EFFECTIVENESS OF GIVING CUCUMBER AND CARROT JUICE TO REDUCING HYPERTENSION DURING PREGNANCY

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ABSTRAK : EFEKTIVITAS PEMBERIAN JUS MENTIMUN DAN JUS WORTEL TERHADAP PENURUNAN HIPERTENSI PADA IBU HAMIL

Latar Belakang: Hipertensi dalam kehamilan menduduki peringkat kedua tertinggi penyebab kematian ibu di Indonesia setelah perdarahan. Proporsi hipertensi dalam kehamilan di Indonesia semakin meningkat, hampir 30% kematian ibu di Indonesia disebabkan oleh hipertensi. Jawa Barat menempati urutan kedua dalam prevalensi hipertensi dalam kehamilan dengan angka sekitar 10,57%. Sementara itu di Kabupaten Sukabumi dari tahun tercatat pada tahun 2023 ada 9 ibu hamil yang meninggal karena hipertensi dalam kehamilan.

Tujuan: penelitian ini adalah untuk mengetahui Efektivitas Pemberian Jus Mentimun Dan Jus Wortel Terhadap Penurunan Hipertensi Dalam Kehamilan Pada Ibu Hamil Trimester 3 Di Rs. Bhakti Medicare Tahun 2025.

Metode: Jenis penelitian ini merupakan penelitian kuantitatif dengan desain penelitian menggunakan *quasi eksperiment two group control pretest-posttest design*. Penelitian akan dilaksanakan di RS Bhakti Medicare pada bulan Agustus 2025 dengan sampel yang diambil pada penelitian ini berjumlah 30 orang ibu hamil dengan hipertensi dalam kehamilan yang dibagi menjadi 2 kelompok intervensi, 15 orang diberikan intervensi jus mentimun, dan 15 orang diberikan jus wortel. Penelitian dilakukan selama 7 hari kemudian hasil penelitian akan dilakukan analisis data berupa analisis univariat dan bivariat menggunakan uji *Paired Sample T Test.*

Hasil: Uji *Paired Sample T Test* diperoleh nilai Sig (2-tailed) sebesar 0,000 atau < 0,005 untuk jus mentimun, dan nilai Sig (2-tailed) sebesar 0,001 atau < 0,005 untuk jus wortel.

Kesimpulan: Jus mentimun lebih efektif menurunkan tekanan darah Pada Ibu Hamil Dengan Hipertensi Pada Kehamilan di RS Bhakti Medicare Sukabumi.

Saran: Diharapkan tenaga kesehatan yang ada di RS untuk lebih aktif memberikan penyuluhan atau KIE, memasang media poster, serta memberikan *leaflet* yang berkaitan dengan penanganan hipertensi pada kehamilan, sehingga dapat membangkitkan kesadaran dalam menjaga kesehatan ibu dalam penanganan angka kesakitan untuk ibu hamil.

Kata Kunci : Hipertensi dalam kehamilan, mentimun, wortel

ABSTRACT

Background: Hypertension in pregnancy ranks second highest cause of maternal death in Indonesia after hemorrhage. The proportion of hypertension in pregnancy in Indonesia is increasing, almost 30% of maternal deaths in Indonesia are caused by hypertension. West Java ranks second in the prevalence of hypertension in pregnancy with a figure of around 10.57%. Meanwhile, in Sukabumi Regency from the year recorded in 2023 there were 9 pregnant women who died due to hypertension in pregnancy.

Purpose: Determine the effectiveness of giving cucumber juice and carrot juice on reducing hypertension in pregnancy in pregnant women in the third trimester at Bhakti Medicare Hospital in 2025.

Methods: This type of research is a quantitative study with a research design using a quasi-experimental two-group control pretest-posttest design. The study will be conducted at Bhakti Medicare Hospital in August 2025 with the sample taken in this study was 30 pregnant women with hypertension in pregnancy who were divided into 2 intervention groups, 15 people were given cucumber juice intervention, and 15 people were given carrot juice. The study was conducted for 7 days then the results of the study will be analyzed using univariate and bivariate analysis using the Paired Sample T Test.

Results: The results of the Paired Sample T Test obtained a Sig (2-tailed) value of 0.000 or <0.005 for cucumber juice, and a Sig (2-tailed) value of 0.001 or <0.005 for carrot juice.

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Conclusion: Thus it can be stated that cucumber juice is more effective in lowering blood pressure in pregnant women with hypertension in pregnancy at Bhakti Medicare Hospital Sukabumi.

Suggestions: Based on this, it is hoped that health workers in hospitals will be more active in providing counseling or IEC, putting up posters, and providing leaflets related to the management of hypertension in pregnancy, so that they can raise awareness in maintaining maternal health in handling morbidity rates for pregnant women.

Keywords : Carrot, cucumber, hypertension in pregnancy

INTRODUCTION

Pregnancy is a period beginning from conception until the birth of the fetus. During pregnancy, women may experience various physiological discomforts in the first, second, and third trimesters, as well as pathological problems, one of which is hypertension during pregnancy. Hypertension is recognized as one of the most severe complications of pregnancy. It typically occurs after 20 weeks of gestation and is often referred to as a "silent killer" because most cases present without symptoms (Puspawidari, Hidayani, & Hanifa, 2025).

Hypertension is a condition in which blood flow from the heart exerts excessive force on the walls of blood vessels (arteries). When blood pressure in pregnant women reaches 140/90 mmHg or higher, it is classified as hypertension, whereas normal blood pressure is below 120/80 mmHg (Febriyani, 2021). Hypertension during pregnancy ranks as the second leading cause of maternal mortality in Indonesia after hemorrhage. Severe preeclampsia is the major cause within the group of hypertensive disorders in pregnancy, often leading to complications and death for both mother and baby. The proportion of hypertensive disorders in pregnancy continues to increase in Indonesia, accounting for nearly 30% of maternal deaths (Julia, Reni, & Astuti, 2023).

According to the World Health Organization (WHO, 2023), hypertension in pregnancy is a major cause of maternal mortality and contributes to other serious complications during childbirth. Approximately 12% of maternal deaths worldwide are related to hypertensive disorders in pregnancy, which occur in 5–10% of all pregnancies globally. Studies indicate that the prevalence of hypertension in Southeast Asia ranks third highest at 25% (WHO, 2023). Based on data from the 2023 Indonesia Health Survey (SKI), there were about 3,049 cases of hypertension in pregnancy in Indonesia (SKI, 2023). West Java ranked second in prevalence with 10.57% (Jabar, 2024). In Sukabumi District, from 2021 to 2023, maternal deaths were caused by hemorrhage, hypertensive disorders, infections, cardiac and vascular diseases—with nine maternal deaths due to hypertension in pregnancy in 2023 (Sukabumi, 2023).

The causes of hypertension in pregnant women are similar to those in the general population—it is triggered by increased blood flow pressure from the heart that damages arterial walls. Hypertension most commonly affects first-time pregnant women (Klikdokter.com, 2025). The short-term impacts of hypertension in pregnancy can affect both mother and fetus. For mothers, it can lead to eclampsia, hemorrhagic or ischemic stroke, liver damage (HELLP syndrome), renal dysfunction, cesarean delivery, preterm birth, and placental abruption. For fetuses, it can cause preterm birth, fetal growth restriction, respiratory distress syndrome, and even fetal death. Long-term complications may include cardiovascular disease, kidney disease, cancer, and maternal or neonatal death (Puspawidari, Hidayani, & Hanifa, 2025).

To prevent worsening of hypertension in pregnancy, early and prompt treatment is essential, even from the initial stage of hypertension. Treatment approaches include pharmacological and non-pharmacological therapies. However, pharmacological therapy tends to be expensive and requires medical supervision. Non-pharmacological therapies have been widely developed and proven effective in preventing the progression of hypertension, such as cucumber juice therapy, which is simple and affordable (Marvia, 2020). Cucumber (*Cucumis sativus*, family *Cucurbitaceae*) is a vegetable with high water content and low calories. It has strong antioxidant properties, lowers body fat, has anti-diabetic effects, and reduces body edema (Naureen, 2022). A study by Ene, Vivi, & Bunga (2022) administered 250 grams of cucumber blended into juice and consumed each morning after breakfast for seven days. The average blood pressure decreased from 157.71 mmHg to 142.52 mmHg afterward.

In addition to cucumber, carrot juice can be used as a non-pharmacological therapy for pregnant women with hypertension. Carrots, when processed into juice without added sugar, are easier

to consume and retain higher levels of beta-carotene. Beta-carotene acts as an antioxidant that protects cells from LDL oxidation. These antioxidants neutralize free radicals and prevent cardiovascular diseases and hypertension (Puspawidari, Hidayani, & Hanifa, 2025). A study by Raden Maria (2019) provided 80 g of carrot juice once daily for one week to pregnant women in their third trimester with hypertension. Results showed that 83.3% of respondents had grade 1 hypertension and 16.7% had grade 2 hypertension before intervention. After seven days of carrot juice therapy, blood pressure decreased in 15 respondents (83.3%) (Maria, 2019).

Bhakti Medicare Hospital is a well-equipped hospital with professional healthcare providers. Improving maternal health and optimizing management of hypertensive disorders in pregnancy are essential steps to reduce maternal and neonatal morbidity and mortality. Therefore, the researcher conducted a study on the management of hypertension in pregnancy using non-pharmacological therapy at Bhakti Medicare Hospital. The researcher also actively participates in continuous promotive and preventive healthcare services alongside curative and rehabilitative care. Bhakti Medicare Hospital was chosen as the research site because no prior study on this topic had been conducted there, and the number of pregnant women with hypertension remains high, with low awareness regarding non-pharmacological therapies. Based on hospital data, of 1,732 pregnant women visiting Bhakti Medicare Hospital Cicurug Sukabumi in 2024, 58 (2.1%) had hypertension in pregnancy—6 with preeclampsia, 8 with chronic hypertension, and 44 with gestational hypertension. Between January and June 2025, from 900 pregnancy visits, 32 pregnant women were recorded with hypertensive disorders in pregnancy.

RESEARCH METHODS

This study employed a quantitative approach with a quasi-experimental design. Quasi-experiments are research methods used to evaluate the effect of an intervention or treatment on a group of subjects. The design used was a *two-group control pretest-posttest design*, involving two selected groups that were first pretested to determine initial conditions, followed by intervention in the experimental group, and posttested to assess final outcomes (Sugiyono, 2019).

The study was conducted at Bhakti Medicare Hospital, Sukabumi, from July to August 2024. The population consisted of all pregnant women with hypertension during pregnancy who visited the hospital between June and August 2025, totaling 54 women. The sample comprised 30 respondents—15 were given cucumber juice and 15 were given carrot juice—selected using purposive sampling based on inclusion criteria: pregnant women with hypertension, without chronic disease, and with no allergy to cucumber or carrot juice.

Primary data were obtained directly from respondents. Data collection began after proposal approval and research permission from the hospital. Respondents were third-trimester pregnant women with hypertension in pregnancy. Blood pressure was measured before and after intervention. The intervention involved giving 250 g of cucumber juice and 80 g of carrot juice in 250 ml bottles, consumed daily for seven days. Data were processed and analyzed before and after the intervention.

Ethical clearance was obtained from the Health Research Ethics Committee of Universitas Indonesia Maju (No. 3048/Sket/Ka-Dept/RE/UIMA/VIII/2025).

RESEARCH RESULTS

The study examined the effectiveness of cucumber and carrot juice in reducing blood pressure among 30 pregnant women with hypertension at Bhakti Medicare Hospital. Fifteen respondents received cucumber juice and fifteen received carrot juice daily for seven days (August 10–17, 2025).

Table 1
shows that most pregnant women in the cucumber group were aged 20–30 years (53.3%), while most in the carrot group were over 30 years old (66.7%)

Characteristics of Respondents' Age Based on Variables	Frequency (n)	Percentage (%)
Cucumber Juice Intervention		
<20 years old	0	0.00
20-30 years old	8	53.3
>30 years old	7	46.7

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Carrot Juice Intervention		
<20 years old	0	0
20-30 years old	5	33.3
>30 years old	10	66.7

Based on Table 2, the blood pressure of pregnant women before being given cucumber juice at Bhakti Medicare Hospital was mostly in the category of mild hypertension, accounting for 80% or 12 respondents, while 20% or 3 respondents were in the moderate hypertension category. The mean blood pressure score was 1.20, which falls into the category of mild hypertension (140/90 mmHg).

Table 2
Mean Blood Pressure of Third-Trimester Pregnant Women With Hypertension Before Cucumber Juice Intervention

Blood Pressure of Pregnant Women before Cucumber Juice Intervention	Frequency (n)	Percentage (%)	Mean	SD
Non-Hypertensive	0	0.00	1.20	0.414
Mild Hypertension	12	80.0		
Moderate Hypertension	3	20.0		
Severe Hypertension	0	0.00		

Based on Table 3, the blood pressure of pregnant women before being given carrot juice at Bhakti Medicare Hospital was entirely in the category of mild hypertension, accounting for 100% or 15 respondents, with a mean blood pressure score of 1.00, which falls into the mild hypertension category (140/90 mmHg).

Table 3
Mean Blood Pressure of Third-Trimester Pregnant Women With Hypertension Before Carrot Juice Intervention

Blood Pressure of Pregnant Women Before Carrot Juice Intervention	Frequency (n)	Percentage (%)	Mean	SD
Non-Hypertensive	0	0.00	1.00	0.000
Mild Hypertension	15	100.0		
Moderate Hypertension	0	00.0		
Severe Hypertension	0	0.00		

Based on Table 4, the blood pressure of pregnant women after being given cucumber juice at Bhakti Medicare Hospital was mostly in the non-hypertensive category, accounting for 66.7% or 10 respondents, while 33.3% or 5 respondents were in the mild hypertension category. The mean blood pressure score was 0.30, which falls into the non-hypertensive category (<140/90 mmHg).

Table 4
Mean Blood Pressure of Third-Trimester Pregnant Women With Hypertension After Cucumber Juice Intervention

Blood Pressure of Pregnant Women After Cucumber Juice Intervention	Frequency (n)	Percentage (%)	Mean	SD
Non-Hypertensive	10	66.7	0.33	0.488
Mild Hypertension	5	33.3		
Moderate Hypertension	0	00.0		
Severe Hypertension	0	0.00		

Based on Table 5, the blood pressure of pregnant women after being given carrot juice at Bhakti Medicare Hospital was mostly in the non-hypertensive category, accounting for 53.3% or 8 respondents, while 46.7% or 7 respondents were in the mild hypertension category. The mean blood pressure score was 0.47, which falls into the non-hypertensive category (<140/90 mmHg).

Table 5
Mean Blood Pressure of Third-Trimester Pregnant Women With Hypertension After Carrot Juice Intervention

Blood Pressure of Pregnant Women After Carrot Juice Intervention	Frequency (n)	Percentage (%)	Mean	SD
Non-Hypertensive	8	53.3	0.47	0.516
Mild Hypertension	7	46.7		
Moderate Hypertension	0	00.0		
Severe Hypertension	0	0.00		

Based on Table 6, the difference in hypertension categories during pregnancy shows that the mean hypertension level before being given cucumber juice was 1.20, classified as mild hypertension (140/90 mmHg), and after administration it decreased to 0.33, classified as non-hypertensive (<140/90 mmHg). Meanwhile, in the carrot juice intervention group, the mean hypertension level before the intervention was 1.00, classified as mild hypertension (140/90 mmHg), and after the intervention it decreased to 0.47, classified as non-hypertensive (<140/90 mmHg). The results of the Paired Sample T-Test showed a Sig (2-tailed) value of 0.000 (<0.005) for cucumber juice and 0.001 (<0.005) for carrot juice. Therefore, it can be concluded that cucumber juice is more effective in reducing blood pressure among pregnant women with hypertension in pregnancy at Bhakti Medicare Hospital, Sukabumi.

Table 6
The Effectiveness of Cucumber and Carrot Juice in Lowering Blood Pressure Among Pregnant Women With Hypertension During Pregnancy

Intervention	Frequency (n)	Pretest	Posttest	P-Value
Cucumber juice	15	1.20	0.33	0.000
Carrot Juice	15	1.00	0.47	0.001

DISCUSSION

Average Blood Pressure Before Cucumber Juice Intervention

Before cucumber juice therapy, 80% of respondents had mild hypertension and 20% had moderate hypertension. Hypertension in pregnancy is a high-risk condition that can endanger both mother and fetus if untreated (Mayasari, 2019). According to the Ministry of Health (2024), pregnancy-induced hypertension is diagnosed when systolic BP >140 mmHg or diastolic >90 mmHg after two measurements spaced four hours apart beyond 20 weeks gestation.

This finding aligns with Bunga et al. (2024), who reported that maternal age, parity, BMI, education, family support, and stress predispose pregnant women to hypertension. The present study also showed that hypertension was more common among women aged >30 years.

Average Blood Pressure Before Carrot Juice Intervention

All respondents in the carrot juice group had mild hypertension, with most aged above 30 years. Increasing maternal age elevates hypertension risk due to vascular stiffness and reduced elasticity (Yurianti & Umar, 2020). Similar findings were reported by Bunga et al. (2024), who found that 70% of hypertensive pregnant women were in high-risk age categories.

Average Blood Pressure After Cucumber Juice Intervention

After cucumber juice therapy, 66.7% of respondents became non-hypertensive. Cucumber has hypotensive effects due to its potassium, magnesium, and phosphorus content, which promote vasodilation and fluid balance (Gustirini, 2022; Cholifah, 2021). This aligns with Mamah & Lia (2023), who found a significant relationship between

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cucumber juice and reduced blood pressure in hypertensive pregnant women (p=0.006). The researcher concludes that cucumber juice can serve as an affordable, safe, non-pharmacological treatment.

Average Blood Pressure After Carrot Juice Intervention

After carrot juice therapy, 53.3% of respondents became non-hypertensive. Carrots (*Daucus carota L.*) contain potassium, which acts as a natural diuretic and vasodilator, aiding blood pressure regulation (Dwi, Sri, & Maryani, 2024). Desy, Lusy, & Putri (2025) also reported that carrot juice significantly reduced blood pressure in hypertensive pregnant women (p<0.05). Thus, carrot juice can be considered a safe, low-cost, natural therapy.

Effectiveness Comparison of Cucumber and Carrot Juice

Paired T-test analysis showed cucumber juice was more effective (p=0.000) than carrot juice (p=0.001) in lowering blood pressure. Non-pharmacological therapies, such as cucumber and carrot juice, can support hypertension management during pregnancy (Kemenkes, 2024). Suciati, Uci, & Magdalena (2025) also found cucumber juice more effective in reducing BP than carrot juice among pregnant women. The researcher suggests cucumber's higher water and mineral content contributes to its superior diuretic and antihypertensive effects.

Research Limitations

Despite optimal implementation, this study had several limitations. Respondents' understanding and adherence to the intervention may have influenced outcomes. The short intervention period (7 days) limited the ability to observe long-term effects, which ideally require prolonged monitoring.

CONCLUSION

There were significant differences in hypertension levels before and after cucumber and carrot juice interventions. Statistical analysis showed a Sig (2-tailed) value of 0.000 (<0.005) for cucumber juice and 0.001 (<0.005) for carrot juice, indicating that cucumber juice was more effective in reducing blood pressure among pregnant women with hypertension at Bhakti Medicare Hospital, Sukabumi.

SUGGESTION

Healthcare professionals are encouraged to provide health education, display posters, and distribute leaflets on managing hypertension during pregnancy to raise awareness and improve maternal health outcomes.

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