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RESEARCH

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Empowering Women and Families in Early Detection of Hypertension Complications in Pregnancy

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Abstract

Hypertension is the main cause of death for pregnant women, which is 31,90% in 2022. Early detection of hypertension complications tends to be actively carried out by health workers rather than empowering mothers, husbands, and families. This study aims to identify the differences in knowledge and attitudes of pregnant women regarding the early detection of hypertensive complications and the role of family support in hypertension prevention, before and after receiving intervention through the use of booklets. This quasi-experimental study used a one-group pretest-posttest design with 60 hypertensive pregnant women. Participants completed questionnaires measuring knowledge and attitudes about hypertension. After receiving a hypertension booklet to read for three days, follow-up evaluations were conducted on family support (day 10), early detection of complications, and blood pressure (day 14). Data were analyzed using paired sample tests. The research results show that the knowledge significantly improved after the intervention (mean increase of 2.47, $p=0.000$), while no significant change was found in attitudes ($p=0.214$). Family support roles increased significantly (mean increase of 2.02, $p=0.000$). Additionally, 88.3% of respondents could detect early hypertension complications, and 81.7% had normal blood pressure after the intervention. The conclusion is there are differences in the knowledge of pregnant women and the role of family in the prevention of pregnancy hypertension before and after receiving the booklet intervention. There is no difference in the attitude of pregnant women before and after receiving the booklet intervention. Suggestions for researchers further need to formulate strategies related to early detection of pregnancy hypertension starting from the family level by involving a network of cooperation between the government and community organizations to prioritize health education at the family level.

Keywords: Empowerment, Detection Early Complications, Hypertension in Pregnancy, Pregnant Women, Families.

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1. INTRODUCTION

Hypertension is one of the most common complications in pregnancy forming a triad together with bleeding and infection. This complication continues into the delivery and postpartum period. The proportion of hypertension in pregnancy is increasing compared to the incidence of bleeding and infection. The direct cause of maternal death is hypertension in pregnancy which occupies the top ranking, namely 31.90% in 2022 (Direktorat Kesehatan Keluarga, 2022). In Gorontalo Province, cases of hypertension in pregnancy experienced an increasing trend from 2020 with 12 cases of maternal death to 16 cases of maternal death in 2021. The number of cases of hypertension death in pregnancy ranks highest after bleeding, 11 cases (in 2020), 8 cases (in 2021) and infection 3 cases (in 2020), 14 cases (in 2021) (Dinkes Provinsi Gorontalo, 2022).

Several city/district government programs in Gorontalo province to reduce and accelerate maternal and child mortality tend to involve more health workers and cross-program/cross-sector health-related programs, including the *Mutiara Berlian* Program in Bone Bolango Regency, the *G-Gas* Program in Gorontalo Regency, the *Rahmat Siaga* Program in North Gorontalo Regency, *Tancap Nikah* Program in Gorontalo City, *Gerbang Sakina* Program in Boalemo Regency. Early detection of hypertension complications tends to be actively carried out by health workers rather than women, husbands, and families (Kurniawan et al., 2017; Wenger et al., 2018). The first person to feel the initial symptoms is the pregnant woman herself and the direct observation and involvement of people who live at home with the woman, namely her husband and family. The current phenomenon in society is that many pregnant and their families are unable to carry out early detection of high-risk pregnancies, including hypertension in pregnancy. The low coverage of early detection of high-risk by the community proves this (Mardiyanti, 2020; Sambah et al., 2023).

Hypertension in pregnancy is a heterogeneous group of conditions that can be classified into chronic hypertension, gestational hypertension, pre-eclampsia/eclampsia, and superimposed pre-eclampsia. These disorders account for a significant proportion of perinatal morbidity and mortality, almost 10% of all maternal deaths (Braunthal & Brateanu, 2019; Chang et al., 2023). Apart from short-term impacts, hypertension also has an impact on the quality of the next generation, such as problems with circulatory function (Fox et al., 2019; Mills et al., 2020).

Chronic hypertension is found in women under 20 weeks gestation, gestational hypertension is found at more than 20 weeks gestation and without proteinuria, Preeclampsia is found at more than 20 weeks' gestation accompanied by proteinuria, and in eclampsia, seizures accompany these symptoms, superimposed pre-eclampsia is found at a gestational age of less than 20 weeks accompanied by proteinuria. The incidence of hypertension can continue during labor and the postpartum period (Behrens et al., 2017; Bisson et al., 2023; Ishaku et al., 2021).

Empowering pregnant is a form of increasing self-efficacy and proves that the more empowered pregnant are, the better their level of health. Pregnant can carry out pressure monitoring independently to detect hypertension events and be able to recognize signs and symptoms of hypertension complications (Fox et al., 2019; Hinton et al., 2017; Yeh et al., 2022). Primary health care models for managing Pre-Eclampsia/Eclampsia (PE/E) in low and middle-income countries recommend the importance of increasing early detection of PE/E by women and families, appropriate management of PE/E effectively at lower health facility levels by encouraging women and families to be more responsive in accessing health facilities on time if they encounter problems, prioritizing improving comprehensive services near where the women live. The primary healthcare model for managing (PE/E) provides an opportunity to prevent and treat PE/E in a simple way with the involvement of related parties, competent health workers, and system readiness in the form of detection tools and quality medicines. Maternal awareness to recognize the danger signs of PE/E early on and seek pregnancy care

facilities accompanied by family (Carter et al., 2021; Shamanewadi et al., 2020; Warren et al., 2020; Yunitasari et al., 2023).

Efforts to empower pregnant for early detection of high-risk pregnancy, including hypertension in pregnancy, are determined by the individual's intention towards the health object, whether or not there is support from the family or surrounding community, there is whether or not there is health information, the individual's freedom to make decisions/act and situations that allow him to behave/act or not behave/not act. A woman who does not want to carry out early pregnancy detection, perhaps because she has no interest and intention in her pregnancy, or perhaps there is no support from her family or the surrounding community. It may also be due to lack of or not obtaining solid information about pregnancy or perhaps the individual does not have the freedom to decide, such as submitting to her husband, in-laws, or respected people, or it could be due to conditions that make this impossible such as health reasons (Helou et al., 2021; Nath et al., 2021). Lack of early detection to recognize the danger signs of pregnancy such as severe headaches, blurred vision, edema, and reduced fetal movement can result in a lack of quick anticipation during pregnancy until the birth process, resulting in a high risk of maternal death (Imani Ramazani et al., 2023; Larasati, 2020; Triguno et al., 2021).

This study aimed to determine differences in knowledge and attitudes of pregnant regarding early detection of hypertension complications in pregnancy and the role of the family in supporting the prevention of hypertension in pregnancy before and after being given intervention using *booklets*. The benefit of this research is an effort to assist government programs in solving midwifery problems and reducing maternal morbidity and mortality rates through involvement in empowering the community through health research.

2. RESEARCH METHOD

The research used a quasi-experimental design with a one-group pretest-posttest format. The study was conducted in Gorontalo Province, which consists of one city (Gorontalo City) and five regencies: Gorontalo Regency, Bone Bolango Regency, North Gorontalo Regency, Boalemo Regency, and Pohuwato Regency. The sampling method applied was accidental sampling, where 60 pregnant women who were the first to visit a health service facility, identified as having hypertension in pregnancy, and willing to participate, were selected as respondents. The instruments for data collection included questionnaires to assess the knowledge and attitudes of pregnant women, checklist sheets to evaluate the roles and abilities of women, husbands, and families in detecting hypertension complications, observation sheets to monitor maternal health conditions and interview guidelines. Data analysis was performed using univariate analysis and bivariate paired sample tests.

A total of 60 pregnant women met the sample criteria and participated in the study. During their first visit to the healthcare facility, they completed a pretest questionnaire and received hypertension management education and therapy from a midwife. The second visit, conducted on the third day after the initial visit, involved researchers identifying the communication dynamics regarding pregnancy and the involvement of the women, their husbands, and families in early detection efforts for hypertension complications in pregnancy. At this stage, the participants were given an intervention in the form of a booklet, which they were instructed to read for 30 minutes daily over three days, following the standard operational procedures established by the health service facility.

On the third visit, which occurred on the tenth day after the first visit, participants received a health check from a midwife and completed the post-test questionnaire. An evaluation was also conducted on the role of the women, their husbands, and their families in the early detection of hypertension complications during pregnancy. The fourth visit, on the fourteenth day after the first visit, involved an evaluation of the ability of the husbands and families to detect early complications of hypertension in pregnancy. For respondents assessed

as having insufficient ability to detect such complications, interviews were conducted to explore the reasons for this deficiency. Post-intervention blood pressure measurements were also taken. This research received approval from the Health Research Ethics Committee at Poltekkes Kemenkes Gorontalo, with approval number DP.01.01/KEPK/05/2023.

3. RESULTS AND DISCUSSION

The occurrence of hypertension during pregnancy is influenced by various factors, including age, educational level, employment status, and parity. Women younger than 20 years or older than 35 are considered at higher risk due to potential health conditions that increase the likelihood of pregnancy complications, such as hypertension (Kaimudin et al., 2018). A lower level of education, particularly below senior high school, significantly impacts the incidence of hypertension among pregnant women, as limited knowledge about health often leads to less effective decision-making in addressing health issues (Yuwono et al., 2017). Physical activity and stress associated with working mothers also contribute to an increased risk of hypertension (Kholifah et al., 2020). Additionally, women who are nulliparous, primiparous, or have high parity (more than four children) face higher risks of developing hypertension during pregnancy (Mariati et al., 2022; Musa et al., 2023; Suciati & Wiyoko, 2022).

The following section presents the demographic profile of the respondents involved in the study. Understanding the participants' characteristics is essential to contextualize the findings and assess factors contributing to hypertension in pregnancy. This overview provides insights into the age, education, employment status, and parity of the respondents, which may influence pregnancy outcomes and the effectiveness of interventions.

Table 1. Characteristics of Respondents

Characteristics	n=60	%
Age (years)		
Low risk (20-35 years)	42	70,0
Risk (<20 and >35 years)	18	30,0
Education		
Below Senior High School	26	43,3
Senior High School	21	35,0
Graduated from college	13	21,7
Job Status		
Not Working	41	68,3
Working	19	31,7
Parity		
Low risk	36	60,0
Risk	24	40,0

Table 1 shows that the incidence of hypertension in pregnancy is mostly experienced by pregnant in the non-risk age group, namely in the age range 20 - 35 years, which is 70%, low education level, which is 43,3%, not working, which is 68,3% and low-risk parity, which is 60%.

Table 2. Average Knowledge Score Before and After Intervention

Variable	Mean	N	Standard Deviation	Mean	p-value
Knowledge Score					
Pretest	36,53	60	4,168	2,47	0,000
Posttest	39,00	60	3,608		

Table 2 shows that the mean knowledge of respondents before the intervention was 36,53 and after the intervention was 39,00, the delta was 2,47. Then the respondent's knowledge score after intervention was higher than before the intervention. With a p-value of 0,000, the statistical test shows that there were differences in respondents' knowledge scores before and after the intervention involving pregnant women and families using the hypertension booklet in pregnancy.

Table 3. Average Attitude Score Before and After Intervention

Variable	Mean	N	Standard Deviation	Mean	p-value
Attitude Score					
Positive	30,40	60	11,560	1,75	0,214
Negative	32,15	60	11,734		

Table 3 shows that the mean attitude of respondents before the intervention was 30,40 and after the intervention was 32,15, the delta was 1,75. Then the respondent's attitude score after the intervention was higher than before the intervention. With a p-value of 0,214, the statistical test shows that there was no difference in respondents' attitude scores before and after the intervention using the hypertension in pregnancy booklet.

Table 4. Average Family Roles Score Before and After Intervention

Variable	Mean	N	Standard Deviation	Mean	p-value
Family Roles					
Pre intervention	1,88	60	0,490	2,02	0,000
Post Intervention	3,90	60	0,399		

Table 4. shows that the mean family roles score before the intervention was 1.88, while after the intervention, it increased to 3.90, resulting in a delta of 2.02. The family roles score after the intervention was significantly higher than before the intervention. With a p-value of 0.000, the statistical test indicates a significant difference in family role scores before and after the intervention using the hypertension in the pregnancy booklet.

Table 5. Distribution of Respondents' Ability to Detect Early Complications of Hypertension in Pregnancy After Intervention

Ability to detect early complications of hypertension in pregnancy	n=60	%
Capable	53	88,3
Unable	7	11,7

Table 5 show that 88,3% of respondents were able to detect early complications of hypertension in pregnancy after intervention.

Tabel 6. Distribution of Hypertension Status Among Respondents Before and After Intervention

Hypertension state	Before		After	
	F=60	%	F=60	%
Normotension	0	0	48	81,7
Hypertension	60	100	12	18,3

Table 6 shows that 81.7% of respondents had normal blood pressure after the intervention.

Hypertension in pregnancy can be influenced by various factors. In this research, the respondents' subjects were age, education level, job status, and parity. The cause of

hypertension in pregnancy tends to be experienced by respondents in the non-risk age category, namely 20-35 years. Researchers assume that this is due to a lack of knowledge about healthy pregnancy, lifestyle factors such as consumption of fast food and fried foods, lack of rest due to excessive use of gadgets, and excessive household work. The incidence of hypertension in pregnancy is more common in the age group 20 - 35 years and with low education, namely less than high school (Basri et al., 2018). Be aware that hypertension in pregnancy increases with maternal age. This is due to the high oxidative stress and low levels of nitric oxide that accumulate with aging, which exert a negative effect on endothelium relaxation (Nath et al., 2021).

Pregnant women who do not work are more likely to have hypertension than those who work. Working pregnant women have a higher level of knowledge than not working. Working pregnant women have more opportunities to interact with other people and thus have more opportunities to obtain information about their situation (Kaimudin et al., 2018). Based on the risk approach, multigravida obstetric status is a normal pregnancy, but researchers assume that multigravida pregnant with a history of hypertension in pregnancy have a greater chance of experiencing it. Pregnant with a history of hypertension are likely to experience complications related to hypertensive disorders in their current pregnancy (Braunthal & Brateanu, 2019; Gudeta & Regassa, 2019; Sungkar et al., 2021).

At the initial meeting, pregnant women were given a questionnaire to measure the mother's knowledge and attitudes about early detection and early treatment of hypertension in pregnancy. The knowledge questions consist of 23 questions, containing 9 questions about symptoms of hypertension in pregnancy, 10 questions about prevention efforts, 4 questions about the impact of hypertension in pregnancy, and the attitude questionnaire consists of 12 statements.

On the third day after the initial visit, a visit was made to the respondent's house to ensure whether the pregnant woman had informed her husband and family about the condition of her pregnancy. The research team identified whether there is a role for women, husbands, and families regarding efforts to detect early complications of hypertension in pregnancy. The results obtained were that 60 respondents (100%) had communicated the condition of their pregnancy to people who lived in the same house, and it had been identified that all respondents (100%) were willing to play a role in efforts to early detect complications of hypertension in pregnancy, namely being willing to provide support in the form of physical activity, selection support food, support for a healthy lifestyle and assistance with health checks. The research team then provided education using a booklet to respondents which contained material about hypertension in pregnancy and asked pregnant, husbands and families living at home to understand and implement the material in the booklet, namely causes, ways of early detection, prevention, and management efforts as well as empowering husbands, family, cadres and health workers in efforts to prevent hypertension in pregnancy. Researchers assume that empowering pregnant and their families using *booklets* has a positive impact on reducing blood pressure because they are able to implement the management of hypertension in pregnancy with the involvement of husbands and families. Education and counseling strategies are needed to promote health practices so as to support women's knowledge/understanding and attitudes toward implementing healthy lifestyles well, especially during pregnancy (Ho et al., 2022; Montazeri et al., 2023; Sugiartini, 2020).

On the tenth day after the visit to the health facility, a visit to the respondent's house was carried out to evaluate the implementation of the role of the woman, husband, and family in efforts to detect early complications of hypertension in pregnancy, anamnesis of the women's health condition in the form of danger signs of hypertension in pregnancy, health examination by the midwife, namely measuring blood pressure and physical examination in the form of detection of edema on the face, hands, and feet. Pregnants who are found to have blood pressure >140/90 mmHg are followed by a proteinuria examination by a health worker. The research

team then distributed post-test questionnaires to pregnant. Next, the role of the husband and family living at the house is implemented, namely by asking whether there is husband/family support for the women's physical activity, food choices, support for a healthy lifestyle, and assistance with pregnancy checks at health facilities.

The low proportion of pregnant who have adequate knowledge about hypertensive disorders in pregnancy will have a negative impact on the health of the women and baby (Agbeno et al., 2022; Kusumawati & Zulaekah, 2021). In this study, there was an increase in knowledge before and after the intervention using the hypertension booklet and there was a positive attitude regarding the detection and prevention of hypertension which was slightly lower than the negative attitude. The increase in knowledge of pregnant women in this study was due to mothers' understanding of the contents of the booklet which discussed types of hypertension in pregnancy, signs and symptoms, causes, impacts, prevention, early detection, management, hypertension in the postpartum period, hypertension in the postpartum period, empowerment mother, husbands and families, empowering cadres and health workers. The availability of booklet media encourages mothers, husbands, and families to read, understand and implement the contents of the booklet as an alternative effort to prevent and manage hypertension in pregnancy independently with midwife supervision and cadre assistance. Educational media is an instrument that facilitates explanations and becomes a relevant auxiliary media in providing a positive influence on pregnant women who are given exposure or treatment. Booklets can be a model for providing educational standards (Herwanti & Sambriang, 2021; Sulistiawati & Yulianti, 2023).

Midwife visits to the house are carried out to identify the condition of the pregnant and carry out health checks of the woman and fetus. Increasing the frequency of meetings between village midwives, cadres, and pregnant can be included in village activities by including material about the health of pregnant. The researchers suggested that, although pregnant women possess good knowledge regarding early detection and management of hypertension during pregnancy, they may still exhibit a less positive attitude towards these efforts, primarily due to family economic limitations. Low socioeconomic status is closely linked to the family's ability to provide nutritious and healthy food, which is crucial in preventing hypertension during pregnancy. Adequate nutrition plays a significant role in reducing the risk of hypertension (Ahmad & Nurdin, 2019; Mattsson et al., 2022). Economic constraints often hinder pregnant women from fulfilling their nutritional needs, impacting their ability to purchase and consume necessary food items.

Additionally, a mother's income influences the completeness of antenatal care (ANC). Lower family income can deprioritize health needs in favor of basic necessities, reducing the frequency of ANC visits. One factor contributing to a lack of commitment to early complication detection through ANC is economic status. Pregnant women with higher incomes tend to adhere to the recommended ANC schedule more than those with lower incomes (Ratnasari et al., 2022). Family support in this study was in the form of physical activity support, healthy food choices, healthy lifestyles, and assistance with pregnant women's health checks. There was an increase in family roles and support before and after intervention by the research team. Participation and support from the family in the form of attention, especially in pregnancy issues involving the health of the mother and fetus, is very important for mothers to have a healthy pregnancy (Sunaringtyas & Rachmania, 2023). The family is expected to act as the closest support system for pregnant women. The family plays a role in providing support in monitoring and preventing complications of pregnancy hypertension and making decisions regarding treatment carried out by pregnant women with hypertension (Marifah et al., 2021; Sharma et al., 2023; Yuill et al., 2020). Providing health education using booklets is more effective than providing health education only with the ability to speak according to the knowledge gained. Mediabooklets are more interesting because they are accompanied by pictures, contain concise, clear information and focus more on things that must be done by

pregnant women, husbands, and families so that what is conveyed is easily accepted (Putri et al., 2021; Wijayanti & Mulyadi, 2019).

The fourteenth visit after the first visit aims to evaluate the ability to detect early complications of hypertension in pregnancy in husbands and their families. There are still husbands and families who are less able to carry out early detection of hypertension in pregnancy. Interviews were conducted to determine the causes of the lack of ability to detect pregnancy hypertension early. Accompaniment by husbands and family who live at the house plays an important role in carrying out early detection to prevent the incidence of pregnancy hypertension. The presence of a companion at house who provides support and attention increases the mother's enthusiasm for having a healthy pregnancy and avoiding negative behavior that triggers hypertension such as not recognizing the signs and symptoms of hypertension in pregnancy, lack of physical activity, poor diet, poor health and safety health and safety lifestyle, and lack of ANC. The ability of early detection of hypertension by families in pregnant women is influenced by exposure to information (Dewi, 2018). Booklets as an information medium used by families to trigger the ability to detect hypertension in pregnant women have proven to be beneficial.

Post-intervention blood pressure of pregnant women is more normal than hypertensive pregnant women. With increased knowledge and support from husbands and families regarding physical activity, diet, lifestyle, and pregnancy checks, blood pressure becomes normal. There are still some pregnant women with hypertension due to a lack of understanding and family support regarding early detection and management of hypertension in pregnancy. The family acts as the closest support system for pregnant women because it is within there is a strong emotional bond in the family, so pregnant women will feel more confident, happy and ready to undergo pregnancy, childbirth, and the postpartum period. Family support provided to pregnant women with love and attention will motivate pregnant women to pay attention to their pregnancy because they feel cared for, loved, or appreciated. The attention given by the family can build emotional stability for pregnant women and serve as motivation to carry out pregnancy checks and blood pressure monitoring according to the schedule determined (Marifah et al., 2021).

4. CONCLUSION

There are differences in the knowledge of pregnant women and the role of family in the prevention of pregnancy hypertension before and after receiving the booklet intervention. There is no difference in the attitude of pregnant women before and after receiving the booklet intervention. Suggestions for researchers further need to formulate strategies related to early detection of pregnancy hypertension starting from the family level by involving a network of cooperation between the government and community organizations to prioritize health education at the family level.

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