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EDUCATING THE IMPACT OF COCONUT SPROUT ON MATERNAL HYPERTENSION IN TANGERANG, INDONESIA: A CASE STUDY

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ABSTRACT

Background: The effects of hypertension during pregnancy have caused health problems serious to mother and fetus. Hypertension can affect fetal development, and sudden fetal and maternal death. One source of plant nutrients that can optimize the number of blood cells is coconut sprout**. Purpose:** Coconut sprouts are high in carbohydrates, fiber, and antioxidants that can help optimize maternal health during pregnancy and reduce the risk of hypertension during pregnancy, however, not many women are aware of this information. **Methods:** This study attempts to inform pregnant women of the benefit of coconut sprout using lectures and demonstration along with primary health centre activities. A pretest and a posttest were conducted to assess improvement in knowledge. The total number of participants who participated in the activities was 50 people. The age range of pregnant women was 23-38 years old. **Result:** Knowledge of participants before the presentation of the material were low, with an average score of 35.41%, compared to 64.55% after the explanation. The comparison of participants' knowledge before and after education was 29.14%. The educational activities and dissemination conducted in the Binong Public Health Center area was to add, expand, and improve participants' knowledge of the impact of hypertension during pregnancy. **Conclusion**: Activities that needed to be continued was checking up urine, protein during pregnancy, direct application of coconut sprouts with controlling laboratory results, and increasing socialization, health promotion about the impact of hypertension, and the use of coconut sprouts to the general public.

Keywords: hypertension, pregnant women, coconut Sprout

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INTRODUCTION

Coconut sprout has benefits in increasing the production of breast milk production, the hormone progesterone, normalizing red and white blood cells, increasing body weight, and being an alternative source of nutrition, which is high in carbohydrates and calcium. It also contains phytoestrogens, flavonoids, and a source of antioxidants (Aiba *et al*., 2017). Coconut sprout can be used to prevent the hypertension through its usefulness as an antioxidant. Antioxidants can work to counteract free radicals that cause oxidative stress. Oxidative stress can trigger an increase in blood pressure in pregnant women. Coconut sprout has another name, namely coconut *kentos* in Javanese terms. Coconut *kentos* has benefits as an antidepressant as tested on animal models of mice by Arief Azis (2020). Antidepressants are part of the stress factor. It has the same performance as antioxidants to prevent and inhibit free radicals from oxidative stress.

Pregnancy hypertension or preeclampsia is a high blood pressure problem that greatly interferes with the health conditions of mothers and children during pregnancy (Lalenoh, 2018). Complications of several pre-eclampsia trigger factors in pregnancy are generally at high risk for the mother and fetus (Ejike *et al*., 2018). The problem of hypertension in pregnancy is quite common, and it is estimated that around 10% of pregnant women experience this disorder (Kevin, 2018), making it the second cause of death in pregnant women due to bleeding. The trend in the prevalence of pregnancy is increasing, namely the presence of preeclampsia and an unhealthy lifestyle due to consuming foods high in sodium. This is what causes that not all women can have a safe and smooth pregnancy. Hypertensive pressure in pregnant women is above systolic and diastolic blood pressure with an average of 140/90 mmHg (Novita and Tania, 2018). Preeclampsia is an increase in high blood pressure due to the continuation of chronic hypertension, chronic hypertension preeclampsia, and gestational hypertension because it does not receive proper treatment after 5 months of gestation, causing organ damage and marked protein content in the urine (Bidanku, 2019 The proportion of preeclampsia in Indonesia is around 37 percent (Arditawati *et al*., 2022). Preeclampsia has a high potential to occur in women with a history of preeclampsia before pregnancy, first pregnancy at a young age under 20 years old and pregnant at an old age of 40 years, having a history of hypertension from the mother or siblings during pregnancy, being overweight, carrying twins and a history of disease. chronic conditions such as kidney disease, diabetes, and high blood pressure (Kemenkes, 2014).

During pregnancy, the mother needs to be supported with a healthy lifestyle including exercise, consumption of nutritious foods such as lean meat, low-fat milk, consumption of vegetables and fruit, and avoiding foods with high salt content, smoking and alcohol consumption. High blood pressure may occur at the age of 20 weeks of gestation or the 2nd trimester. It is known as gestational hypertension. Symptoms of gestational hypertension do not indicate the presence of excess protein in the urine and the absence of organ damage (Amri, 2016). In addition, there is chronic hypertension in pregnant women, which occurs before the gestational age reaches 20 weeks. This hypertension has existed before pregnancy, and the symptoms are very difficult to determine. The severity of hypertension during pregnancy is known as chronic hypertension with superimposed preeclampsia because it is characterized by the presence of protein in the urine and usually occurs at gestational age below 20 weeks (Novita and Tania, 2018). The risks posed by eclampsia are characterized by pregnancy seizures before or after delivery, coma, brain damage, and causing death to the mother or baby (Honest Docs, 2019). Coconut sprout can help prevent hypertension but not many pregnant women aware of this information. This study thus offer a unique case of activity at a primary health centre that attempts to improve the knowledge of pregnant women of the benefit of the coconut sprout.

Binong Public Health Center is a health center that has a cooperative relationship with the UPH Faculty of Nursing. Hypertension is a symptom condition that can affect the health of the mother and fetus. Hypertension can be in the form of mild hypertension or severe hypertension which can have harmful effects on the mother and fetus during pregnancy. This hypertension problem needs to be socialized to mothers in the Binong Public Health Center, as a continuation of the previous PKM activities in

RW 02 Binong District. Data on maternal age with postpartum rates in the Binong Public Health Center is estimated to reach 30 mothers in one day. The incidence of hypertension at the Binong Health Center from observations and interviews with the head of the Public Health Center and cadres stated that when checking the blood pressure of pregnant women, it was found that the diastolic (≥ 90 mmHg) and systolic (≥ 140 mmHg) limits were around 10%. The cause of high blood pressure in mothers who are pregnant is due to the habit of consuming fast food, namely supermi mixed as a side dish of rice. They did that due to lack of understanding triggers hypertension during pregnancy.

Steps or solutions to overcome the problem of hypertension in pregnant women are: socializing education on the impact of hypertension before or during pregnancy on mothers, monitoring by checking systolic and diastolic blood pressure at the public health center or at the nearest health clinic, implementing healthy eating patterns for preventive care by consuming food sources that can prevent and reduce hypertension, and empowering fresh coconut cobs at a dose of 25 g/day as a food menu to prevent and control hypertension. Coconut tubers act as antioxidants from flavonoid compounds (Aiba *et al*., 2017) and stabilize the complete hematological picture of blood as has been tested in vivo in an animal model of white rat Sprague Dawley strain (Aiba *et al*., 2016). Novelty atau kebaruan dalam penelitian ini adalah tombong kelapa memiliki khasiat mencegah hipertensi pada ibu hamil.

The goals and expectations of educational activities on the impact of hypertension in pregnancy and the benefits through coconut cassava nutrition can increase participants' understanding and knowledge about having a good and healthy pregnancy (mother and fetus). Providing food menu tips for consumption during pregnancy is useful for maintaining and protecting the health of the mother and fetus. Besides that, it can build and improve thinking concepts whose benchmarks are from the results of the pretest and posttest, and participants' awareness that it is important to continue to do medical check-ups in routinely monitoring health at the nearest puskesmas or hospital.

The expected benefits through this activity are: participants can understand the impact of hypertension before and during pregnancy, find out the factors that cause hypertension during pregnancy, can find solutions to avoid hypertension during pregnancy by consuming natural sources of nutrients that can optimize the number of blood cells in the body during pregnancy, find out the benefits of consuming coconut by optimizing the number of blood cells to avoid hypertension during pregnancy, and can take advantage of the coconut menu with other menus that contain lots of fiber, such as fruit to support the health of the mother and fetus during pregnancy. The problem of fulfilling nutrition based on recommendations from clinical antenatal services provided by health workers to mothers undergoing pregnancy has major challenges related to receiving information, limited time, and knowledge of clinical impact in adequate nutrition education (Lee *et al*., 2018).

METHOD

The target participants in this Public Health Center program were 50 women who were pregnant in the first trimester (1) to third trimester, aged 20-30 years in the Binong Village Health Center area. The target participants in this study were pregnant women. The sampling of pregnant women respondents or participants was carried out in conjunction with the KP ASI program at the Binong Health Center, in collaboration with the RT/RW of Binong Village.

The implementation of the activity began with pretest questions, education, dissemination and demonstration, examination of systolic and diastolic pressures, and posttest evaluation with the same questions in the pretest. Filling in the pretest and posttest questions aimed at participants in order to determine the participants' knowledge about hypertension and its effects in pregnancy, and to find out to what extent coconut sprout was known for its benefits in people's lives. The way to collect pretest and posttest data was by giving 5 questions to participants before the material was presented. Filling out the pretest which was shown to participants at the beginning before the presentation of the material was aimed to know the initial understanding and knowledge about the impact of hypertension, and the benefits of coconut sprout that were known by

the participants. The results of the pretest through 5 questions as feedback evaluation at the beginning of the presentation of the material by the Public Health Center team added up the total understanding of the participants who attended and answered the questions, namely 17 participants. The total sum of the results of knowledge and understanding of the participants' answers was 17 people divided by the total who participated and multiplied by 100%, then the average value of the participants' understanding results is evaluated by the pretest. Likewise, the same addition was carried out on the evaluation of the posttest results after the presentation of the total answers from participants obtained from 5 questions from 17 participants' answers obtained and divided by 17 and multiplied by 100% as the average achievement value of knowledge and understanding of participants from 100% to achieved.

Education: the presenter conveyed the topic of the impact of hypertension, factors causing hypertension, and symptoms of hypertension in pregnant women. Participants paid close attention and listened to the material from the beginning of the activity to the end of the activity, and can ask questions, suggestions, responses, and inputs that were relevant and innovative for discussion forums.

The dissemination and demonstration of the coconut sprout was part of the continuation of the education on the usefulness of the coconut sprout whose direct application can be seen in the form, taste, and examination of participants' blood pressure after the seminar took place with wisdom. Evaluation that was conducted was as the implementation feedback in the form of pretest and posttest results for the knowledge and understanding of participants on the impact of hypertension during pregnancy and the benefits of coconut sprout.

This article does not have ethical permission because this is a product of community service articles from the results of previous research.

RESULT

Based on the data from the pretest and posttest results, participants who attended PKM activities on education about the impact of hypertension in pregnancy and prevention through coconut sprout nutrition explained that participants' knowledge about hypertension, its effects, signs, symptoms, and nutrition prior to material exposure showed very low knowledge and not enough. The knowledge and understanding obtained from the participants, where the overall average value of achievement is 35.45% (Table 1). However, the comparison of the participant's achievement value after the explanation of hypertension material, impact, symptoms, signs, and coconut sprout showed an increase and improvement in knowledge, namely 64.55% (Table 1). The achievement of the results of increasing the knowledge of the participants through education on the impact of hypertension and prevention with coconut sprout can prevent and reduce the risk of hypertension during pregnancy.

The comparison of participants' knowledge before and after education, which is 29.06%. Mother's knowledge obtained from the results of the pretest and posttest means that educational activities and seminars conducted in the Binong Public Health Center area, especially for participants who attend provide additional, increase, and improve participants' knowledge of the impact of hypertension during pregnancy (Table 1).

Table 1. The results of participants' knowledge before and after the presentation of material about education on the impact of hypertension in pregnancy and prevention through coconut sprout nutrition in the Binong Public Health Center area, Tangerang.

No	Respondents	Score	
		Pretest	Posttest
1	NA	27	80
2	HN	42	65
3	ED	40	77
4	R	20	50
5	A	45	50
6	RT	0	65
7	RH	20	50
8	AA	40	70
9	MM	62	70
10	JB	0	45
11	SK	47	63
12	DS	47	77
13	S	60	72
14	SS	0	40
15	N	45	60
16	SU	47	100
17	D	60	62
Average in percentage (%)		35.45%	64.55%

The increased knowledge of the participants can be seen from the 5 questions of the initial feedback evaluation and after the participants received the material about the impact of hypertension and the benefits of coconut sprout that was delivered. The five questions given to the participants were aimed at knowing the participants' prior knowledge before and after receiving educational materials about the impact of hypertension and the benefits of coconut sprout.

Based on the five pretest and posttest questions from participants who attended education about the impact of hypertension and the benefits of coconut sprout, there were two questions that were not known to the participants, namely number 3 "Preeclampsia in pregnancy causes participants to lack understanding and knowledge, because they have not received an explanation and delivery of material. Meanwhile, the same questions in the pretest that were given in the posttest showed that the participants' acceptance of educational materials on the impact of hypertension and prevention through coconut sprout was better than before. So, the pretest and posttest provided were useful in providing understanding and knowledge to participants about the impact of hypertension and the benefits of using coconut sprout to be more conveyed.

Another thing that was obtained by the participants was the importance of awareness to check their own health in order to maintain personal health and the fetus in the womb, regardless of the risks that could be dangerous. high blood pressure rises above normal and protein in the urine increases a lot." The statements above are true or false (Table 2).

Another question that was not understood by the participants was number 4, which was to mention the benefits of coconut sprout and the nutritional content found in coconut tombong (Table 2). The two pretest questions that were completely unanswered by the participants were questions number 3 and number 4. Meanwhile, the pretest questions numbered 1, 2, and 5 meant that participants did not understand correctly about the impact of hypertension and the benefits of coconut sprout during pregnancy.

Table 2. Pretest Evaluation Feedback and posttest of participants' knowledge about hypertension and the benefits of coconut trunks

Question	Pretest	Percentage	Posttest	Percentage
Hypertension in pregnancy which greatly interferes with the health of the mother and child during pregnancy is occured in more than what number of the systolic and diastolic blood pressur?	7	33.33	14	66.67
Hypertension with preeclampsia has the potential to occur in women with a history of preeclampsia which can cause disturbances in what organs of the body?	2	14.28	12	85.72
Preeclampsia in pregnancy causes high blood pressure to rise above normal and protein in the urine increases a lot. The statement above is true or false?	0	0	15	100
Mention the benefits of coconut sprout and the nutritional content found in coconut sprout?	0	0	8	100
Mention 5 sources of plant nutrients that can prevent hypertension.	5	27.78	13	72.22

The education on the impact of hypertension that is intended in PKM activities or community service regarding the impact of hypertension during pregnancy and the benefits of coconut cassava is how the role of academics is to socialize the dangers of hypertension and its effects on maternal and fetal health. In addition, informing the benefits of coconut sprout which have benefits in preventing hypertension to be applied in maintaining health during pregnancy. So, this community service activity is to convey the results of the study that hypertension in pregnant women can be prevented by consuming coconut sprout.

The results of the education on the impact of hypertension on the mother during pregnancy and the benefits of nutrition through coconut sprout in the Binong Health Center area went well, where participants were very

enthusiastic about taking part in the presentation of material about hypertension, its impact on maternal and fetal health during pregnancy, as well as solutions to prevent hypertension by giving coconut sprout. . The material on hypertension in pregnancy and the benefits of coconut sprout nutrition presented to participants provided a study of knowledge, understanding of mothers to be able to maintain and improve health, so as to avoid the impact of hypertension.

Participants' understanding of hypertension during pregnancy before any explanation about hypertension and its effects was very poor. However, after the explanation of hypertension, the participants' understanding and knowledge increased for the better. This provides motivation for participants to be able to maintain health during pregnancy and encourages participants during pregnancy to routinely check the health of their bodies, wombs, and fetuses at the Public Health Center or hospital, in order to reduce the harmful effects that can occur during pregnancy.

Participants were very enthusiastic about listening, doing pretests before the presentation of the material explained, and doing post tests after explanations in seminars and education activities. The active participants asked what tips were related to the causes and symptoms of hypertension during pregnancy and what food menus were good for consumption during pregnancy so as to avoid symptoms of hypertension.

Education that is no less interesting than the explanation of hypertension material and its impact on mothers during pregnancy, namely the dissemination of coconut sprout. Participants were very interested in the use of coconut sprout to prevent hypertension during pregnancy, by asking how many doses can be used every day and the substance content of coconut husks that can prevent hypertension.

Coconut sprout is the germination of the coconut plant which has a high enough nutritional value to be used as food and traditional medicine. This is based on the nutritional content and substances contained in coconut sprout, such as carbohydrates, phytoestrogens, flavonoids, antioxidants, and high calcium. (Aiba *et al.*, 2017). In addition, the content of flavonoids that work to lower blood pressure, as explained that the use of Ajwa dates which contain flavonoids can reduce blood pressure in the elderly (Prayoga *et al.*, 2022).

Participants who took part in educational activities on the impact of hypertension during pregnancy and the benefits through coconut sprout nutrition were very well targeted. Based on the results of the initial survey, information obtained through the head of the cadre for the guidance of the pregnant and lactating mothers group called *KPASI* or the breastfeeding support group stated that there were symptoms, signs of systolic and diastolic pressure more than 140/80 mmHg, i.e. 190/80 mmHg.

Based on information, the cause of participants with high blood pressure was due to their daily habits during pregnancy consuming a lot of rice menu plus noodles (fried or boiled) and consuming spicy food, fried snacks, and consuming foods high in salt. However, from the data on blood pressure checks during PKM activities regarding education on the impact of hypertension and the benefits of coconut trunks, it is still within normal limits.

Data from the results of blood pressure examinations on participants showed that the systolic and diastolic blood pressures of 8 respondents as representatives of the 17 participants who took part were still within the normal range, namely 90/60 mmHg to 120/80 mmHg (Table 3). However, normal pregnant women's blood pressure is generally in the range of less than 120/80 mmHg, but data shows that there are 115/80 mmHg to 120/80 mmHg indicating symptoms of hypertension during pregnancy and the age range is 24–38-year-old.

Table 3. Systolic and diastolic number of respondents (pregnant women)

Respondents	Age	Sistolik dan diastolik
1	33 year old	100/80 mmHg
2	33 year old	90/50 mmHg
3	33 year old	120/80 mmHg
4	38 year old	110/60 mmHg
5	23 year old	90/60 mmHg
6	35 year old	120/80 mmHg
7	24 year old	125/80 mmHg
8	34 year old	115/80 mmHg

It is very important for pregnant women with hypertension to be educated and socialized, thus it can help them preventing preeclampsia, gestational, and eclampsia. Moreover, it is important to have regular health checks based on gestational age at hospitals,

health centers or clinics. Therefore, there are still many pregnant women who are less concerned about health conditions. It is influenced by the personal background of each pregnant woman, the importance of family support, especially husbands at an emotional and psychological level during pregnancy.

DISCUSSION

Poor knowledge and understanding of participants about the impact of hypertension cause the risk of mortality to the mother and fetus, which is related to preeclampsia around 60% do not have good knowledge, and 40% have knowledge (Ejike *et al*., 2018). It is important to increase the knowledge and understanding of participants about the impact of hypertensio, thus they can enhance their knowledge and understanding about the impact of hypertension and prevention through coconut sprout. The results of the pretest and posttest showed an improvement in the participants' understanding of preventing the impact of hypertension during pregnancy. Therefore, during pregnancy, it is important for women to receive individual nutritional guidance or guidance to reduce the incidence of complications due to hypertension and bleeding (Li *et al*., 2021).

The results of the participants' pretest before the implementation of education on hypertension and the benefits of using coconut shells showed that of the 5 questions evaluated for initial feedback about systole and diastolic only 7 participants answered correctly. On the question of systolic and diastolic blood estimation in the multiple choice category at the pretest, 7 participants answered correctly, namely 140/90 mmHg with an average percentage of 41.17% before education. However, after being educated in posttest knowledge, participants' understanding ranged from 82.35%. Furthermore, pretest question number 2 can only be answered by 2 participants, ranging from 11.76%. Moreover, questions number 3 and 4 cannot be answered by participants, which is zero, and question number 5 can only be answered by 5 participants, for approximately 29.41%. In contrast to the results, in the posttest after the presentation of material, where the first question ranges from 82.35%, question number 2 has an average of 70.58%, number 3 is approximately 88.23%, number 4 is approximately 47.05%, and question number 5 is approximately 76.47%. The results of the posttest evaluation on the total mean in Table 1 are in line with the participants' understanding shown in the posttest questions to correctly answer question number 1 (one) with about 17 participants, the average percentage range is 82.35% (Table 2). Followed by questions number 2, 3, 4, 5 which are improved. The average range of correct and incorrect percentages of participants' answers is obtained by adding up the number of correct questions and dividing by the number of participants and multiplying by 100%.

Based on the evaluation results from the pretest given, many participants answered the consumption menu during pregnancy, namely consuming instant noodles, fried snacks, salted fish, coffee consumption, and very little consumption of fruits, as well as awareness to check the condition of pregnancy during pregnancy is still low. This is what makes the puskesmas cadres have to find and visit participants' homes in collaboration with the head of the Binong neighborhood unit, Tangerang Banten, which is the Binong Community Health Center program in reaching pregnant women and breastfeeding mothers. Based on the participants' living habits and their lack of knowledge about health care, it became a reference for health centre cadres and academics to educate and socialize the impact of hypertension and how to prevent it in a sustainable community service program.

The results of the understanding and knowledge of participants are in line with research data which states that hypertension has correlation with age, diet, knowledge in pregnant women as tested by other researchers at the Krueng Barona Jaya Health Center, Aceh Besar District in 2017 (Rafsanjani *et al*., 2019). Educational activities, services and counseling are essential to be undertaken during pregnancy. The incidence of hypertension in pregnant women can also be sourced from a history of hypertension, obesity, pregnancy stress, and exposure to cigarette smoke (Arikah *et al*, 2020).

Hypertension in pregnant women has several risks that need to be considered such as weight, consuming unhealthy foods and lots of salt, such as consuming fast food “supermi and fried food”, and so on. Correlation between

hypertension and maternal age is a risk factor for hypertension, and the status of working mothers, consumption of fast food, and antenatal care (Sukfitriany *et al*., 2016). In addition, they should maintain weight, and avoid crowds or interactions from active smokers. It is very important for pregnant women to maintain weight and implement a healthy lifestyle with a healthy menu. Therefore, the risk of hypertension has correlation with body mass index (BMI). Therefore, a healthy lifestyle, weight, age factors, those that are not considered properly can increase the risk of preeclampsia or hypertension in pregnant women. Hypertension is a disease caused by an unhealthy lifestyle through poor diet and lack of exercise activities. In addition, ot is due to stress factors and uncontrolled smoking habits. (Suoth *et al*, 2014)

Hypertension in pregnant women is influenced by a history of hypertension, age, exposure to cigarette smoke from active smokers, and stress experienced during pregnancy as found in the Wosu Health Center area, Bungku Barat District, Morowali Regency (Surianti *et al*., 2021). Knowledge of participants in education about the impact of maternal hypertension during pregnancy and prevention through coconut nut nutrition in the Binong Public Health Center area from the pretest and posttest results showed correlation between maternal knowledge and attitudes towards hypertension during pregnancy at the Inpatient Health Center in Karang Bandar Lampung City (Sunarsih and Zahara, 2016).

The increase in high blood pressure that can be seen from the systolic blood range should be not more than 130 mmHg and diastolic should be not more than 80 mmHg. The increasing cases of symptoms and risks for pregnant women are increasing much influenced by stress factors, increased body weight, unhealthy snacks in the form of fried foods, consumption of fast food containing high levels of salt, and exposure to cigarette smoke. Precipitating factors for high blood pressure in pregnant women are caused by a history of hypertension before, obesity, parity, exposure to cigarette smoke, pregnancy stress, parity, sports activities, salt consumption, and age during pregnancy did not contribute any effect (Arikah *et al*, 2020).

Hypertensive indications in pregnancy are caused by the influence of obesity and metabolic syndrome of women during pregnancy at reproductive age. Hypertensive disorders in pregnancy are more common in women, namely preeclampsia and gestational age in terms of their personal or family history, and diabetes. (Subki *et al*, 2018). Hypertension in pregnancy is also influenced by lifestyle factors, such as drinking coffee, obesity, and a hypertension history (Marlina *et al*, 2021). The mechanism of the habit of pregnant women consuming coffee drinks is based on the presence of high caffeine content which can increase the risk of hypertension during pregnancy (Kawanishi *et al*, 2021). Caffeine is a substance that triggers hypertensive disorders if the dose used exceeds the normal dose required. Therefore, a coffee drinker in a day two or more cups does not pose a risk of hypertension.

The research results from various data explain that the risk of hypertension in pregnant women is most commonly caused by a previous history of hypertension. In addition, a history of hypertension in pregnant women occurred before pregnancy or at 20 weeks of gestation. Hypertensive disorders in the mother during pregnancy pose a higher risk by causing preeclampsia and increasing morbidity and mortality in the mother and fetus during pregnancy.

Symptoms of hypertension in pregnant women can lead to cardiovascular risk, because it can cause cardiometabolic disease at a younger gestational age in women. Hypertension during pregnancy, namely preeclampsia, gestational, chronic hypertension affects maternal cardiovascular during post partum with the risk of death during the first 10 years (Wendy *et al*, 2018). Many factors can cause hypertensive disorders in pregnant women and various relationships that can trigger hypertension. The care and attention of every academic and health sector is very important, and it is necessary to conduct health promotion, education, outreach, and seminars to pregnant women, and the general public.

Community Service Limitation

The limitation in this activity is that the number of pregnant women targeted for participation is limited from the initial survey

result, since they have given birth and moved residence. This activity is part of community service to educate about hypertension and increase knowledge about the benefits of coconut sprout as a research application results in preventing hypertension.

CONCLUSION

1. The total knowledge of participants prior to education from 17 participants was around 29.06%, meaning that they did not understand the impact of hypertension and prevention through coconut sprout.
2. Knowledge understood by participants after being educated was around 64.47%. This means that participants' knowledge and understanding of the impact of hypertension and prevention through coconut spout are increasing.
3. Information given on the benefits of coconut sprout can be understood well by participants in the posttest results, from answers ranging from 47.05%.

SUGGESTION

Some suggestions needed after being given education, such as:

1. It is necessary to undertake urine and protein examinations for participants during pregnancy.
2. A direct assessment of participants by controlling laboratory results in applying the benefits of coconut shells to prevention of hypertension.
3. Increase socialization and health promotion about the impact of hypertension and the use of coconut sprout to the general public.

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CONFLICT OF INTEREST

Author has no conflict of interest.

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AUTHOR CONTRIBUTION

Author Sumiaty Aiba served as coordinator of community service, data collection, data analysis literature, article writing, article revision and reference collection. Author Desman Berkati Larosa served as a member in collecting data, writing articles, directing activities, analyzing data, and looking for references. Author Maria Maxmila Yoche as a member in writing articles, a distolic or systole test team in community service activities, and a moderator in activities. Author Christie Lidia Rumerung as a member in data collection, article writing, distol or systole test team in community service activities. Author Komilie Sitomorang as a member in writing articles, a team for preparing tools and materials in community service activities, and accommodation.

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