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Effect Cookies Made from (*Musa acuminata Cavendish* and *Cucumis sativus)* and Self Talk against Reducing Urine Protein Levels and Blood Pressure in Women of Childbearing Age Pre Hypertension

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ABSTRACT

OBJECTIVE: This study aimed to determine the influence of cookies made from (*Musa acuminata cavendish* and *Cucumis sativus)* and self-talk to reduce urine protein levels and blood pressure in women of childbearing age before hypertension.
METHODOLOGY: The study was quasi-experimental, using pretests and post-tests from September to November 2023. Random sampling was done using the Slovin formula. Samples were divided into four groups, each group consisted of 30 people. The total sample consisted of 120 people. Data collection instruments included questionnaires, booklets, and cookies. Data were analyzed using SPSS Software with an independent t-test and ANOVA.
RESULTS: There were differences in urine protein levels between the initial and final measurements. In group one, five respondents had positive urine protein, while 24 had negative urine protein. In group two, four patients had positive urine protein levels, and all of them were negative. In group three, 2 had positive proteins, and 28 had negative proteins. In group four, 2 had positive proteins, and 28 had negative proteins. A p-value of 0.000 indicates the influence of *Musa acuminata Cavendish* and *Cucumis sativus* cookies and the self-talk module on protein levels.
CONCLUSION: *Musa acuminata Cavendish* and *Cucumis sativus* cookies and the Self Talk booklet for prehypertensive mothers in Kendari City for 12 weeks can effectively reduce blood pressure and urine protein levels.

Keywords: Cookies, Pre Hypertension, Urine Protein, Blood Pressure, *Musa acuminata Cavendish, Cucumis sativus*

INTRODUCTION

The high number of cases of hypertension in women of childbearing age can have a negative impact on the health of the mother and fetus during pregnancy[1]. Hypertension during pregnancy can increase the risk of complications such as preeclampsia and premature birth [2]. Therefore, this research is essential to find an effective way to reduce protein levels in urine and blood pressure in women of childbearing age before hypertension occurs. Preeclampsia affects up to 3.9% of pregnant mothers worldwide[3]. Placental ischemia is the primary cause of preeclampsia. Other contributing variables include primigravida, maternal age < 20 or > 35 years, preeclampsia in the family history, repeated pregnancies, diabetes, and obesity. Complications of preeclampsia can include eclampsia, HELLP syndrome, and placental abruption[4]. Early detection and management of preeclampsia are crucial in preventing adverse outcomes for both the mother and baby[5].

Preeclampsia is referred to as a "disease because this condition can be explained by multiple ideas[5]. Although many other aspects remain unknown, endothelial and placental factors have recently been recognized as significant factors in the pathophysiology of preeclampsia [6]. In preeclampsia, the absence of trophoblast cell invasion into the matrix tissue and muscle layer of the spiral arteries can lead to persistent placental hypoxia and ischemia and a reduction in placental perfusion. Blood flow to the fetus is disrupted by ischemia in the placenta [7]. Consequences of this can include intrauterine growth restriction, preterm birth, and even maternal and fetal death[8]. Anti-angiogenic factors of the placenta contribute to the development of preeclampsia by causing vasoconstriction and endothelial dysfunction. These factors, such as soluble fms-like tyrosine kinase-1 (sFlt-1) and soluble endoglin, can lead to hypertension, proteinuria, and other symptoms characteristic of preeclampsia [5].

Preeclamptic patients experience increased hemoglobin levels and decreased platelet counts. Hematological disorders and heme degradation disorders cause increased hemoglobin levels. Hematological abnormalities are caused by endothelial damage because the damage causes a decrease in intravascular plasma volume, which in turn causes hemoconcentration[9]. Strategies and interventions to reduce hemoglobin and increase platelets, both pharmacologically and non-pharmacologically. Non-pharmacologically, cookies are made from *Musa acuminata Cavendish* and *Cucumis sativus.* Pharmacological interventions may include blood transfusions or medications to help regulate hemoglobin levels and platelet counts. It is essential for healthcare providers to closely monitor these patients and tailor treatment plans to their individual needs.

The high potassium content in *Cucumis sativus* juice can facilitate the excretion of urine (diuretic), lowering blood pressure [10]. Decreased baroreceptor levels are caused by atherosclerotic stiffness in the large arteries where the receptors are located. Blood vessel stiffness progressively increases with age [11]. Consuming *Cucumis sativus* is beneficial for those with hypertension because it lowers blood pressure. Because *Cucumis sativus* contains a lot of water, it also has diuretic qualities that can increase urine and help decrease blood pressure [12].

The purpose was to Influence Cookies Made from (*Musa acuminata Cavendish* and *Cucumis sativus)* and Self Talk Against Reducing Urine Protein Levels and Blood Pressure in Women of Childbearing Age Pre Hypertension. The novelty of this research lies in using Musa acuminata Cavendish and Cucumis sativus as substitutes for cookies and applying the self-talk method as a psychological approach to reduce urine protein levels and blood pressure in prehypertensive women. The findings of this study will aid the development of non-pharmacological treatments for conditions related to prehypertension.

METHODOLOGY

Design

This was a quasi-experimental research with a pre- and post-test design. The sample group was divided into four groups. The first group was given Musa acuminata Cavendish cookies, Cucumis sativus, and modules like Self Talk. The second group was given *Musa acuminata Cavendish* cookies and Cucumis *sativus,* and the third group was given the module Self Talk for 12 weeks. The control group was not provided with Musa *acuminata Cavendish* cookies, Cucumis sativus, or modules Self Talk. Measurements between the intervention and control groups were held on the same day.

Research Population and Sample

This research was conducted in the Puuwatu, Mata, Nambo and Mekar Community Health Center Work Areas, Kendari, Indonesia, from September to November 2023. The sampling technique was done using simple random sampling using the Slovin formula. The study population included patients with prehypertension. The study sample included 120 patients with prehypertension. Each group comprised 30 participants. The first group (given *Musa acuminata Cavendish* cookies and Cucumis sativus and modules Self Talk) consisted of 30 people, group two (given *Musa acuminata Cavendish* cookies and Cucumis *sativus* consisted of 30 people, groups of three (given module Self Talk) consisted of 30 people, and groups of four (not given *Musa acuminata Cavendish* cookies, and Cucumis sativus and modules Self Talk) consisted of 30 people.

The research sample was obtained using purposive sampling. The inclusion criterion in this study is women of childbearing age with TD120-139/80-89 mmHg. Meanwhile, the excluded from this study are women of childbearing age who have hypertension. Blood pressure was measured using a sphygmomanometer on 120 samples in 4 groups, which were then averaged (can be seen in **Table III**)

Research Instrument

The instruments used were Cookies *Musa acuminata Cavendish* and Cucumis sativus, Booklet therapy Self-talk, Questionnaire, Blood pressure using a sphygmomanometer, and examination of urine protein levels using the dipstick method. Primary data were collected in the form of levels of urine protein and blood pressure before and after treatment.

Data analysis

The data obtained were processed using univariate, bivariate, and multivariate analyses. The results of the study are narrated and tabulated. For statistical tests, the level of significance was set at $p \leq 0.05$. If the data were normally distributed, then the parametric independent t-test was used. Still, the non-parametric ANOVA test was used using SPSS Software if the data were not normally distributed.

RESULTS

Table I showed the data revealed that high school was the predominant level of education among respondents in this age group. This demographic profile suggests potential challenges in finding employment opportunities for individuals with this educational background and age range.

Table I: Characteristics of Respondents

Variable	Group I		Group II		Group III		Group IV	
	n	%	n	%	n	%	n	%
Age								
21-30	11	36.7	9	30.0	8	26.7	12	40.0
31-40	14	46.6	15	50.0	12	40.0	13	43.3
41-50	5	16.7	6	20.0	10	33.3	5	16.7
Education								
Elementary School	5	16.7	6	20.1	5	16.7	7	23.3
Junior High School	5	16.7	7	23.3	6	20.0	7	23.3
Senior High School	14	46.6	10	33.3	13	43.3	11	36.7
University	6	20.0	7	23.3	6	20.0	5	16.7
Working Status								
Work	9	30	11	36.7	8	26.7	10	33.3
Doesn't work	21	70	19	63.3	22	73.3	20	66.7

Table II shows that in 100 grams of *Musa acuminata Cavendish* and *Cucumis sativus* cookies, the calorie content is 36%, the protein content is 5.1%, the fat content is 0.5%, the carbohydrate content is 5.9%, the calcium content is 7 mg, iron (Fe) is 0.8 mg, and potassium is 492 mg. The conclusion from **Table II** is that *Musa acuminata Cavendish* and *Cucumis sativus* cookies can be used as food ingredients for prehypertensive women of childbearing age. These cookies are a good source of potassium, iron, and calcium, making them a nutritious option for individuals seeking to maintain a healthy diet. Additionally, the low-fat content in these cookies can benefit those looking to manage their weight or cholesterol levels.

Table II: Nutritional Value of *Musa acuminata Cavendish* and *Cucumis sativus*

Sample	Variable						
	% calories	% protein	% fat	% carbs	% calcium	% fe	% potassium
Cookies *Musa acuminata Cavendish* and *Cucumis sativus*	36	5.1	0.5	5.9	7	0.8	492

Table III shows the difference in blood pressure between the initial and final measurements, with the best decrease observed in Group 1. The analysis showed a p-value of 0.000, less than 0.05, indicating that consuming Musa acuminata Cavendish and Cucumis sativus cookies and the self-talk module affects blood pressure in women of childbearing age in Kendari City.

Table III: Effect of giving *Musa acuminata Cavendish* and *Cucumis sativus* cookies and self-talk booklets on blood pressure in prehypertensive women of childbearing age

Group		n	Blood pressure						*p-value*
			Beginning			End			
			Mean	Min	Max	Mean	Min	Max	
I	Systolic	30	131	121	137	118	110	125	0,000
	Diastolic		85	80	89	75	70	82	0,000
II	Systolic	30	129	120	139	120	111	130	0,000
	Diastolic		87	80	89	77	70	84	0,000
III	Systolic	30	127	120	138	122	115	131	0.001
	Diastolic		85	81	89	79	71	84	0.001
IV	Systolic	30	126	120	137	128	120	139	0.003
	Diastolic		86	80	88	87	80	89	0.004

Table IV shows differences in urine protein levels between the initial and final measurements. In group one, all respondents had negative urine protein levels, whereas in group two, all had negative levels. In group three, two respondents had positive urine protein; in group four, two had positive proteins. The analysis results showed a p-value of 0.000, indicating that consuming Musa acuminata Cavendish and Cucumis sativus cookies and the self-talk module significantly affected protein levels in women of childbearing age. It can be drawn that the intervention of consuming Musa acuminata Cavendish and Cucumis sativus cookies, along with the self-talk module, had a significant impact on urine protein levels in women of childbearing age. Further research may be needed to explore the mechanisms behind this effect and its potential implications for maternal health.

Table IV: Effect of giving *Musa acuminata Cavendish* and *Cucumis sativus* cookies and self-talk booklets on protein levels of prehypertensive women of childbearing age

Group	n	Urine Proteins									*p-value*
		Initial Measurements					Final Measurement				
		Negative	Positive				Negative	Positive			
			+	++	+++	++++		+	++	+++	++++	
I	30	24	5	0	1	0	30	0	0	0	0	0,000
II	30	26	4	0	0	0	30	0	0	0	0	0,000
III	30	28	2	0	0	0	28	2	0	0	0	0,000
IV	30	28	2	0	0	0	28	2	0	0	0	0,000

DISCUSSION

The nutritional composition of 100 grams of Musa acuminata Cavendish and Cucumis sativus cake is 36% calories, 5.1% protein, 0.5% fat, 5.9% carbohydrates, 7 mg calcium, 0.8 mg iron (Fe), and 492 mg potassium. **Table II** concludes that prehypertensive women of childbearing age can use Cucumis sativus and Musa acuminata Cavendish cookies as food ingredients. Cookies that contain high levels of nutrients are highly recommended for consumption by women of childbearing age with prehypertension because they can help meet daily nutritional needs. This can also help keep blood pressure stable. Healthy pregnant women will give birth to healthy babies, too. Therefore, prehypertensive women of childbearing age need to pay attention to balanced nutritional intake and choose foods that are rich in nutrients [13]. Additionally, consuming cookies containing Cucumis sativus and Musa acuminata Cavendish can also help maintain the health of the mother and fetus during pregnancy. The right nutritional combination of these two food ingredients can provide optimal benefits for the health of prehypertensive women of childbearing age [14,15].

These cookies are a healthy choice for anyone trying to maintain a balanced diet because they are an excellent source of potassium, iron and calcium. Potassium is good for pregnant women because it helps maintain blood pressure and reduces the risk of muscle cramps. Potassium, found in Cucumis sativus, inhibits the renin-angiotensin system and lowers aldosterone release, lowering sodium and water absorption in the renal tubules and blood pressure. Because of this, there is an increase in diuresis, which lowers blood volume and, ultimately, blood pressure [16,17]. Calcium is essential for healthy fetal bone development [18–20]. Iron is also needed to prevent anemia in pregnant women [21,22], so these cakes can provide complete nutritional benefits for the health of the mother and fetus. So, including these healthy cookies in your daily diet can help support a healthy pregnancy. Calcium is also essential for maintaining healthy teeth and bones in pregnant women, while iron helps increase oxygen levels in the blood [23,24]. That way, including these healthy cakes can provide essential nutrients for the health of the mother and fetus during pregnancy.

The research found that consuming Musa acuminata Cavendish and Cucumis sativus cakes and the self-talk module significantly affected blood pressure in women of childbearing age in Kendari City. The results showed a decrease in blood pressure levels in participants who consumed cake and took part in the self-talk module compared to those who did not. Stable blood pressure is good for pregnant women because it can reduce the risk of pregnancy complications such as preeclampsia [25]. Apart from that, this research also emphasizes the importance of healthy eating patterns and stress management in maintaining the health of women of childbearing age. Keeping blood pressure stable can also improve a woman's quality of life [26].

These findings suggest that combining dietary and psychological interventions may be beneficial for managing blood pressure in this population. Dietary and stress management interventions can significantly positively impact the health of women of childbearing age. Thus, women must consider these aspects to maintain their overall health [27,28]. By implementing healthy lifestyle changes, women of childbearing age can reduce their risk of chronic disease and improve their quality of life [14]. Also, consulting nutritionists and psychologists can help design a suitable program to achieve the desired health goals.

The variations in urine protein levels between the first and last measurements are displayed in **Table IV**. While all respondents in group two had negative urine protein levels, all in group one had negative values. Two respondents in group three and two in group four exhibited positive urine proteins. The self-talk module and the eating of cookies made from Musa acuminata Cavendish and Cucumis sativus considerably impacted the amounts of protein in women who were or were not pregnant, according to the study results, which revealed a p-

value of 0.000. The self-talk module and the consumption of cookies made from Musa acuminata Cavendish and Cucumis sativus significantly affected the urine protein levels in women who were or would become pregnant.

CONCLUSION

Musa *acuminata Cavendish* cookies and Cucumis sativus can be used as substitute local ingredients to reduce urine protein levels and blood pressure in prehypertensive women of childbearing age. Booklet self-talk can be used as reading material to lower blood pressure in prehypertension. Providing *Musa acuminata Cavendish* cookies, Cucumis sativus, and booklets Self Talk for 12 weeks can reduce blood pressure and urine protein in prehypertensive women of childbearing age.

Ethical permission: This research has received ethical approval from the Kendari Ministry of Health Polytechnic with number LB.02.01/Etik-027.2023
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Data Sharing Statement: The corresponding author can provide the data proving the findings of this study on request. Privacy or ethical restrictions bound us from sharing the data publically.

AUTHOR CONTRIBUTION

Aswita ASWT: Conceptual Framework, The Work's Design, The Data Analysis, And The Interpretation
Kartini KRTN: Work's Design, The Data Analysis
Titi PDO: Data Analysis

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