

Relationship between Risk Factors and the Incidence of Hypertension in Pregnancy

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A B S T R A C T

Hypertension in pregnancy is one of the causes of maternal death. Severe preeclampsia is the most significant cause of complications that can lead to death. This study aims to determine the factors that influence the incidence of hypertension in pregnancy. This was an analytical observational study with a case control approach. The study population was all pregnant women, with a total sample of 47 pregnant women, who were selected using a purposive sampling technique based on inclusion criteria. Data were collected using a questionnaire that had been tested for validity and reliability. Data were analyzed using the Chi-Square statistical test. This study was conducted among pregnant women at the Obstetrics and Gynecology Polyclinic of Ngimbang Regional General Hospital in Lamongan. Based on the results of statistical test using the Chi Square Test, it was obtained a p value = 0.000 ($P < 0.05$) which indicated that there was a relationship between history of hypertension and the incidence of Hypertension in pregnancy. The OR value of 262.857 indicated that a woman with a history of hypertension had 262.857 times higher risk to have hypertension in pregnancy. It can be concluded that hypertension in pregnancy was caused by factors of history of hypertension and coffee consumption habit. Pregnant women are recommended to avoid risk factors for hypertension in pregnancy. Furthermore, healthcare workers are expected to provide counseling and health education for early detection of pregnant women so as to prevent the risk factors for hypertension.

Hipertensi pada ibu hamil merupakan salah satu penyebab kematian ibu tertinggi. Preeklampsia berat merupakan penyebab yang menimbulkan komplikasi yang dapat berujung pada kematian. penelitian ini dilakukan dengan tujuan untuk mengetahui faktor-faktor yang mempengaruhi kejadian HDK. Jenis penelitian yang digunakan adalah observasional analitik dengan pendekatan case control. Populasi seluruh ibu hamil, dengan sampel sebanyak 47 ibu hamil, menggunakan teknik purposive sampling dengan kriteria inklusi. Pengumpulan data menggunakan kuesioner yang telah diuji validitas dan reliabilitasnya. Dengan menggunakan uji statistik Chi-Square, penelitian dilakukan pada ibu hamil di Poli kandungan RSUD Ngimbang Lamongan. Berdasarkan hasil uji statistik dengan menggunakan Uji Chi Square diperoleh nilai $p = 0,000$ ($P < 0,05$) artinya ada hubungan antara riwayat hipertensi dengan kejadian hipertensi pada ibu hamil. Nilai OR sebesar 262,857 berarti riwayat hipertensi mempunyai resiko sebesar mempengaruhi kejadian hipertensi dalam kehamilan. Kesimpulan HDK disebabkan oleh faktor riwayat hipertensi dan kebiasaan konsumsi kopi. Saran kepada ibu hamil agar dapat menghindari faktor resiko bisa terjadinya hipertensi dalam kehamilan dan diharapkan kepada para petugas kesehatan agar dapat memberikan penyuluhan dan edukasi kesehatan deteksi dini kepada ibu hamil agar dapat menghindari faktor resiko penyebab hipertensi.

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Introduction

Hypertension is a non-communicable disease which is still a major problem in the world of global health with more than one billion patients (World Health Organization, 2014). The number of

patients with Hypertension in pregnancy is predicted to increase every year (Arafah & Notobroto, 2018).

Hypertension in pregnancy is one of the causes of maternal death. In this case, severe preeclampsia is the most significant cause in the hypertension group in pregnancy which causes complications that can lead to maternal death. Hypertension in pregnancy in Indonesia has increased by 30% which is the most common cause of death for pregnant women in Indonesia. One of the direct causes of maternal death in Indonesia is hypertension in pregnancy by 28%, followed by eclampsia by 24%, and hemorrhage by 11%. (MoH RI, 2022; Safitri & Djaiman, 2021). In 2019, the total number of pregnant women who died from hypertension in Indonesia reached 1,066 cases, followed by East Java with 162 cases (East Java Health Office, 2020)

The Maternal Mortality Rate (MMR) was obtained from various surveys carried out specifically with the implementation of family health checks and Indonesian Demographic Health reviews. The coverage of the MMR research area was wider than the previous survey (Alwiningsih, 2017). According to report made by the Community Health Centers in the Family Health Department of the Lamongan Health Office in 2020, the total number of pregnant woman death as managed by healthcare workers was 14 patients, namely 5 women in labor and 9 postpartum women with a MMR of 84 per 100,000 births, which has increased when compared to the MMR in 2019. Several triggering factors for the high maternal mortality rate was hypertension, bleeding, infection, and disorders of the circulatory system. Therefore, efforts that can be made to reduce maternal mortality include studying maternal mortality cases, increasing staff by reviewing Normal Childbirth Care (APN), rolling desks, holding classes for pregnant women, accompanying high-risk pregnant women, providing Complementary Food for pregnant women and assisting delivery at health facilities with the team (Lamongan District Health Profile, 2021).

A woman is determined as being at risk of high blood pressure (hypertension) when the systolic blood pressure is >140 mmHg and diastolic blood pressure is >90 mmHg. The risk factors for hypertension can be divided into 2 groups, namely the consequential factors that can be changed, namely age, gender, heredity, and parity factors among pregnant women, and those that cannot be changed, namely obesity, stress, smoking, alcohol, and salt intake (Arikah et al., 2020).

There are several aspects that influence the incidence of hypertension among pregnant women worldwide, such as; have family history of hypertension, have a history of preeclampsia in past pregnancies, obesity, nulliparity, diabetes, chronic hypertension, and extreme maternal age. According to Mochammad Ilham et al. (2022), there was a relationship between parity and the incidence of Hypertension in pregnancy with a p value of 0.000. Furthermore, it was also found that there was a relationship between weight gain and the incidence of hypertension in pregnancy with a p value of 0.048. Parity is one of the causes of hypertension in pregnancy. A study conducted by Marlina et al. (2021) showed that there was a relationship between parity and the incidence of hypertension in pregnancy with OR = 3.934

Based on the high maternal mortality rate due to Hypertension in pregnancy in Indonesia, especially in Lamongan City, this study was conducted with the aim of determining the factors that influence the incidence of hypertension in pregnancy at Ngimbang regional General Hospital of Lamongan. Since this hospital is one of the public hospitals in Lamongan, it is expected that there will be more cases of hypertension in pregnancy to be involved as the study samples at this hospital. This study is expected to provide benefits for those who read it.

Methods

This was a case-control-based analytical observational study. The study population consisted entirely of pregnant women. A purposive sampling method based on inclusion and exclusion criteria was used to select the 47 pregnant women who made up the study's total sample (Rosadi & Hildawati, 2021). Inclusion criteria involved: 1) Pregnant women who were willing to be the study samples; 2). Pregnant women who visited the Obstetric Gynecology Polyclinic of Ngimbang Regional General Hospital; 3). Pregnant women who could read. Meanwhile, the exclusion criteria involved: 1) Pregnant women who were not willing to be the study samples, 2). Pregnant women who did not visit the Obstetric Gynecology Polyclinic of Ngimbang Regional General Hospital; 3). Pregnant women who were not good at reading. Data were collected using a questionnaire that had been tested for validity and reliability. Data were analyzed using the Chi-Square statistical test.

Results

Table 1. Relationship between History of Hypertension and the Incidence of Hypertension in Pregnancy

History of Hypertension	Hypertension				$\alpha = 0,05$	OR	95%CI
	Case		Control				
	f	%	f	%			
Yes	46	97.,9	7	14.9	0.000	262.857	30.997-2229.018
No	1	2.1	40	86.1			
Total	47	100	47	100			

According to table 1, it was shown that the incidence of hypertension was higher in the category of cases with a history of hypertension by 46 (97.9%). In addition, there was a higher number of control respondents who did not have hypertension in the category of no history of hypertension by 40 (86.1%).

According to the results of statistical tests using the Chi Square test, it was obtained a p value of 0.000 ($P < 0.05$) which indicated that there was a relationship between a history of hypertension and the incidence of hypertension among pregnant women. The OR value was 262.857 which meant that women with a history of hypertension had 262.857 times higher risk to have hypertension in pregnancy.

According to table 2, it was revealed that the incidence of hypertension was higher in the category of having a coffee consumption habit by 38 (80.9%). In addition, there was a higher number of control respondents who did not have hypertension in the category of no coffee consumption habit by 46 (97.9%).

Table 2. Relationship between Coffee Consumption Habits and Incidence of Hypertension in pregnancy

Coffee Consumption Habit	Hypertension				$\alpha = 0.05$	OR	95%CI
	Case		Control				
	f	%	f	%			
Yes	38	80.9	1	2.1	0.000	194.222	23.543-1602.291
No	9	19.1	46	97.9			
Total	47	100	47	100			

According to the results of statistical tests using the Chi Square test, it was obtained a p value of 0.000 ($P < 0.05$) which indicated that there was a relationship between coffee consumption habit and the incidence of hypertension among pregnant women. The OR value was 194.222 which meant that women with coffee consumption habit had 194.222 times higher risk to have hypertension in pregnancy.

Discussion

The results showed that almost 100% (97.9%) of hypertension occurred in pregnant women with a history of hypertension. The results of statistical tests revealed that there was a relationship between a history of hypertension and the incidence of hypertension in pregnancy. Based on the data above, it can be seen that with a history of hypertension, a woman might experience hypertension in pregnancy (Ianatus Shofya Nurrohmah, 2019).

History of hypertension can be defined as previously experienced hypertension before pregnancy or before 20 weeks of gestation. Women who have a history of hypertension are at greater risk of experiencing hypertension in pregnancy and can cause preeclampsia. Besides that it can increase maternal and neonatal morbidity and mortality (Fox et al., 2019). Furthermore, a history of chronic hypertension during pregnancy can increase the risk of hypertension in pregnancy, and such condition can result in superimposed preeclampsia and chronic hypertension (Mandiri & Khadijah, 2018).

According to a study conducted by Imaroh, the results of statistical test using the Chi Square test obtained a p value of 0.015 ($p < 0.05$; 95% CI = 5.950). It very well may be reasoned that there was a connection between family background of hypertension and the occurrence of hypertension in pregnancy. In addition, women with a family history of hypertension had 5.9 times greater risk of experiencing hypertension (Marlina et al., 2021).

According to a study conducted by Robson, a history of previous pregnancy could be a factor in hypertension during pregnancy. The results further showed that a history of pregnancy was dominated by 16 patients (18.82%), 2 patients (2.35%) had a previous history of preeclampsia, and 12 patients (14.12%) had a previous history of hypertension. Pregnant women who previously had a history of preeclampsia had a 7-fold increased risk of developing hypertension in pregnancy (Dewi & Sulistiyono, 2015). A history of hypertension was significantly related to the incidence of hypertension in pregnancy since pregnant women who previously had hypertension had a 20% risk of having hypertension in their current pregnancy.

The results of this study showed that the incidence of hypertension was more common among pregnant women with a coffee consumption habit by 80.9%. The results of statistical analysis revealed that there was a relationship between coffee consumption and the incidence of hypertension ($p = 0.000$).

According to the American Pregnancy Association, caffeine is a stimulant. That is, when pregnant women consume caffeine, their blood pressure and heart rate may increase. Not only a stimulant, caffeine is also a diuretic (Suhardjono, 2017). Thus, consuming caffeine can increase the frequency of urination. Increased frequency of urination can reduce fluid levels in the body. If not balanced with sufficient fluids, pregnant women can experience dehydration (Malka & Kebidanan Batari Toja Watampone, 2022).

A study conducted by Dewi & Sulistiyono (2015) showed that there was a relationship between the coffee consumption habit and the level of hypertension in the work area of fishermen's CHC in Gresik District. Based on the frequency and duration of coffee consumption, type of coffee, and thickness of coffee, most of patients who had coffee consumption habit experienced hypertension with a p value = 0.000.

Moreover, a study conducted in Japan by Zaki et al., (2021) revealed that pregnant women who consumed caffeinated drinks had an increase in the risk of hypertension in pregnancy (Suhartini & Ahmad, 2019). According to the assumption of researchers, coffee consumption habit can cause hypertension in pregnancy since coffee contains caffeine which can increase blood pressure. As we know, pregnant women are very susceptible to various complications during pregnancy because of the many changes that occur both physiologically and psychologically. Thus, the consumption of caffeine contained in coffee is very vulnerable to triggering hypertension in pregnancy (Indayani & Fijri, 2021).

Conclusion

Based on the results of this study, it was found that the incidence of hypertension among pregnant women was caused by a history of hypertension and coffee consumption habit. Pregnant women are recommended to avoid risk factors for hypertension in pregnancy. Furthermore, pregnant women with a history of hypertension should pay more attention to their diet so as not to cause hypertension during their pregnancy. Obese women also need to monitor their weight gain, as well as pregnant women with coffee consumption habits in order to reduce coffee consumption during pregnancy. In addition, healthcare workers are expected to provide counseling and health education for early detection of pregnant women so as to prevent the risk factors for hypertension.

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