention and Treatment of Hypertension". JCH; 6 (12) : 716-19.

[20]. Bruno C.M.; Amaradio M.D., Pricoco G., Marino., E. Bruno F. (Mar, 2018). "Lifestyle and Hypertension: An Evidence-Based Review". J Hypertens Manag; 4: 030.