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Mini Research

Effectiveness Of Administering Red Dragon Fruit Juice On High Blood Pressure In Pregnant Women In Sinanggul Village, Working Area Of Mlonggo Health Center

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ABSTRACT

Gestational hypertension is hypertension that occurs during pregnancy, with blood pressure $\geq 140/90$ mmHg in pregnancy for the first time, which usually resolves after giving birth. It appears without urine protein and will disappear after 3 months after delivery, and severe gestational hypertension means the blood pressure reaches ≥ 160 mmHg, then the blood returns to normal ≤ 20 weeks after delivery. Treating hypertension during pregnancy with dragon fruit juice is a non-pharmacological alternative for reducing high blood pressure in pregnant women, because it is a source of antioxidants containing dragon fruit flavonoids, potassium and vitamin C and for lowering blood pressure. The research was to determine the effectiveness of giving red dragon fruit juice on high blood pressure in pregnant women in Sinanggul Village, Mlonggo Community Health Center Working Area. Type of quantitative research with a pre-experimental research design with a one group pretest and post-test design approach. Population in this study were all pregnant women who experienced hypertension during pregnancy in the Mlonggo Community Health Center working area, Jepara Regency with a sample of 5 people using a purposive sampling technique. Results of the dependent t test analysis (Paired sample t-test) show a significance p-value of 0.004. This shows that the p value ≤ 0.05 . It was concluded that giving red dragon fruit juice was effective in reducing high blood pressure in pregnant women. Advice for pregnant women who suffer from hypertension is that they can consume red dragon fruit juice as an alternative treatment to lower blood pressure.

Keywords: *Hypertension, Pregnancy, Red dragon, fruit juice*



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Introduction

According to WHO (World Health Organization), the maternal mortality rate worldwide in 2022 is estimated to reach 287,000 deaths. This figure is equivalent to almost 800 deaths per day, based on WHO data showing that gestational hypertension is one of the main causes of morbidity and mortality in the world, both for mother and fetus. Globally, 80% of maternal deaths classified as direct causes of maternal death are due to bleeding (25%), usually postpartum hemorrhage, and hypertension in pregnant women (12%), eclampsia (8%), abortion (13%) and for other reasons. others (7%). Around 99% of all maternal deaths occur in developing countries due to increasing complications during pregnancy, childbirth and after delivery (Arikah, et al. 2020).

Indonesian Health Profile Data, (2022) The prevalence of hypertension in pregnancy in Indonesia, noted that 8,341 cases (1.51%) of pregnant women were found from all samples of women aged 15 – 54 years. The prevalence of hypertension in pregnant women was 1,062 cases (12.7%). Of 1,062 cases of pregnant women with hypertension, 125 cases (11.8%) were found to have been diagnosed with hypertension by health workers. This shows that hypertension is a health problem that often arises during pregnancy and can cause complications in 2-3% of pregnancies.

Based on data from the Jepara District Health Service in research by Rusnoto, et al (2022), Jepara in 2020 there were 23,979 cases of hypertension which was ranked first among non-communicable diseases. Based on the results of pre-survey data obtained from the Mlonggo Community Health Center, data on pregnant women in Mlonggo District from January-June 2024 amounted to 1,418 pregnant women. For Sinanggul Village, there were 86

pregnant women and 5 pregnant women of whom I used as respondents in this research. At the Mlonggo Community Health Center, gestational hypertension in pregnant women is handled by providing IEC, reducing salt consumption, increasing vegetable and fruit intake and routinely monitoring blood pressure.

The causes of hypertension in pregnant women can impact the condition of the mother, fetus or baby. In mothers, autoplacental ischemia, arteriolar spasm, seizures and pneumonia, urinary tract infections, excess fluid and intrauterine growth restriction (IUGR) can occur. This increase in hypertension usually occurs due to changes in modern lifestyle patterns and lifestyles which prefer everything in instant form, thus causing a sedentary lifestyle. So, it is necessary to improve and increase healthy lifestyles in order to emphasize reducing cases of hypertension, then the factors that influence hypertension are maternal age, primigravida, family history, history of hypertension and pregnancy factors (Casmuti & Fibriana, 2023).

There are two ways to treat hypertension in pregnant women, namely pharmacological and non-pharmacological. Pharmacology uses drugs that have been produced to treat hypertension, therefore pregnant women who experience gestational hypertension are not advised to take drugs because they can harm the fetus and pregnant mother. Chemical drugs widely used to treat hypertension are diuretics, angiotensin and beta blockers (Husna, et al 2023).

One of the non-pharmacological therapies for hypertension is red dragon fruit which is believed to have many benefits such as lowering blood pressure, lowering blood sugar levels, and is a source of antioxidants, dragon fruit contains flavoid, potassium and vitamin C and to lower blood pressure, namely dragon



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fruit juice 100 gr. consumed 3 times a day for 21 days (Nisa, et al 2019).

Based on the description above, researchers are very interested in examining the effectiveness of giving red dragon fruit juice on high blood pressure in pregnant women in Sinanggul Village, Mlonggo Community Health Center Working Area.

Research Method

This research was carried out in Sinanggul Village, the working area of the Mlonggo Community Health Center, Jepara Regency, from 16 July – 22 July 2024. The population in this study consisted of 86 pregnant women in Sinanggul Village, the

working area of the Mlonggo Community Health Center. I to III trimester in Sinanggul Village who experienced high blood pressure were 5 people in Sinanggul Village, the working area of the Mlonggo Community Health Center. The sampling technique uses purposive sampling. This research is a quasi-experimental research model because this research attempts to reveal cause and effect relationships. Research design with one group pre-test and post-test design. This research design uses one group of subjects who have been determined by taking measurements before and after the intervention.

Results and Discussions

Table 1

Frequency Distribution of Hypertension Before Giving Red Dragon Fruit Juice to Pregnant Women in Sinanggul Village, Semowo Health Center Working Area in 2024.

Hypertension (Pretest Systolic Blood Pressure)	Frequency	Percentage %
Normal	0	0
Grade 1	3	60
Grade 2	1	20
Grade 3	1	20
Total	5	100

Tabel 2

Hypertension (Pretest Diastolic Blood Pressure)

Hypertension (Pretest Diastolic Blood Pressure)	Frequency	Percentage %
Normal	0	0
Grade 1	3	60
Grade 2	1	20
Grade 3	1	20
Total	5	100.0

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Based on tables 1 and 2 above, it shows that of the 5 respondents who had grade 1 hypertension there were 3 respondents (60%), grade 2 hypertension there was 1 respondent (20%), grade 3 hypertension there was 1 respondent (20%).

Table 3
Distribution of hypertension after being given red dragon fruit juice to pregnant women in the second trimester in Sinanggul Village, Semowo Health Center Working Area in 2024.

Hypertension (Post Systolic Blood Pressure)	Frequency	Percentage %
Normal	3	60
Grade 1	2	40
Total	5	100.0

Hypertension (Post Diastolic Blood Pressure)	Frequency	Percentage %
Normal	3	60
Grade 1	2	40
Total	5	100.0

Based on table 3 above, it shows that of the 5 respondents there were 3 respondents (60%) who did not have hypertension, while there were 2 respondents (20%) who had grade 1 hypertension.

Table 4
The effectiveness of giving red dragon fruit juice against high blood pressure in pregnant women in Sinanggul Village, Mlonggo Community Health Center Working Area in 2024.

		Paired Samples Test						
		Paired Differences						
		mean	SD	Std. Error Mean	95% Confidence Interval of the Difference		f	sig. (2-tailed)
					Lower	Upper		
air 1	Pretest Systolic blood pressure-	.200	.447		-.645	.245	.000	.004
	Posttest systolic blood pressure			.200				
air	Frequency of Nausea		.44					



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Pretest	.200	7	645	.755	.000	004
Diastolic blood pressure		200				
Posttest						
Diastolic blood pressure						

Table 4 provides information from the results of SPSS 22 analysis using the T-Test statistical method after giving red dragon fruit juice for 7 days. Significant results were obtained with a p-value of 0.004. So it can be concluded that giving red dragon fruit juice is effective in treating nausea and vomiting in second trimester pregnant women in Sinanggul Village, Mlonggo Health Center Working Area, Jepara Regency.

Based on the research results, it shows that the majority (40%) of respondents who experience hypertension are over 35 years old. This is because when the mother is >35 years old, a degenerative process occurs which results in structural and functional changes that occur in the peripheral blood vessels which are responsible for changes in blood pressure. The increase in hypertension is in line with increasing age, this is caused by changes in the structure of large blood vessels, so that the lumen becomes narrow and the walls of blood vessels become stiffer, as a result of which systolic blood pressure increases. This is in line with research from Sukfitrianty, et al (2016). Saying that maternal age is a risk factor for hypertension with a value of OR = 2.566, this means that pregnant women who declare their age at high risk are 2.566 times more likely to suffer from hypertension compared to pregnant women who declare their age at low risk. Because OR > 1 means the mother's age is a risk factor for hypertension (Sukfitrianty & Lagu, 2016). This is also in line with research by Pratiwi, et al (2022) which states that at the age of 35 years or more, at that age there are changes in the tissues and organs of the womb and the birth canal is no longer flexible, at that age other diseases tend to occur in the pregnant woman's body. the only ones are hypertension and eclampsia (Pratiwi, et al 2022). There fore, the risk of hypertension can be

prevented appropriately and complications during pregnancy can be avoided. For pregnant women at risk of experiencing hypertension, it is recommended that health workers carry out pregnancy control, get adequate rest, adopt a healthy lifestyle during pregnancy, and modify diet (Rica & Yuke, 2023).

1. Characteristics of Respondents Based on Education

The results of the research show that based on education, the most high school/vocational school graduates were 3 respondents (60%) and the least education was elementary school and junior high school, 1 respondent each (20%). Lack of insight, limited social interactions, limited information about health make individuals less able to accept facts based on scientific analysis or based on science. The education of pregnant women greatly influences the knowledge of pregnant women, especially regarding eating patterns and the diet of pregnant women will influence the incidence of pre-eclampsia in pregnancy (Veftisia & Nur Khayati, 2018). In line with research by Taslim, et al (2016) that there is a relationship between diet and the incidence of grade 1 and 2 hypertension in pregnant women with a p-value of 0.012 (<0.05) where the majority of 16 respondents with a percentage of 45.7%



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have a background High school graduate or equivalent (Taslim, et al. 2016).

2. Characteristics of Respondents Based on Gestational Age

Based on the results of research on gestational age in the 1st trimester, there was 1 respondent of (20%) and in the 2nd trimester there were 3 respondents of (60%), while in the 3rd trimester of pregnancy there was 1 respondent of (20%). At 28-42 weeks of gestation, fibrinogen levels increase at older gestational ages, so this is in line with research by Muzalfah, et al (2018) showing that there is a significant relationship between gestational age and the incidence of preeclampsia (p value = 0.014, OR= 4.008 and 95% CI = 1.428-11.247 (Muzalfah, et al. 2018).

3. Characteristics of Respondents Based on Obstetric Status

Based on the research results, it was found that the obstetric status of primiparas was 3 respondents (60%) and multiparas were 2 respondents (40%). The research results of Nur Fatimah, et al (2020) state that hypertension in pregnancy is more common in primiparous mothers than multiparous. Another study found that 67.8% of parity mothers were >1 in cases and 94% of controls had hypertension in their pregnancies, pregnant women who parity > 1 has a 7 times chance of having hypertension in pregnancy. The occurrence of HDK was reported to be more serious in multiparous women in the case group than in the control group. This may be due to mothers experiencing psychological stress and physical boredom which puts women at risk of developing hypertension during pregnancy (Nurfatimah, et al 2020). And in multipara there were 2 respondents (40%). The results of this study are in line with

research by Tarigan (2020) that there is a significant relationship between parity and the incidence of hypertension in pregnancy with a P value of 0.000. From the results of this study it can be proven that there is a significant influence on age and parity on the incidence of hypertension in pregnancy. It is hoped that pregnant women can always maintain their pregnancy by having regular pregnancy check-ups at health services to detect and prevent hypertension in pregnancy, so that if preeclampsia occurs during pregnancy it can be treated quickly and appropriately by health workers (Tarigan, 2021).

4. Blood Pressure Before being given Red Dragon Fruit Juice

The research results showed that of the 5 respondents who experienced grade 1 hypertension, 3 people (60%), 1 person (20%) had grade 2, and 1 person (20%) had grade 3. Blood pressure measurements were carried out on the previous day by administering red dragon fruit juice by measuring using a blood pressure measuring instrument. On average, respondents experienced grade 1 hypertension before the intervention of giving red dragon fruit juice. This is in line with research by Mufidah, (2019) who said that of the 19 total respondents, there was a small percentage of respondents who had mild blood pressure, namely 3 people (15.8%), with the moderate hypertension category, namely almost 8 people (42, 1%) and almost half of the respondents were in the severe hypertension category, namely 8 people (42.1%) before being given red dragon fruit juice. Systolic blood pressure increases due to reduced flexibility of large blood vessels, with increasing age up to the seventh decade, while diastolic pressure increases until the fifth and sixth decades and then remains or tends to decrease.



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Increasing age will cause several physiological changes, in old age there is an increase in peripheral resistance and sympathetic activity (Mufidah, 2019).

5. Blood Pressure After being given Red Dragon Fruit Juice

Blood pressure measurements were carried out on respondents after the 7th day after the intervention. On average, respondents experienced grade 1 hypertension after the intervention. The results showed that of the 5 respondents who experienced grade 1 hypertension, there were 2 people (40%), in the category of respondents who did not experience high blood pressure there were 3 people (60%). This is in line with research by Rofia, et al (2023) which states that ten research journals show that the average systolic and diastolic blood pressure decreased after being given dragon fruit juice by giving 100 grams of dragon fruit which was juiced using 150 ml of water and consumed as much as 2x a day with the duration of administration varying between 3-7 days. Decreased systolic blood pressure between 6.93-29.93 mmHg. The pvalue results from research on 10 journals show that the value is $< \alpha$ (0.05). Discussion: Dragon fruit is high in potassium and flavonoids. Potassium helps regulate the amount of sodium (content in salt) retained by the kidneys. Potassium ions in extracellular fluid will cause the heart to relax and also make the heart rate slow. Meanwhile, flavonoids work as Angiotensin Converting Enzyme (ACE) inhibitors by inhibiting the formation of Angiotensin II from Angiotensin I. By reducing the amount of Angiotensin II, the effect of vasocontraction and aldosterone secretion is reduced for the reabsorption of sodium

and water so that blood pressure will decrease.

6. The effectiveness of giving red dragon fruit juice against high blood pressure in pregnant women

The results of the dependent t-test analysis (Paired sample t-test) show a significant p-value of 0.004. This shows that if the p value is ≤ 0.05 , it can be concluded that H_0 is accepted, meaning that giving red dragon fruit juice is effective in reducing high blood pressure in pregnant women, or there is a significant effect of reducing high blood pressure between before and after giving dragon fruit juice. red on pregnant women in Sinanggul Village, Mlonggo Health Center Working Area, Jepara Regency. This is in line with research by Olivia M.B, et al (2022) which stated that in 7 journals analyzed, it was found that on average red dragon fruit juice (*Hylocereusp Polyrhizus*) could lower blood pressure, from 3 journals consuming 400 ml of red dragon fruit juice/day, 3 journals stated that the juice red dragon fruit as much as 100 200 ml/day, and 1 journal stated giving dragon fruit juice 2x/day. The average consumption of red dragon fruit juice is carried out on 3 consecutive days. The effect of giving red dragon fruit juice (*Hylocereusp Polyrhizus*) can reduce systolic and diastolic blood pressure by 55-15 mmHg (Olivia, et al. 2022).

This is in line with research by Aprianti, et al (2021) which states that the results of the analysis using the paired t-test statistical test showed that the p-value = $0.000 < \alpha = 0.05$, which concluded that there was an effect of giving red dragon fruit juice on reducing blood pressure in women of childbearing age with hypertension.



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Conclusion

Non-pharmacological therapy by administering red dragon fruit juice is effective in reducing blood pressure in pregnant women. However, the small sample size and the absence of control for confounding variables by researchers such as pharmacological treatment may bias the results of the analysis. Research with a larger sample and controlling for confounding variables in the future will increase confidence about the effectiveness in reducing high blood pressure in pregnant women.

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Conflc of Interest

The authors say they have no conflicts of interest.

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