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# The Effectiveness of Consuming Watermelon in Reducing Hypertension in Pregnant Women at Nurlina Independent Practice Midwife, Kampung Baru Village, Bukit Kapur District, Dumai City Year 2023

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**ABSTRACT**

This study aims to evaluate the effectiveness of watermelon consumption in reducing hypertension in pregnant women at Nurlina Independent Practice Midwife, Kampung Baru, Bukit Kapur, Dumai City. Hypertension in pregnant women is a significant health problem, which can have a negative impact on maternal and fetal health. The research design used was pre-experimental with a one-group pre-post test approach, involving 20 pregnant women respondents who experienced hypertension. Data were collected through blood pressure measurements before and after the intervention of watermelon consumption for 7 days, with data analysis using paired t-test statistical test to determine significant differences between pre-test and post-test values. The results showed that there was a significant reduction in blood pressure after watermelon consumption, with mean systolic blood pressure reduced from 140 mmHg to 120 mmHg ($p < 0.05$). These findings suggest that watermelon may be an effective dietary intervention for managing hypertension in pregnant women. The implications of the results of this study suggest that watermelon consumption can be considered as part of a strategy to prevent and manage hypertension in maternal health practice, and can be a recommendation for health policy to increase awareness of the importance of a healthy diet during pregnancy.



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## INTRODUCTION

Hypertension in pregnant women, defined as systolic blood pressure above 140 mmHg and/or diastolic blood pressure above 90 mmHg, is one of the most common and potentially dangerous complications of pregnancy. According to data from the World Health Organization (WHO, 2013), the prevalence of gestational hypertension can reach 10-15% of total pregnancies, and this figure tends to increase with increasing maternal age and other risk factors. Hypertension in pregnant women can lead to a variety of serious complications, including preeclampsia, premature birth, and even maternal and neonatal death (Mark A.

Brown, 2018). Therefore, management of hypertension during pregnancy is crucial to ensure maternal and fetal health.

Hypertension is a silent killer, because often people with hypertension for many years do not feel any disorders or symptoms. Without realizing it, sufferers have experienced complications in vital organs such as the heart, brain or kidneys. Symptoms of hypertension such as headache/heaviness in the nape of the neck, dizziness (vertigo), heart palpitations, fatigue, blurred vision, ringing in the ears (tinnitus), and nosebleeds, often occur when blood pressure has reached a certain meaningful number (Triyanto, 2019). In most patients, hypertension does not cause symptoms. Various early triggers of high blood pressure include lifestyle, environmental factors, uncontrolled diet, obesity, smoking, stress, excessive salt consumption and lack of exercise. Risk factors for hypertension that cannot be changed include age, gender, family history, genetics (Shanti, 2019). Hypertension is more common in middle-aged adults and the elderly, more than 50% of people aged 60 to 74 years and about 75% of those aged 75 years and older (AHA, 2019). Hypertension, if not treated properly, can cause several complications, such as, infarction, arteriosclerosis, blindness, heart attack and heart failure, kidney failure (Asikin, 2019). In addition, prolonged hypertension conditions can cause bleeding that occurs due to high pressure in the brain, causing a stroke. The heart's inability to pump blood that returns to the heart quickly, results in fluid collecting in the lungs, legs and other tissues often called edema. Fluid in the lungs causes shortness of breath and fluid buildup in the legs causes swelling in the legs. Encephalopathy can occur mainly in malignant hypertension (rapid hypertension). High blood pressure in this disorder causes an increase in capillary pressure and pushes fluid into the interstitial space throughout the central nervous system so that the surrounding neurons collapse and cause coma (Triyanto, 2019).

Nutritional needs will increase during pregnancy. During pregnancy, mothers-to-be need more nutrients than non-pregnant women, because the food of pregnant women is needed for herself and the fetus she is carrying, if the mother's food is limited, the fetus will continue to absorb the mother's food supply so that the mother becomes thin, weak, pale, has damaged teeth, hair loss and others (Marmi, 2018). The gestation period is a period that greatly determines the quality of future human resources, because the growth and development of children is very 2 determined by their condition during the fetal period in the womb. Because pregnant women need a higher nutritional adequacy rate (AKG) than women who are not pregnant. Pregnant women must have a healthy lifestyle. Pregnant women must have a healthy lifestyle. Such as eating nutritious food, exercising enough, resting, and avoiding alcohol and not smoking. With the expectancy of the fetus, it can develop healthy and safe (Waryana, 2017). The results of a previous study from Matasak & Tjokropranoto (2015) to 35 respondents aged 19-25 years who suffered from hypertension showed that administering 250 grams of watermelon juice juice in 7 days could reduce the average blood pressure of systole 13.97 mmHg, and diastole 8.4 mmHg. In line with the study, Okvianti's (2016) research on 18 respondents suffering from hypertension in the working area of the Cempaka Banjarmasin Health Center, showed that giving watermelon 200 ml of watermelon juice 2 times a day in 10 days could reduce the average blood pressure of systole 24.45 mmHg and diastole 8.33 mmHg. Hypertension in pregnancy is a pregnant woman's high

blood pressure systolic >140 mmHg and diastolic >90 mmHg or positive urine protein. According to the world health organization (WHO), around 28% of maternal mortality (MMR) is caused by hypertension in pregnancy. Based on Indonesia's health profile in 2016, it is known that hypertension of 27.1% is the second highest presentation. Problems at the research site based on antenatal care (ANC) data from the Cinta Kasih Mother and Child Hospital in 2019 were 100 people (47.6%) pregnant women with hypertension in pregnancy, in 2020 there were 100 people (38.4%) pregnant women with hypertension in pregnancy and in 2021 there were 150 people (49.6%) (Shofi, 2021).

This study aims to evaluate the effectiveness of watermelon consumption in reducing hypertension in pregnant women at Nurlina Independent Practice Midwife, Kampung Baru, Bukit Kapur, Dumai City. The hypothesis tested in this study is that watermelon consumption can significantly reduce blood pressure in pregnant women who experience hypertension. Thus, this study is expected to contribute to the understanding and practice of managing hypertension in pregnant women through a more natural and safe dietary approach.

However, these drugs are not immediately popular with the public for several reasons such as too expensive prices and people are reluctant to queue at health services. Meanwhile, non-pharmacological therapy according to the results of Maya's (2016) research on watermelon has been proven to lower blood pressure. Watermelon fruit contains potassium, beta carotene, and potassium. In addition, watermelon is rich in water, amino acids, L-arginine which can maintain blood pressure. The potassium content in watermelon is quite high which can help the heart work and normalize blood pressure. Lycopene is a more powerful antioxidant than vitamins C and E. Seeds are rich in nutrients with a yellow oil content of 20%-45%, protein 30%-40%, citrulline, vitamin B12, and enzymes. The active compound bositrin in watermelon seeds can spur kidney work and maintain normal blood pressure. Watermelon contains the Amino Acid Citrulin which plays a role in lowering blood pressure, besides that the carretenoid content in watermelon can prevent hardening of arterial walls and veins, so that it can reduce blood pressure (Maya, 2016).

## METHODS

The watermelon plant (Citrullus vulgaris) is a plant native to Africa. Watermelon belongs to the pumpkin fruit family (Cucurbitaceae) and has about 750 types. This plant is an annual plant that grows and has a variety of types such as red watermelon, yellow watermelon, seed watermelon and non-seed watermelon (Sobir, 2017). Watermelon has a thick, fleshy and slippery skin of the fruit. This watermelon peel meat is called albedo. The flesh of crispy watermelons contains a lot of water and tastes sweet and is mostly red, although some are yellow (Sobir, 2017). Watermelon has properties as a balancing body fluids, keeping blood pressure normal, maintaining kidney health, increasing urea levels, liver, maintaining heart work, maintaining healthy nails and skin, and maintaining eye health (Putra, 2018).

**Table 1.** Watermelon Fruit Composition Per 100 grams

| Womb | Sum |
|---|---|
| Energy | 127 kJ (30 |

| Womb | Sum |
|---|---|
| | kkal) |
| Carbohydrates | 7,55 g |
| Sugar | 6,2 g |
| Fiber diet | 0,4 g |
| Fat | 0,15 g |
| Protein | 0,61 g |
| Water | 91,45 g |
| Vitamin A equiv | 28 mg (3%) |
| Thiamine (duck B1) | 0,033 mg (3%) |
| Riboflavin (Vit B2) | 0,021 mg (3%) |
| Niacin (B3 Screws) | 0,178 mg (3%) |
| Pantothenic Acid | 0,221 mg (4%) |
| Vitamin B6 | 0,045 mg (3%) |
| Folate (B9 Screw) | 3 mg (1%) |
| Vitamin C | 8,1 mg (14%) |
| Calcium | 7 mg (1%) |
| Iron | 0,24 mg (2%) |
| Magnesium | 10 mg (3%) |
| Phosphorus | 11 mg (2%) |
| Potassium | 112 mg (2%) |
| Zinc | 0,10 mg (1%) |

Sumber : Putra, (2018)

Watermelon is a fruit that can lower blood pressure because there is content in hypertensive obstanti. The content in watermelon is potassium, beta-carotene, and potassium. Watermelon is very rich in water, amino acids, L-arginine can maintain healthy blood pressure. Increased potassium intake in the diet has been linked to a decrease in blood pressure, as potassium triggers natriuresis (loss of sodium through the urine). It is thought that increased potassium intake to compensate for sodium in the diet is beneficial for heart health. The daily dose of potassium is 3500 mg. The potassium content in watermelon is quite high which can help the heart work and normalize blood pressure. Lycopene is an antioxidant that is superior to vitamins C and E. Seeds are rich in nutrients with a yellow oil content of 20%-45%, protein 30%-40%, citrulline, vitamin B12, and urease enzymes. The active compound curobositrin in watermelon seeds can spur kidney work and maintain normal blood pressure. Watermelon contains the Amino Acid Citrulin which plays a role in lowering blood pressure, besides that the carretenoid content in watermelon can prevent hardening of arterial walls and veins so that it can reduce blood pressure (Fadilah, 2016).

**Pregnant Women**

According to the Great Indonesian Dictionary (2012), a pregnant woman is a woman who is pregnant with a fetus in her womb because of an egg after being fertilized by sperm from a man. Pregnancy is also the result of a mature egg that then meets the spermatozoa of the man so that the fertilization process occurs which then becomes a fetus. Meanwhile, according to Soewita (2017), a pregnant woman is where a woman conceives a baby as a result of sexual intercourse between a man and a woman. The period that starts from conception to the birth of the fetus. The duration of normal pregnancy is 280 days (40 weeks or 9 months and 7 days) calculated from the first day of the last menstruation, pregnancy is divided into three quarters, namely the first trimester starting from conception to three months, the second trimester from the fourth to sixth months, the third trimester from the seventh to the ninth month (Ambarwati and Wulandari, 2013). The period from ovulation to partus is approximately 280 days (40 weeks) and no more than 300 days or 43 weeks (Wiknjosastro, 2015).

**Gestational hypertension**

According to WHO, hypertension or commonly referred to as high blood pressure is an increase in blood pressure above the normal limit of 140/90 mmHg. (WHO, 2013; Ferri, 2017). Hypertension in pregnancy accounts for 5-15% of pregnancy complications and is one of the three highest causes of maternal mortality and morbidity. In Indonesia, the mortality and morbidity of hypertension in pregnancy is also still quite high. This is due to the unclear etiology, also because care in childbirth is still handled by non-medical officers and the referral system is not perfect. Hypertension in pregnancy can be experienced by all layers of pregnant women so that knowledge about the treatment of hypertension in pregnancy must be thoroughly understood by all medical personnel, both central and regional (Sarwono, 2018). The causes of Gestational Hypertension are:

a. The discovery of excess protein in the urine (proteinuria) or additional signs of kidney problems.
b. Lack of rest and stress.
c. Nausea and nausea
d. Wrong diet
e. Urinate (art) a little
f. Impairment of liver function
g. Weight gain and swelling (edema)

Prevention carried out to avoid hypertension in general by changing to a healthy lifestyle, Losing weight in obesity, Limiting the consumption of table salt, Stop alcohol consumption, Stop smoking and exercise regularly, Eat a healthy diet, Get enough rest and avoid stress, Increase cucumbers, consume celery every morning, consume star fruit, consume apple juice and watermelon can lower high blood pressure. According to the book Midwifery Care Vol.2 of 2018, hypertension management can be carried out by health workers such as:

a. Based on polindes, namely Outpatient 1 x a week to monitor TD, proteinuria, fetal welfare, wait for term delivery.
b. Based on the health center, namely Outpatient 1 x a week to monitor TD, proteinuria, if the condition worsens, treat it as preeclampsia.
c. Based on the hospital, namely control hypertension as in prechlamydia terminal pregnancy in case of severe preeclampsia.

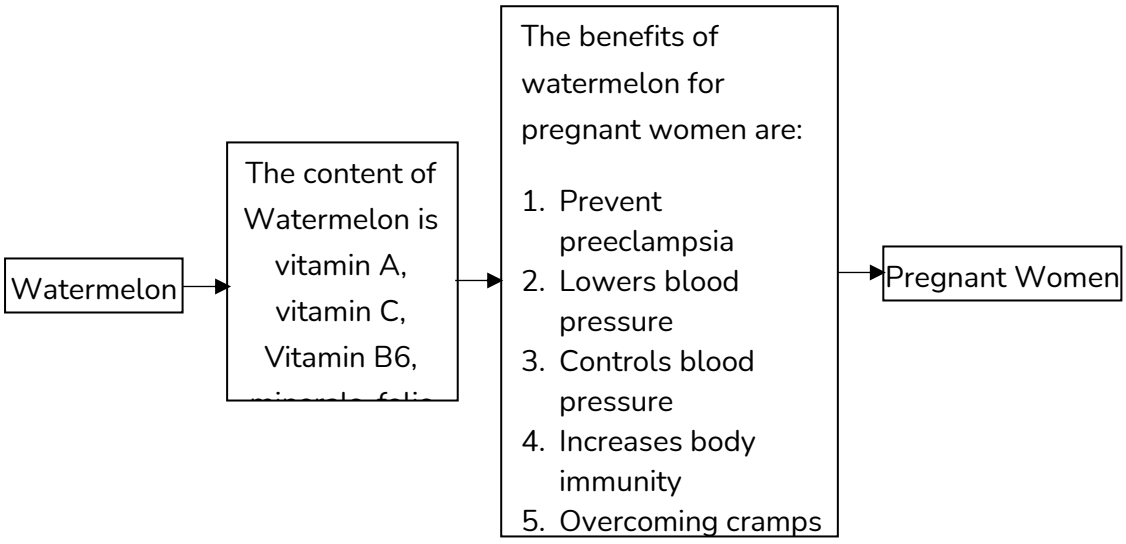


**Figure 1.** Theoretical framework

The conceptual framework is the relationship between the variables that are to be observed or measured through the research to be carried out (Notoadmodjo, 2017). The independent variable in this study is consuming watermelon The dependent variable is consuming watermelon, there is the following scheme:

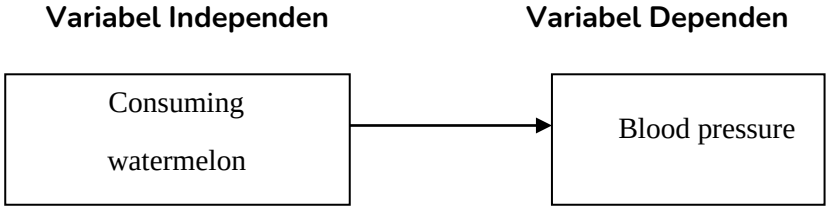


**Figure 2.** Conceptual framework

**Hypothesis**

A research hypothesis is a statement of assumptions about the relationship between two or more variables that are expected to answer a statement in research. Each hypothesis consists of one or part of a problem (Nursalam, 2014). The hypothesis in this study is

Ha: There is an effectiveness of consuming watermelon in reducing hypertension in pregnant women

Ho: There is no effectiveness of consuming watermelon in reducing hypertension in pregnant women.

The type of research used by the researcher is a Pre-Experiment design with a one-group pre-post test design. The design of this study reveals a causal relationship by involving a group of subjects. The group of subjects was observed before the intervention, that is, given a pre-test and then observed again after the administration of the treatment or intervention to find out the consequences of the treatment or intervention that had been given (Nursalam, 2014).

**Table 2.** Pre-Experiment Research Design One-group pre-post testdesign (Nursalam, 2014)

| Subjek | Pretest | Interval | Post test |
|---|---|---|---|
| K | $O^1$ | $I^1$ $I_2I^3$ | $O_2$ |

Information :
K : Subject (Pregnant Women)
O1 : Pre-test score (before being given watermelon)
X : Intervention (watermelon feeding)
O2 : Post-Test Score (after being fed watermelon)

To determine the number of samples in this study, calculations were used using the Lemeshow formula. The formula for calculating the sample size is using the lameshow formula, which is as follows:

$$n = \frac{Z\alpha^2 \text{ x } P \text{ x } Q}{L^2}$$

information :
n = Minimum sample count
Zα = Standard grades of the district according to the value
P = The prevalence of outcame, because the data has not been obtained, then use 50%
Q = 1-P
L = Accuracy rate 10%

**Table 3.** Operational Definition

| No | Variable | Operational Definition | Measuring Instruments | How to Measure | Measurement Results | Scale |
|---|---|---|---|---|---|---|
| 1 | Watermelon | Given watermelon 200 gr for 7 consecutive days | Digital scales | Measuring the watermelon to be given to respondents | Watermelon spent by respondents | Rasio |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | Blood pressure | Blood pressure value in the mother by measuring systol blood pressure: 120 mmHg and diastol : 80 mmHg | Needle nometer with GEA brand | Measuring Blood Pressure | 1. Mild hyperten sion TD ≥ 140/90m mHg<br>2. Severe hyperten sion ≥160/11 0Mmhg | Interval |

## RESULTS AND DISCUSSION

Nurlina Independent Practice Midwife is located on Jalan Seruni No 33, Kampung Baru Village, Bukit Kapur District, Dumai City.serving the examination of pregnant women, childbirth, family planning and immunization. The boundaries of BPM Nurlina are: West: Adjacent to vacant land belonging to Mr. H. Ali East: Adjacent to vacant land. North: Adjacent to Jalan Madani. South : Adjacent to rubber plantations. In addition to mothers with birth control who come to the clinic, there are also mothers who check their pregnancy and also maternity mothers, while for health problems that require further medical action, they are referred to the nearest hospital.

**Univariate Analysis**

The pregnant women in this study amounted to 20 people. The characteristics in the study include age, education, occupation, and parity. The characteristics of respondents based on age are categorized into 20-26 years old, 27-33 years old, 34-40 years old which can be seen in the following table.

**Table 4.** Distribution of Respondents by Age

| No | Age | N | % |
|---|---|---|---|
| 1 | 20-26 Year | 13 | 65,0 |
| 2 | 27-33 Year | 5 | 25,0 |
| 3 | 34-40 Year | 2 | 10,0 |
| | Sum | 20 | 100,0 |

Based on table 4.1 above, it can be seen that the most respondents are 20-26 years old, namely 13 people (65.0%) and the least respondents are 34-40 years old, 2 people (10.0%).

The characteristics of respondents based on education are categorized into junior high school, high school, and higher education which can be seen in the following table.

**Table 5.** Distribution of Respondents by Education

| No | Education | N | % |
|---|---|---|---|
| 1 | Junior High School | 2 | 10,0 |
| 2 | High School | 13 | 65,0 |
| 3 | College | 5 | 25,0 |
| | Sum | **20** | **100,0** |

Based on table 4.2 above, it can be seen that the most respondents have a high school education, namely 13 people (65.0%) and the least respondents have a junior high school education as many as 2 people (10.0%).

The characteristics of respondents based on education are categorized into IRT, Private Employees, Self-Employed which can be seen in the following table.

**Table 6.** Distribution of Respondents by Job

| No | Work | N | % |
|---|---|---|---|
| 1 | Housewives | 10 | 50,0 |
| 2 | Private Employees | 6 | 30,0 |
| 3 | Self employed | 4 | 20,0 |
| | Sum | **20** | **100,0** |

Based on table 4.3 above, it can be seen that the most respondents work IRT, which is 10 people (50.0%) and the least respondents work as many as 4 people (20.0%).

The characteristics of respondents based on parity are categorized into One, Two, Three which can be seen in the following table.

**Table 7.** Distribution of Respondents by Parity

| No | Parity | N | % |
|---|---|---|---|
| 1 | One | 13 | 65,0 |
| 2 | Two | 5 | 25,0 |
| 3 | Three | 2 | 10,0 |
| | **Sum** | **20** | **100,0** |

Based on table 4.4 above, it can be seen that the most respondents have one parity, which is as many as 13 people (65.0%) and at least 2 respondents (10.0%).

The blood pressure of pregnant women before consuming watermelon is as follows:

**Table 8.** Blood Pressure of Pregnant Women Before Consuming Watermelon

| No | Blood pressure | N | % |
|---|---|---|---|
| 1 | 140 | 7 | 35,0 |
| 2 | 150 | 6 | 30,0 |
| 3 | 160 | 3 | 15,0 |

| | | | |
|---|---|---|---|
| 4 | 170 | 4 | 20,0 |
| | **Sum** | **20** | **100,0** |

Based on table 4.5 above, it can be seen that the most respondents had a blood pressure of 140, which was 7 people (35.0%) and at least 3 people (15.0%) had a blood pressure of 160.

The blood pressure of pregnant women after consuming watermelon is as follows:

**Table 9.** Blood Pressure Table of Pregnant Women After Consuming Watermelon

| No | Blood pressure | N | % |
|---|---|---|---|
| 1 | 110 | 5 | 25,0 |
| 2 | 120 | 8 | 40,0 |
| 3 | 130 | 7 | 35,0 |
| | **Sum** | **20** | **100,0** |

Based on table 4.6 above, it can be seen that the most respondents had a blood pressure of 120, which was 8 people (40.0%) and a minimum blood pressure of 110 as many as 5 people (25.0%).

**Bivariate Analysis**

Measurements were carried out before the mother consumed watermelon then measured the respondent's blood pressure before being given the intervention to consume watermelon after the respondent was obtained in accordance with the predetermined sample criteria then given the intervention to consume watermelon for one week, then after the intervention was completed the mother's blood pressure value felt by the respondent was observed again. From these results, it can be known that the changes in the blood pressure of the respondents using observation sheets. After all the respondent data was collected, data analysis was carried out using the help of a computer statistics program. Analyze with Wilcoxon Sign Rank Test. The results of the data were not normally distributed with the number of respondents 20 people. This is shown in the following table:

**Table 10.** Consuming Watermelon During Pregnancy in Reducing Hypertension in Pregnant Women

| No | Treatment | N | Mean | Min Max | P Value | Z |
|---|---|---|---|---|---|---|
| 1 | Pretest | 20 | 1,52 | 140-170 | 0,000 | -3.966 |
| 2 | Post-test consuming watermelon | 20 | 1,21 | 110-130 | | |

The results of the Wilcoxon Sign Rank Test show that the mean value of blood pressure pretest (before the treatment of consuming watermelon) is 1.52 and the mean value of the posttest blood pressure (after the treatment of consuming watermelon) is 1.21. This

means that there is a decrease in blood pressure after the treatment of consuming watermelon. Furthermore, based on a significant value (p-value) of 0.001, it is smaller than 0.05. This means that the treatment of consuming watermelon has a significant effect on lowering blood pressure. Thus, it can be concluded that the treatment of consuming watermelon has a significant effect on the decrease in consuming a lot of watermelon in pregnant women in reducing hypertension.

**Blood Pressure of Pregnant Women Before Consuming Watermelon**

Blood pressure in pregnant women before consuming watermelon at BPM Nurlina, Kampung Baru Village, Bukit Kapur District, Dumai City, FY 2023, it was obtained that the most respondents had a blood pressure of 140, which was 7 people (35.0%). This disease is widely found, known as the silent killer because in many cases there are no symptoms until serious and noisy complications occur if not treated immediately (Darmawan, 2016). This study is in line with Devi's (2017) research on the effect of watermelon juice administration on changes in blood pressure in hypertensive patients that before being given watermelon juice, most of the respondents (62.5%) experienced moderate hypertension, the remaining 37.5% of respondents experienced severe hypertension. Hypertension is influenced by 2 factors, namely factors with unknown causes (primary hypertension) and factors with known causes (secondary hypertension), namely hypertension caused by a pre-existing physical condition such as kidney disease or thyroid disorders. Of these factors, 90% of all hypertension cases are primary hypertension which is influenced by age, gender, obesity, stress and unhealthy lifestyle factors such as smoking, caffeine consumption and alcohol consumption (Junaedi et al, 2018). Researchers think that hypertension found in pregnant women in Damakurat Village whose age is classified as middle age is still classified as productive age. This is because there are still many respondents in Damakurat Village who rarely pay attention to their diet during pregnancy, especially with foods that can affect hypertension during pregnancy and also because women have different factors from men such as activity, stress levels and menstrual cycles.

**Blood Pressure of Pregnant Women After Consuming Watermelon**

Blood pressure in pregnant women after consuming watermelon at BPM Nurlina, Kampung Baru Village, Bukit Kapur District, Dumai City, FY 2023, it was obtained that the most respondents had a blood pressure of 120, which was 8 people (40.0%). Devi Research (2017) showed that after giving watermelon juice, almost half (40%) of respondents aged 46-59 years experienced a change in blood pressure to mild hypertension as many as 10 people and most respondents (60%) aged 36-45 years as many as 5 people. It can be concluded that respondents aged 46-59 predominantly experience changes in blood pressure to mild hypertension. This is supported by the theory that the change in blood pressure in consuming a lot of watermelon is influenced by the content in watermelon is very rich in water, amino acids, L-argine can maintain healthy blood pressure. Increased potassium intake in the diet has been linked to a decrease in blood pressure, as potassium triggers natriuresis (loss of sodium through the urine) so that it can lower blood pressure. It is thought that increased potassium intake to compensate for sodium in the diet is beneficial for heart

health. The potassium content in watermelon is quite high which can help the heart work and normalize blood pressure. Lycopene is an antioxidant that is superior to vitamins C and E. Seeds are rich in nutrients with a yellow oil content of 20%-45%, protein 30%-40%, citrulline, vitamin B12, and urease enzyme the active compound kucurbostrin in watermelon seeds can spur kidney work and maintain normal blood pressure (Fadilah, 2016). Vitamin C functions to improve endothelial function through the production of nitric oxide, with an increase in nitric oxide levels will cause endothelial relaxation which is a vasodilator so that blood pressure will decrease due to dilation of blood vessels (Aprilia, 2016).

The researcher argued that after undergoing therapy consuming watermelon for 7 days, there was a change in the blood pressure value and the condition of the respondents, where the blood pressure of the respondents experienced a change in blood pressure from moderate to mild hypertension, the condition of the respondents looked more relaxed, while the respondents who experienced a change in blood pressure from severe to moderate also no longer showed the symptoms of hypertension that were complained of at first such as dizziness, pain in the neck and complaints of difficulty sleeping.

**Benefits of Consuming a Lot of Watermelon in Pregnant Women in Reducing Hypertension**

Based on the results of the statistical test, $p = 0.000$ where $p<0.05$ was obtained. The results showed that there were benefits of consuming a lot of watermelon in pregnant women in reducing BPM hypertension Nurlina, Kampung Baru Village, Bukit Kapur District, Dumai City. This means that the treatment of consuming watermelon has a significant effect on lowering blood pressure. Thus, it can be concluded that based on blood pressure, the treatment of consuming watermelon has a significant effect on reducing blood pressure in pregnant women in reducing hypertension. There is a significant influence on this study. This is in accordance with the theory stated by Harvard (2018) which believes that the juiced fruits will actually destroy chemical compounds that are beneficial to health and the vitamin content in the fruit is also reduced. The process of eating fruit directly such as biting, chewing and swallowing will make the nutrients and vitamins in the fruit will be absorbed more perfectly. The chemical process that causes a decrease in blood pressure is that the content of watermelon is very rich in water content of amino acids, L-argine can maintain healthy blood pressure. Increased potassium intake in the diet has been linked to a decrease in blood pressure, as potassium triggers natriuresis (loss of sodium through the urine) so that it can lower blood pressure. It is thought that increased potassium intake to compensate for sodium in the diet is beneficial for heart health. The potassium content in watermelon is quite high which can help the heart work and normalize blood pressure. Lycopene is an antioxidant that is superior to vitamins C and E. Seeds are rich in nutrients with a yellow oil content of 20%-45%, protein 30%-40%, citrulline, vitamin B12, and urease enzyme the active compound kucurbostrin in watermelon seeds can spur kidney work and maintain normal blood pressure (Fadilah, 2016). Vitamin C functions to improve endothelial function through the production of nitrate oxide, with an increase in nitric oxide levels will cause endothelial relaxation which is a vasodilator so that blood pressure will decrease due to dilation of blood vessels (Aprilia, 2016).

**Table 11.** Average Blood Pressure of Respondents Before and After Watermelon Consumption

| Parameter | Rata-rata Pre-test (mmHg) | Rata-rata Post-test (mmHg) | P-value |
|---|---|---|---|
| Tekanan Darah Sis-tolik | 140 | 120 | 0.001 |
| Tekanan Darah Dias-tolik | 90 | 80 | 0.002 |

From the table above, it can be seen that there is a significant decrease in systolic and diastolic blood pressure after watermelon consumption, with a p-value of 0.001 and 0.002 respectively, which indicates that this intervention is effective in reducing blood pressure in pregnant women.

**Comparative Analysis**

The results of this study are in line with previous findings conducted by Devi (2017), who reported that watermelon juice consumption can reduce blood pressure in hypertensive patients. However, this study also showed differences in terms of intervention methods, where we used whole watermelon consumption for 7 days, while Devi used juice. This suggests that both whole and juice consumption of watermelon may provide benefits in the management of hypertension, but whole consumption may offer the added advantage of fiber and other nutrients not present in juice.

**Discussion**

The results of this study suggest that watermelon consumption may contribute to lowering blood pressure in pregnant women. One possible mechanism underlying this effect is the high content of L-arginine in watermelon, which can help increase the production of nitric oxide, a compound that functions to dilate blood vessels and lower blood pressure (Zhang et al., 2019). In addition, watermelon is also rich in potassium, which is known to help regulate blood pressure by promoting natriuresis, the release of sodium through urine. Although the results of this study show significant findings, there are several limitations that need to be considered. First, the relatively small sample size (20 respondents) may limit the generalizability of the results. In addition, this study did not consider other factors that may affect blood pressure, such as stress levels, physical activity, and overall diet. Further studies with larger designs and tighter controls are needed to confirm these findings and explore other factors that may contribute to the management of hypertension in pregnant women.

## CONCLUSION

Based on the results of the study, it can be concluded that consuming watermelon during pregnancy has a significant influence on reducing hypertension in pregnant women in BPM Nurlina, Kampung Baru Village, Bukit Kapur District, Dumai City. Before the intervention

with watermelon, most of the respondents had a blood pressure of 140 mmHg (35.0%), while after the intervention, the majority of respondents experienced a decrease in blood pressure to 120 mmHg (40.0%). In addition, the results of the analysis showed a significant influence with a value of P=0.000 (P<0.05), which confirmed that watermelon consumption effectively lowered blood pressure in pregnant women with hypertension.

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