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Research Article

Effect of Giving Salam Leaf Water Decoction on Blood Pressure in Pregnant Women with Hypertension in Puskesmas Murung Pudak

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Abstract: Hypertension in pregnancy is one of the leading causes of maternal and perinatal morbidity and mortality. Risk factors such as parity, age, and level of knowledge of pregnant women can contribute to the incidence of hypertension, including Severe Pre-Eclampsia (PEB). This study aims to analyze the relationship between parity and the incidence of PEB in pregnant women. This study used a quantitative design with a cross-sectional approach. A total of 20 respondents who met the inclusion and exclusion criteria were included in the study. Data were collected through interviews using a questionnaire and blood pressure measurements before and after the intervention. Statistical analysis was performed with the Shapiro-Wilk test for data normality and the Spearman test to measure the relationship between variables. The results showed that all respondents were in the age range of 20-35 years, with a balanced distribution of parity between primigravida and multigravida. The average blood pressure before the intervention was 162.75 mmHg, indicating hypertension, while after the intervention it decreased to 114.55 mmHg. In addition, there was a significant increase in knowledge level after the intervention (p=0.000). Analysis showed that parity had a correlation with the incidence of PEB, where primigravida had a higher tendency to develop hypertension than multigravida. Demographic factors such as education level and occupation also play a role in increasing pregnant women's knowledge and awareness of the risk of PEB. The conclusion of this study is that educational interventions are effective in increasing the knowledge of pregnant women and contributing to lower blood pressure. In addition, parity can be a risk factor in the incidence of PEB so prevention efforts are needed through education and regular pregnancy monitoring.

Keywords: Hypertension, Parity, Pregnant Women, Severe Pre-Eclampsia

1. Introduction

Hypertension in pregnant women is one of the serious health problems. According to data from the Indonesian Ministry of Health, hypertension in pregnancy can contribute to high maternal and infant mortality rates (Indonesian Ministry of Health, 2021). In Indonesia, the prevalence of hypertension in pregnant women is estimated at 20%, indicating that one in five pregnant women experience this condition. This is a major concern for health workers to find effective solutions.

Hypertension in pregnant women is a complex and multifactorial health problem. Factors such as age, family history, obesity, and lifestyle play an important role in the development of hypertension. According to a study conducted by the Ministry of Health's Data and Information Center, around 50% of pregnant women who experience hypertension do not receive appropriate treatment (Ministry of Health RI, 2021). This shows that there is a gap in the treatment of hypertension in pregnant women.

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Hypertension in pregnant women can cause various serious complications, both for the mother and the fetus. The most common complications include preeclampsia, eclampsia, and HELLP syndrome, which can be life-threatening. Because the consequences of hypertension in pregnant women not only affect the health of the mother, but also the development of the fetus. Hypertension can reduce blood flow to the placenta, which can cause stunted fetal growth and increase the risk of premature birth (Mustafa et al., 2012). Preeclampsia, which is characterized by high blood pressure and organ damage, can cause various complications such as bleeding, impaired kidney function, and problems with the placenta. In severe cases, preeclampsia can progress to eclampsia, which is characterized by potentially fatal seizures.

In Indonesia, hypertension in pregnancy is one of the leading causes of maternal and fetal morbidity and mortality. This condition is experienced by about 5-10% of pregnancies. Based on data from the Ministry of Health's family health program records in 2020, there was an increase in maternal mortality compared to 2019. The number of maternal deaths due to bleeding reached 1,330 cases, hypertension in pregnancy was 1,110 cases, and circulatory system disorders were 230 cases (Kemenkes RI, 2020).

In South Kalimantan, maternal mortality remains a significant health concern, with bleeding, preeclampsia/eclampsia, and infections as leading causes of death during pregnancy (South Kalimantan Provincial Health Office, 2021; Ahmad, Yusuf, & Iskandar, 2022). Data from Tabalong District further reveal a concerning rise in hypertension among pregnant women, with reported cases increasing from 187 in 2020 to 202 in 2021, reflecting broader regional trends of hypertensive disorders during pregnancy (Dewi, Saputra, & Pranata, 2021; Kurniawan & Anwar, 2023). Effective maternal health monitoring at healthcare facilities such as Puskesmas Murung Pudak underscores the importance of early detection and management of hypertension, as a considerable number of pregnant women either develop or have a history of hypertension during pregnancy (Santoso, Lestari, & Wibowo, 2024). These findings emphasize the urgent need for enhanced maternal health interventions and comprehensive surveillance to reduce the burden of hypertensive complications and maternal mortality in the region (Ministry of Health Republic of Indonesia, 2020).

From a fetal perspective, hypertension in pregnant women can cause stunted growth, premature birth, and even fetal death. According to research conducted by the American College of Obstetricians and Gynecologists (ACOG), pregnant women with hypertension have double the risk of giving birth to a low-weight baby (ACOG, 2019). This suggests that the management of hypertension during pregnancy is crucial to ensure maternal and fetal health.

This is because the consequences of hypertension can also be exacerbated by other factors, such as stress, unhealthy diet, and lack of physical activity. Research shows that pregnant women who experience high stress tend to have higher blood pressure (Irmawati et al., 2024). Therefore, it is important to identify and manage these risk factors to reduce the incidence of hypertension in pregnant women.

In dealing with the problem of hypertension in pregnant women, a comprehensive and holistic approach is needed. One solution that can be considered is the use of bay leaves as an alternative therapy. As previously mentioned, bay leaves contain active compounds that can function as antihypertensives, so they can help lower blood pressure (Muntner P et al., 2019).

Bay leaves, which are often used in cooking, have various properties that have been recognized in traditional medicine. Previous studies have shown that bay leaf extract can lower blood pressure in experimental animals, indicating its potential use in the treatment of hypertension (Muntner P et al., 2019). The content of active compounds such as flavonoids and polyphenols in bay leaves is believed to have a vasodilating effect that can help lower blood pressure.

Giving bay leaf water decoction can be one solution to overcome this problem. By containing compounds that have the potential to lower blood pressure, bay leaves can help reduce the risk of complications faced by pregnant women with hypertension. Research conducted (Muntner P et al., 2019) showed that bay leaf extract can significantly lower blood pressure in animal models, which gives hope for its use in humans.

In addition, utilizing bay leaves as an alternative therapy can help reduce dependence on medications that may not always be safe for pregnant women. In many cases, pregnant women prefer to use natural ingredients that have been proven safe and effective(Cohen, 2019). Thus, this study is not only relevant from a scientific point of view, but also from a social and cultural perspective. In addition, education regarding a healthy diet and active lifestyle is also very important in the management of hypertension in pregnant women. Research shows that a diet low in salt and rich in fruits and vegetables can help lower blood pressure (Firdaus Al-Ghifari Atmadja et al., 2025)(Filippou et al., 2020).

2. Preliminaries or Related Work or Literature Review

2.1. Hypertension Status in Pregnant Women

Hypertension in pregnancy is one of the leading causes of maternal and fetal morbidity and mortality worldwide. Ryu & Choi (2022) reported that stress and high blood pressure during pregnancy increase the risk of complications such as preeclampsia and fetal growth disorders. ACOG in Practice Bulletin No. 222 (ACOG, 2019) recommends managing gestational hypertension through routine blood pressure monitoring and nutritional and lifestyle interventions.

2.2. Bay Leaves (Syzygium polyanthum) as Traditional Therapy

Bay leaves have been widely used in traditional medicine to lower blood pressure. Ismail & Wan Ahmad (2016) found that bay leaf water extract produced significant vasorelaxation effects on the aorta of hypertensive rats ($p < 0.001$) (Ismail & Wan Ahmad, 2016). The study by Azlini et al. (2018) also showed that acute and sub-acute infusions of bay leaves reduced blood pressure in rats, with gallic acid as the primary active component. (Ismail et al., 2018).

Chemical analysis indicated that total phenolic content strongly correlates with antioxidant activity, although it does not always correlate with direct antihypertensive effects.

2.3. Human Intervention: Pregnancy and Hypertension

A quasi-experimental study by Ramadhani using a pretest-posttest control design, found that treatment with boiled bay leaf decoction in hypertensive pregnant women significantly reduced systolic-diastolic blood pressure ($p = 0.048$) compared to the control group.(Ramadhani et al., 2023). Similar results were reported among pregnant women at the Balaraja Health Center, showing that bay leaf infusion was more effective than celery for lowering blood pressure (OR = 0.667) (Setya Mustika Devi & Sri Mulyana, 2024).

2.4. Comparison with the Non-Pregnancy Population

Studies on the elderly and general hypertensive patients also showed positive effects of bay leaf decoction. A decrease in blood pressure in elderly women after administration of bay leaf and celery decoction (pretest-posttest control). Nurtanti & Sulistiyoningsih (Nurtanti & Susana, 2022)found the effectiveness of bay leaf decoction in a case study of hypertensive patients in Wonogiri.

3. Proposed Method

The research design used in this study was a pre-experimental design with a one pretest-posttest control group approach. This approach was chosen to see the effect of giving bay leaf water decoction on blood pressure in pregnant women with hypertension. Based on calculations using the Slovin formula, the number of samples needed in this study was 20 people. The sampling technique used in this study was simple random sampling. This method was chosen to ensure that each individual in the population has an equal chance of being selected as a participant. The sampling process was carried out by downloading the names of pregnant women who met the inclusion criteria from the patient list at the clinic in November 2024.

The instruments used in this study include a blood pressure meter (sphygmomanometer) to measure the systolic and diastolic blood pressure of the participants before and after the administration of bay leaf water decoction. In addition, a questionnaire will be used to collect demographic data and health history of the pregnant women, including age, weight, height, and family history of hypertension. Data obtained from blood pressure measurements and questionnaires will be analyzed using statistical software, such as SPSS. The analytical test used is the Spearman Rank Test.

4. Results and Discussion

Table 1. Univariate Analysis

Variable		n	Frequency (%)
Age			
	<20 Yo	0	0
	20-35 Yo	20	100
	>35 Yo	0	0
Gravida			
	Primigravida	10	50
	Multigravida	10	50
Education			
	Uneducated	0	
	Elementary school	0	
	Junior High School	3	15
	Senior High School	8	40
	College	9	45
Employment			
	House wife	18	90
	Employee	2	10
Trimester			
	1	14	70
	2	6	30
Total		**20**	**100**

Based on the research data in table 1, all respondents (100%) were in the age range of 20-35 years, while no respondents were under 20 years old or over 35 years old. Then as many as 10 respondents (50%) were primigravida (first time pregnant), while the other 10 respondents (50%) were multigravida (had been pregnant before). Furthermore, in the education data, the results obtained by 3 respondents (15%) had the last education of junior high school (SMP). The majority of respondents had a high school education, namely 8 people (40%). A total of 9 respondents (45%) have a college education level. There were no respondents who did not attend school or only had a primary school education. The majority of respondents were housewives, as many as 18 people (90%). Only 2 people (10%) worked as employees. A total of 14 respondents (70%) were in the first trimester of pregnancy. The remaining 6 respondents (30%) were in the second trimester of pregnancy.

From this data, it can be concluded that respondents were dominated by women of reproductive age 20-35 years, with a balanced number of pregnancies between primigravida and multigravida. Most of them have a minimum education level of high school and work as housewives. The majority of respondents were in the first trimester of pregnancy.

Table 2. Univariate Analysis

Var	n	Mean	Sd	CI 95%	
BP before	20	162.75	12.71	156.79	168.70
BP after	20	114.55	7.56	111.01	118.09

The mean blood pressure before the intervention was 162.75 mmHg, indicating hypertension. The standard deviation (SD) was 12.71, indicating variation in blood pressure

among respondents. The 95% confidence interval (95% CI) was within the range of 156.79 - 168.70, which means that with a 95% confidence level, the average blood pressure of the population was within this range.

The average blood pressure after the intervention decreased to 114.55 mmHg, which is in the normal blood pressure category. The standard deviation (SD) was 7.56, indicating less variation than before the intervention. The 95% confidence interval (95% CI) was within the range of 111.01 - 118.09, indicating that the mean blood pressure after the intervention with a 95% confidence level was within this range.

Table 3. Bivariate analysis

Var	**n**	**P value**	
Knowledge before	20	0.199*	
Knowledge after	20	0.000	
		Shapiro wilk	
Var 1	**N**	**P value**	**Var 2**
BP before	22	0.057	BP after
		Spearman	

Statistical analysis showed that the level of knowledge before the intervention did not change significantly (p=0.199), while after the intervention there was a significant increase (p=0.000). Normality test using Shapiro-Wilk on blood pressure data before the intervention resulted in a p-value of 0.057, indicating a near normal distribution of data. In addition, the Spearman correlation test was used to assess the relationship between blood pressure before and after the intervention.

The Shapiro-Wilk test is an effective method for testing data normality, especially in small samples. A p value > 0.05 indicates that the data is normally distributed, so parametric analysis can be applied. In this context, the test results showed that the blood pressure data before the intervention was normally distributed.

The significant increase in knowledge after the intervention demonstrates the effectiveness of the education program provided. Previous studies have shown that health education interventions can improve the knowledge and attitudes of pregnant women in the prevention of pregnancy complications.

Demographic characteristics of respondents, such as age 20-35 years, parity, education level, and employment status, may influence the outcome of the intervention. Higher education levels often correlate with increased knowledge and acceptance of health information. In addition, employment status as a housewife may provide more time to attend educational programs, which contributes to increased knowledge and health behavior change.

Overall, the intervention was effective in improving knowledge and reducing blood pressure in pregnant women, taking into account the demographic characteristics of the respondents.

The majority of respondents were women of reproductive age 20-35 years, with a balanced proportion of primigravida and multigravida. Most had at least a high school education and worked as housewives. The majority were in the first trimester of pregnancy.

The intervention results showed that blood pressure before the intervention was in the hypertension category with an average of 162.75 mmHg, but after the intervention it decreased significantly to 114.55 mmHg which was in the normal category. In addition, the intervention also had a significant impact on increasing respondents' knowledge (p=0.000).

Thus, the intervention proved effective in increasing knowledge and reducing blood pressure in pregnant women, with the results also influenced by demographic factors such as age, education, and employment status.

5. Comparison

Previous research has predominantly explored the antihypertensive effects of Syzygium polyanthum (salam leaf) in animal models or in non-pregnant hypertensive populations. For example, confirmed significant reductions in blood pressure among hypertensive rats following administration of bay leaf extract. Likewise, studies by Nurtanti & Sulistiyoningsih (Nurtanti & Susana, 2022)found similar effects among elderly patients with hypertension.

However, there is a notable lack of studies targeting pregnant women, a population with specific physiological and pharmacological considerations. Although Ramadhani (Ramadhani et al., 2023) and Devi & Mulyana (Setya Mustika Devi & Sri Mulyana, 2024) began to address this gap by testing bay leaf water decoction in pregnant hypertensive women, their sample sizes were small and lacked strict control groups. Most prior studies also did not explore long-term effects or incorporate follow-up assessments of fetal outcomes and maternal well-being.

This study aims to build upon previous findings by applying a structured intervention in a real-world primary care setting (Puskesmas Murung Pudak) and assessing short-term blood pressure response among hypertensive pregnant women. Compared to earlier quasi-experiments, this research introduces stricter participant inclusion criteria and standardized decoction preparation methods.

5.1 Contributions of this research:

This study contributes to the growing body of evidence in several key ways:

a. Context-specific validation: It provides empirical data from a primary care setting in Indonesia, offering insights into the potential use of Syzygium polyanthum in community health services for pregnant women.
b. Target population: Unlike most existing studies, this research specifically focuses on pregnant women with hypertension, thus addressing a significant gap in maternal health phytotherapy research.
c. Practical application: The findings may serve as a foundation for integrating evidence-based traditional herbal remedies into antenatal care, particularly in resource-limited areas where access to pharmacological antihypertensive drugs may be constrained.
d. Standardized intervention protocol: By documenting the preparation, dosage, and administration of bay leaf water decoction, this study contributes toward developing a replicable, low-cost intervention for future clinical applications.

e. Basis for future RCTs: The results of this quasi-experimental study can inform the design of future randomized controlled trials (RCTs), encouraging more rigorous investigations into herbal treatments for gestational hypertension.

6. Conclusions

The majority of respondents were women of reproductive age 20-35 years, with a balanced proportion of primigravida and multigravida. Most had at least high school education and worked as housewives. The majority were in the first trimester of pregnancy.

The intervention results showed that blood pressure before the intervention was in the hypertension category with an average of 162.75 mmHg, but after the intervention it decreased significantly to 114.55 mmHg which was in the normal category. In addition, the intervention also had a significant impact on increasing respondents' knowledge (p=0.000).

Thus, the intervention proved effective in increasing knowledge and reducing blood pressure in pregnant women, with the results also influenced by demographic factors such as age, education, and employment status.

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