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RESEARCH ARTICLE

The Effect of Cassava-Dried Shrimp Crackers on Urine Protein in Maternity Hypertension in Maros District Health Center

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ABSTRACT:

Maternal Mortality Rate is a serious world health problem. According to the World Health Organization in 2017 around 295,000 women died and after pregnancy and childbirth in 2018 increased to 830,000. The main cause of maternal death is preeclampsia, therefore hypertension and urine protein as causes of preeclampsia need to be controlled. Research has shown that certain nutrients can improve blood pressure and urine protein. The research objective was to analyze the effect of cassava cracker consumption on urine protein in maternity hypertension. This type of research used quasi-experimental and the populations in this study were all Maternities at Cenrana and Tompobulu Health Center. The sample was 15 pregnant women at Puskesmas Cenrana as an experimental group and 15 pregnant women at Tompobulu health center as a control group. The results of the paired t test showed that the consumption of ebi cassava crackers at fourth's week had a significant effect on changes in urine protein in pregnant women in intervention group with a value of $p > \alpha 0.05 = 0.008$, while in the control group there was no effect with a value of $p > \alpha 0, 05 = 0.250$. It was concluded that consumption of ebi cassava crackers during four weeks changed the urine protein from positive to negative. Hopely, every hypertensive pregnant woman consumes cassava crackers to prevent positive urine protein.

KEYWORDS: Consumption Cassava-Dried Shrimp Crackers, Maternity hypertension, Urine protein.

INTRODUCTION:

According to the data the maternity mortality in the world in 2017 about 295,000 women died. In Everyday, about 810 mothers die from pregnancy and childbirth. The cause of maternity death during pregnancy is 75% due to heavy bleeding, infection, high blood pressure during pregnancy (pre-eclampsia and eclampsia), complications from childbirth, unsafe abortion¹. According to the Indonesian Health profile, the maternity mortality rate per 100,000 live births in 2015 was 305, three times from target MDG in 2015 surely 102². The main causes of death for pregnant women are hypertension during pregnancy, pre-eclampsia and eclampsia^{3,4}. According to data from the Maros District Health Office 2019, the number of hypertension in pregnancy was 65 pregnant women. Cenrana health center has the highest number of hypertension cases (25 cases of hypertensive pregnant women)⁵.

One of the non-pharmacological therapies which can be given to hypertensive patients towards pregnant women is nutritional therapy which carried out with hypertension diet management⁶. Cassava, dried-shrimp, cassava leaves and pumpkin seeds are foods which untapped maximally whereas they have good nutritional content^{7,8}. Therefore, these food ingredients easy to obtain and cheap, these ingredients are made into healthy snacks for pregnant women. The research objective was to analyze the effect of cracker consumption on urine protein for hypertensive pregnant women.

MATERIAL AND METHODS:

This type of research used quasi-experimental. The research held in June-July 2020 and the populations were all pregnant women at Cenrana and Tompobulu health center. The samples were 15 pregnant women at Cenrana health center as an experimental group and 15 pregnant women at Tompobulu health center as a control group. The tool used to measure the blood pressure is a Sphygmomanometers from GEA brand. The method of measurement is not hypertension if it is below 120/80mmHg, Pre-hypertension if 120/

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80mmHg- 140/90mmHg, hypertension level 1 if more than 140/90mmHg-160/100mmHg, hypertension level 2 if more than 160/100mmHg. Urine protein was measured using the OneMed Gluco protein test. How to measure urine protein is each pregnant woman was asked 5cc of urine in a special reservoir, then let stand for 2 minutes until all the strips are immersed and read. If the strip is yellow it means negative urine protein and if it is green the urine protein content is positive. The intervention materials were crackers made from cassava, cassava leaves and pumpkin seeds which had their nutritional content analyzed as much as 25 grams per day for 30 days. The crackers were delivered and given to the samples every evening by the enumerators to be consumed until they were finished at their respective homes. The statistical test used is the T test.

RESULT AND DISCUSSION:

Table 1. The Characteristics of pregnant women in the intervention and control groups in the area of Cenrana and the Tompobulu Health Center, Maros Regency 2020

Age	Intervention		Control	
≤20	2	13,3	3	20
21-30	3	20	10	66,7
31-40	9	60	2	13,3
41-50	1	6,7	-	-
Primary School	3	20	6	40
Junior High School	4	26,7	3	20
Senior High School	4	26,7	4	26,7
DIPLOMA	2	13,3	1	6,7
S1 (Fresh Student)	2	13,3	1	6,7
No Occupation	11	73,3	11	73,3
Civil Servant	1	6,7	1	6,7
Entrepreneur	2	13,3	3	20
Contract Employees	1	6,7		
Trimester 1	1	6,7	5	3,3
Trimester 2	5	33,3	8	53,3
Trimester 3	9	60	2	13,3

Table 1: shows that from the 15 respondents, most of the pregnant women in the intervention group were aged 31-40 years, while in the control group most of the pregnant women were 21-30 years old. Most of the pregnant women in both groups had junior high and high school education. Generally, pregnant women in both groups did not work.

Urine protein pregnant women

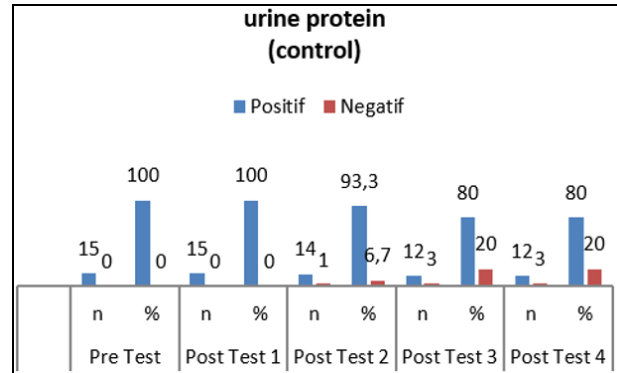
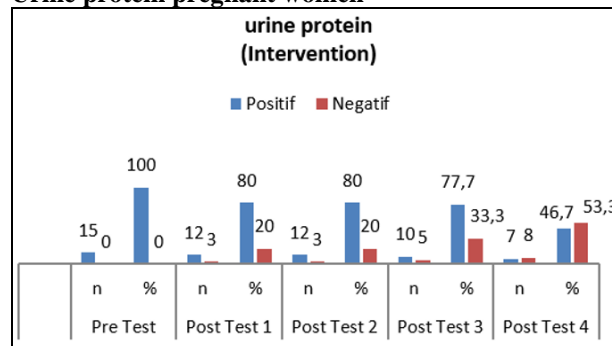


Figure 1. the transformation in urine protein for pregnant women before and after in the intervention group and control group at Cenrana and Tompobulu health center, Maros Regency.

Figure 1 shows transformation in urine protein from the week to week, the longer the more pregnant women who had negative urine protein in the intervention group. In the control group there was also a change, but the number of pregnant women who changed their protein content was less than the intervention group.

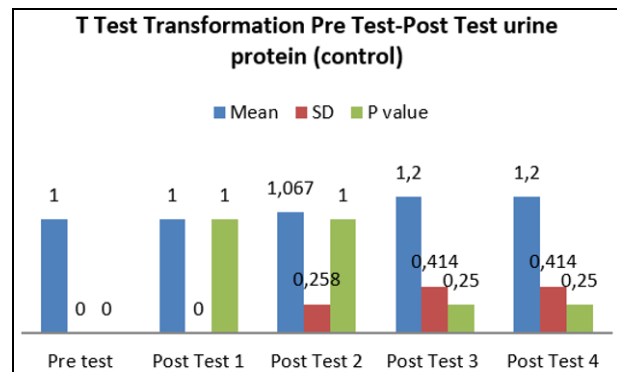
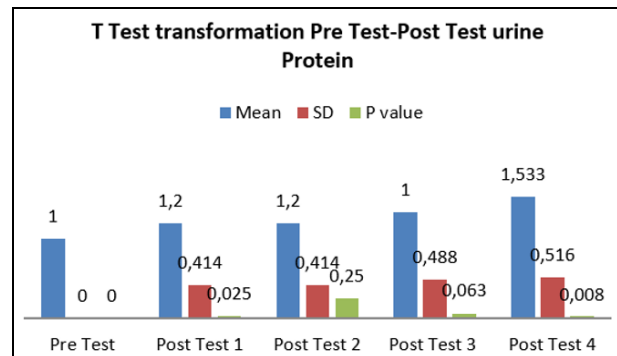


Figure 2. T-Test for Transformation in Urine Protein Pretest-Posttest.

Figure 2 shows the p-value of 0.250 at posttest 1, which means that there is no significant transformation in the urine protein content of pregnant women. At posttest 2, the p-value is 0.250 which means that there is no significant transformation in the urine protein content of pregnant women. At posttest 3, the p-value is 0.063,

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meaning that there is no significant transformation in the urine protein content of pregnant women. At posttest 4, the p-value is $0.008 \leq 0.05$, which means that there is a significant transformation in the urine protein content of pregnant women. Meanwhile, for the control group, from posttest 1 to posttest 4, the p value was greater than 0.05, meaning that there was no transformation.

Urine protein is a indication of kidney's damage and identifies those who risk to aggravate kidney disease. Urinary protein excretion increases in normal pregnancy from less than 150mg/day in non pregnant individuals to 300mg/day in pregnancy^{9,10}. There are 3 characteristics associated with preterm birth and low birth weight namely decreased kidney function, hypertension and urine protein¹¹. Despite more evidence about the relationship between urine protein and pregnancy result, so far no therapeutic approaches have been identified to control it in pregnancy, and many reno-protective and anti-proteinuric agents are used, including ACE (angiotensin converting enzyme) inhibitors and receptor inhibitors. angiotensin, is prohibited in pregnancy because of its suspected teratogenicity¹². In order to prevent pregnant women from progressing to preeclampsia and eclampsia, in this study, pregnant women were given interventions made from natural foods, namely ebi cassava crackers to change urine protein levels. After consumed crackers for 1st week, there was a change in protein levels from positive to negative for three pregnant women. The same situation occurred at 2nd week, there was a change in protein levels from positive to negative in three pregnant women. The next change occurred at 3rd week as many as five people who experienced a negative change in protein levels.

At 4th week many who had a change in protein levels from positive to negative. In the control group changes were more slowly seen, at 3rd week there was a change in only for one pregnant women. The next changes occurred at 4th week and 5th week, respectively, there was a change in urine protein levels from positive to negative for three pregnant women. This shows that the intervention of ebi cassava crackers has the ability to improve protein levels in half of problem pregnant women. Positive urine protein problems in semester 2 and 3 did not only occur at the study location but also at other health center^{13,14}. The cause of positive protein in urine can be caused by excessive protein consumption, high fever, strenuous physical activity, or diseases such as kidney problems, preeclampsia, and urinary tract infections. The Factors that play a role in the emergence of urine protein are glomerular filtration and tubular protein reabsorption. In preeclampsia, urinary protein appears due to decreased glomerular filtration rate. Such as; Another glomerulopathies there is increased

permeability towards vast majority molecular weight proteins¹⁵. In this study, it was proven that the problem of positive urine protein could be overcome by consuming dried cassava crackers. Listening to Murattalal-Quran has no significant effect on changing positive to negative urine protein¹⁶. A low protein diet and a plant-based diet contribute to urine protein control¹². High blood pressure in hypertension forces the kidneys to work harder able to cause in damage kidney cells which is indicated by the presence of urine protein. Although hypertension results in urine protein, not all hypertensive pregnant women have positive urine protein. In a healthy condition and normal pregnancy, there is no significant increase in urine protein or the amount is above normal limits. Only some proteins with small molecular numbers can be found in urines¹⁵. Hypertension can be controlled with herbal treatment, such as; papaya because it contains potassium and antioxidants (vitamin C) which able to lowered blood pressure. Papaya fruit able to lowered systolic and diastolic blood pressure in hypertensive pregnant women¹⁷. After the blood pressure drops becomes prehypertension, it is expected that urine protein will also be negative as happened in the cassava cracker intervention, after the blood pressure level drops, the urine protein of pregnant women becomes negative. This significant change was seen in the 4th week after giving cassava ebi crackers. Whereas for the control group, there was no significant change in urine protein levels of pregnant women in the 1st week to the 4th week. A calcium supplementation program during pregnancy has shown low calcium intake to reduce the risk of developing preeclampsia/eclampsia by up to 78% in the high-risk group, and even up to 41% in the low-risk group. The use of MgSO₄ for prevention and treatment of severe preeclampsia/eclampsia. MgSO₄ is a life-saving drugs and anti-seizure option for women with preeclampsia/eclampsia is severe. This reduces the risk of developing seizures or recurrent seizures by more than 50% compared with other drugs¹⁸. Lycopene supplementation does not reduce the incidence of preeclampsia in women at risk high. However lycopene supplementation seems to help in reducing the incidence of intra-uterine growth retardation¹⁹. Giving the red fruit oil of gestation 7 days to 20 days of pregnancy can effectively prevent the appearance of clinical symptoms of preeclampsia in an animal model of preeclampsia. The results are consistent with the research prevention of preeclampsia to provide anti-oxidant, ie 1,000mg of vitamin C and 400IU of vitamin E from the age of 18-22 weeks gestation in women who are at high risk of preeclampsia can significantly reduce the incidence of preeclampsia^{20,21}. In addition to food intervention, control of urinary protein can also be done with gymnastics. It was found that there was an effect of prenatal Yoga exercise on the incidence of preeclampsia

(p value 0.035). OR value of 2.46 means that pregnant women who had prenatal yoga exercises are not likely to develop preeclampsia by 2.46 times compared with pregnant women who did prenatal yoga exercises. **Gymnastics Yoga for health can lower blood pressure, heart rate and increase blood circulation to remove the remnants of food containing the toxin to the body, relieve edema and cramping which are common in the last months of pregnancy, to help the baby's position and movements, improves the digestive system and appetite, increases energy and slows down metabolism to restore calm and focus, reduces nausea, morning sickness and mood, relieves tension around the cervix and birth canal which focuses on opening the pelvis²².**

CONCLUSION:

Ebi cassava crackers consumption as much as 25gram / day for 4 weeks alter urine protein positive to negative. It is recommended that every hypertensive pregnant woman consume cassava dried-shrimp crackers to prevent urine protein.

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