A LITERATURE REVIEW OF HYPERTENSION FACTORS IN PREGNANT WOMEN

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ABSTRACT

Introduction: Hypertension in pregnancy is one of the most common complications that can lead to death after blood loss and infection. Hypertension affects approximately 10% of pregnancies and contributes significantly to maternal and perinatal deaths. This study aimed to analyze the risk factors associated with hypertension in pregnant women. Methods: The research literature review method was used to search for articles on scientific sites such as ScienceDirect, PubMed, and Google Scholar using the keywords hypertension and pregnancy. Results: Of the 168 articles obtained, only eight met the criteria and described the risk factors associated with hypertension in pregnant women. Conclusions: The risk factors associated with hypertension in pregnant women include a history of hypertension, cigarette smoking, obesity, exercise, salt consumption, stress, age, and parity. The results are expected to provide additional information on the factors causing hypertension in pregnant women.

Keywords: Hypertension, Pregnancy Women

INTRODUCTION

The maternal mortality rate (MMR) is an indicator of a country's Health Status. Hypertension in pregnancy is a syndrome unique to human pregnancy and associated with increased maternal and fetal complications.(1) Hypertension is the second leading cause of maternal death worldwide. A recent study on hypertension during pregnancy over the past decade has described various clinical factors that may be associated with an increase in hypertension. However, mayoritas are retrospective or case-control, and almost all have a limited sample size, so the conclusions reached are highly contraindicated.(2)

Hypertension occurs in about 3-5% of the first pregnancy and 15-25% of these women.(3) Estimating the risk of hypertension in previous pregnancies will allow couples to make better-informed choices about hypertension.(4) In addition, with the prediction model, it is possible to identify women at high risk for hypertension and 75-85% of women who will not have hypertension.(5) These women may benefit from fewer reductions due to low-risk stratification.(6)

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Many prognostic models have been developed to predict hypertension; however, with limited performance and without implementation in clinical treatment.(7) Most of these models aim to predict hypertension during the first and second trimesters of pregnancy. Only a few models have been developed to predict recurrent hypertension before pregnancy, which is considered the most important risk factor for hypertension. A can be modified, such as obesity and untreated hypertension.(8)

The majority of cases of hypertension occur in pregnancy, with a reported incidence in this case in the population of 5% to 7%, so it is necessary to know the determinants that cause hypertension.(9) Therefore the analysis was restricted to pregnant women. From this background, the objective of our study is to find out the determinants of hypertension that can be applied clinically to and related to the development of hypertension.(10)

The mortality rate is one of the third targets of the Sustainable Development Goals (SDGs) to ensure healthy living and promote well-being for all people of all ages.(11) The SDGs target is 70 per 100,000 by the end of 2030.(12) Meanwhile, the target by the end of 2019 is 306 per 100,000 live births.(13) One of the cases of pregnancy complications contributing to MMR in Indonesia is hypertension pregnancy.(14) Risk factors for hypertension in pregnant women are having a family history of hypertension, reproductive age that is too young or old, primigravida, recurrent pregnancy, diabetes, kidney disease/disorder, hypertension since before pregnancy, overweight during pregnancy (>1 kilogram/week).(15)

Hypertension is one of the most common complications of pregnancy.(16) It affects about 10% of pregnancies and contributes significantly to maternal and perinatal mortality.(17) Since there are no characteristic symptoms, hypertension is a dangerous disease.(18) If it happens to a woman who is pregnant, it can cause death in both the mother and the baby to be born.(19) Hypertension occurs when the blood pressure in the blood vessels increases chronically.(20) Hypertension or high blood pressure is a persistent increase in pressure in arterial blood vessels, in which systolic blood pressure is ≥ 130 mmHg and diastolic pressure is ≥ 80 mmHg.(21) Hypertension is often asymptomatic, so it becomes the silence of the deadly killer.(22) If left unchecked, hypertension can interfere with the functioning of other organs, especially vital organs such as the heart, kidneys, and eyes.(23) Hypertension can causes various diseases, including stroke, diabetes, and kidney failure. According to WHO (World Health Organization) data, pregnancy hypertension is one of the causes of pain and death worldwide for the mother and fetus.(24) Globally, 80% of pregnant women's deaths are classified as direct causes of maternal death, namely caused by bleeding (25%), usually postpartum haemorrhage, hypertension in pregnant women (12%), abortion (13%) and other causes (7%).(25) The high incidence of hypertension in pregnancy is closely related to the degree of pain and death in the fetus, and there are still many risk factors, and rudimentary management leads to a poor prognosis for both the mother and the fetus.(26) From this background, our study aims to analyze the risk factors associated with hypertension in pregnant women.(27)

Hypertension can interfere with fetal growth, leading to premature birth, impaired fetal growth, fetal death, or other perinatal-related problems.(28) Prevention of hypertension can be done by recognizing the risk factors that cause hypertension, and it is recommended to minimize it without sacrificing fetal growth.(29) Hypertension in pregnancy can be detected when the gestational age is <23 weeks.(30) Unavoidable causes of hypertension include multiple pregnancies and medical comorbidities at high risk.(31) Treatment of hypertension according to the protocol in cases of pregnancy will be given drugs in the first line of labetalol, extended-release, nifedipine, amlodipine, and methyldopa.(32)

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Pregnancy hypertension with a chronic stage can occur up to 2 weeks postpartum.(33) Chronic hypertension can lead to premature birth before <35 weeks of pregnancy placental abruptio fetal death and neonatal death. Most patients with chronic hypertension will be given therapy before 14 weeks of gestation.(34) If left untreated, hypertension can cause cardiovascular disorders in the mother and neonatal morbidity.(35) The use of aspirin in mild chronic hypertension in pregnancy with blood pressure <140/90 mm Hg negatively affects the growth of the fetus.(36) In conclusion, the treatment of hypertension in pregnancy can reduce the risk of maternal morbidity and perinatal so cannot avoid mortality, so it is necessary to recognize the factors that cause hypertension to prevent hypertension in pregnancy.(37)

METHODS

This research uses PRISMA by going through a process of identification, selection, and finally assessing articles, following the inclusion and exclusion criteria. The inclusion criteria were articles published in 2020, 2021, and 2022, and the exclusion criteria were only abstracts. The article contained only one of the keywords, hypertension or pregnancy. Articles were searched using scientific sites such as ScienceDirect, PubMed, Elsevier, NCBI, DOAJ, Proquest, Microsoft Academic, Sage Journal, Oxford Academic, LIPI, ResearchGate, JSTOR, and Scrib.Id used the keywords hypertension and pregnancy. The flow of the selection process is illustrated in figure 1.

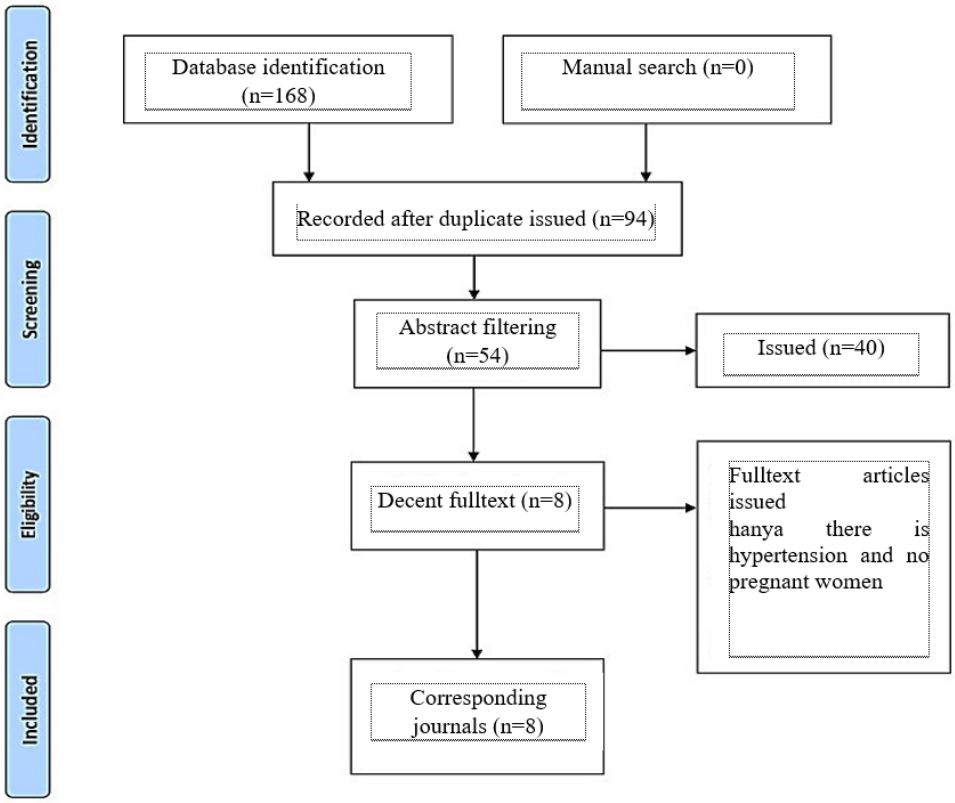

Figure.1 Flow of selection process

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RESULTS

Eight articles met the inclusion criteria and were eligible for the review. The data analyzed were synthesized and are presented in Table 1.

Table 1. Synthesis of article reviewed

No	Title	Author	Year	Method	Sample	Result
1.	Pregnancy, hypertension and maternal ageing: From epidemiology to functional genomics	Eliza C. Miller, Ashley Wilczek, Natalie A. Bello, Sarah Tom, Ronald Wapner, Cousin Suh	2022	Regression analytics by design posttest design	Pregnant women	Women who are less than 20 years old and over 35 years old have a higher risk of death if they have hypertension
2.	Differences in maternal soluble ST2 levels in the third trimester of normal pregnancy versus hipertensi	Prameswari Hawani Sasmayaa, Khalid Achmad Fitraha, Anggraeni Dewia, Irianti Setyorinib, Akbar Mohammad Rizkia	2022	Quasi-experimental pre posttest type with the control group	Pregnant women	Increased incidence of hypertension in primigravida women with previous abortions
3.	Comparison of nitric oxide levels, roll-over test value, and body mass index in hypertension and normotension	Indri N. Marasinga, Irfan Idris, Isharyah Sunarno, Sharvianty Arifuddina, Andi Wardihan Sinranga, Burhanuddin Bahar	2021	Quasi-experimental pre andposttest type with a control group	Pregnant women	Weight gain of at least 2 pounds per week, especially during the third trimester associated with the risk of hypertension
4	Association of blood lead levels with hypertension: A cohort study in China	Su Zhen Wu, Huan Ying Xu, Ying Chen, Yu Chen, Qiao Ling Zhu, Min Hua Tan, Miao Miao Zhang	2021	Cohort	Pregnant women	The increase in Systolic and historical blood pressure systolic in early pregnancy (before 22 weeks of pregnancy) is highly predicted to be a risk of hypertension
5	Analysis of Risk Factors for Hypertension in Pregnant Women	Ni Kadek Tias Tanti, Yulizar, Titin Dewi Sartika Silaban	2022	Analytical survey design	Pregnant women	There is a relationship between gravida, a history of hypertension, and partial body mass index with the occurrence of hypertension in pregnant women.
6	Risk Factors for Hypertension in Mrs Hamil	Wiranto, Natalia Desy Putriningtyas	2021	Analytical observational, with a	Pregnant women	There is a relationship between nutritional status before pregnancy,

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				case-control approach		mother's age, family history of hypertension, sodium intake, and calcium intake with the incidence of hypertension in pregnant women in the Gunungpati Health Center Working Area, Semarang City. There is no relationship between gravidity and potassium intake and the incidence of hypertension in the expectant mother.
7.	Overview of Risk Factors for Hypertension in Pregnancy at Bhayangkara Hospital Denpasar	Febyan, Ida Bagus Rumbawa Pemaron	2020	observational studies by the method of intervention,	Pregnant women	There is a relationship between body mass index and maternal age with the incidence of hypertension in pregnancy, and there is no meaningful relationship between gravidity and hypertension in pregnancy.
8.	Risk Factors for Hypertension in Pregnant Women at the Kramat Jati Health Center, East Jakarta, 2021	Titi Arikah, Tri Budi Wahyuni Rahardjo, Sri Widodo.	2020	Analytical descriptive with cross-sectional research design	Pregnant women whose gestational age is 20 weeks and above	Most of the pregnant women in this study did not suffer from hypertension, as many as 50. The dominant variable associated with hypertension in pregnant women is a history of hypertension and obesity. Variables not related to hypertension in pregnant women are the of pregnant women, salt consumption and age.

DISCUSSION

Based on the study's results, a p-value of 0.009 was obtained, which means that there is a relationship between the history of hypertension and the incidence of hypertension in pregnant women.(1) Results 3,383 means that pregnant women with a history of hypertension are 3.3 times more likely to suffer from hypertension than pregnant women who do not have hypertension.(38) Women who develop hypertension

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in the first pregnancy will increase their hypertension in subsequent pregnancies.(2) Matell stated that the incidence of hypertension would grow in a second pregnancy if there was a pregnancy with too much distance from the first. With a history of hypertension, the probability of primigravida will increase four times.(3) Most of the respondents who suffer from hypertension have a history of hypertension, namely 64.1%.(4) Those with no history of hypertension are mostly not suffering from hypertension.(5) This shows that the history of hypertension in previous pregnancies plays an essential role in the incidence of hypertension during pregnancy.(6)

The study's p-value of 0.010 < 0.05 means a relationship between exposure to cigarette smoke and the incidence of hypertension in pregnant women.(7) Results mean that pregnant women exposed to cigarette smoke are 3.5 times more likely to suffer from hypertension than pregnant women who are not exposed to cigarette smoke.(8) Exposure to cigarette smoke during pregnancy determines fetal growth.(9) The nicotine in cigarette smoke is a vasoconstrictor substance that will cause vasoconstriction of blood vessels and increase heart contractions, increasing blood pressure in pregnant women.(9)

Most of the respondents who suffered from hypertension were respondents who were exposed to cigarette smoke, which was 57.4%, and respondents who were not exposed to cigarette smoke were mostly not suffering from hypertension.(37) This shows that cigarette smoke exposure can affect pregnant women's blood pressure.(10) Researchers assume pregnant women exposed to cigarette smoke will have a greater risk of hypertension.(11) This is because the nicotine in cigarette smoke is a vasoconstrictor substance that can increase the heart's work and blood pressure in pregnant women.(12)

Based on the study results, p-value of 0.000 < 0.05 indicates a relationship between obesity and the incidence of hypertension in pregnant women. Results = 5.176 means that obese pregnant women are 5.1 times more likely to suffer from hypertension compared to pregnant women who are not obese.(13) Obesity is the percentage of fat abnormalities expressed by the body mass index, which compares body weight and height squared in meters.(14) Being overweight and having hypertension often go hand in hand because adding kilograms makes the heart work harder.(15)

Most respondents who suffered from hypertension were obese (65.7 %). At the same time, only 34.7% of people with obesity do not have hypertension. Researchers assume obese people are at risk of suffering from hypertension at the time of pregnancy because, in obese people, there is increased work on the heart to pump blood. Excessive weight leads to an increase in blood volume and area, and expansion of the circulatory system. The greater body mass, the more blood is required to supply oxygen and nutrients to the body tissues. This results in an increase in the volume of blood circulating through the blood vessels, thereby increasing the pressure on the arterial wall.

This study's results align with the research conducted on the effects of her research and obtained a p-value of 0.001.(16) In line with the analysis, their research received a p-value of 0.001, indicating a relationship between obesity and hypertension.(17) Based on the study's results, a the p-value of 0.125 was obtained, meaning there was no relationship between the olaraga of pregnant women and the incidence of hypertension in pregnant women.(18) Exercise is a type of physical activity that is planned and structured, and the movement of a part of the body is repeated to obtain fitness, for example, walking, jogging, swimming, and aerobics. Every adult should perform at least 30 minutes of moderate-intensity physical activity daily.(19) The results showed no relationship between physical activity in pregnant women and the incidence of hypertension in pregnant women.(20 The results of this study contradict

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those of previous studies. The effects of their study obtained a p-value of 0.000, meaning there is a relationship between physical activity and hypertension.(21)

Researchers assume that although there was no relationship between pregnant women and the incidence of hypertension in this study, the exercise of pregnant women is still a risk factor for pregnancy hypertension.(22)This is because pregnant women who engage in regular sports play an essential role in maintaining a healthy body. Through sports activities, the heart can work more efficiently.(23) The frequency of the pulse is reduced, but the power of pumping the heart is getting stronger, the need for heart oxygen at a certain intensity, a reduction in fat and weight and lower blood pressure.(24)

Based on the study results, a p-value of 0.481 > 0.05 indicates that no relationship exists between salt consumption and hypertension in pregnant women. (25) InOrganizationo (WHO recommendssalt consumption patternsoto reducetheerisk offhypertensionk. The recommended sodium level is no more than 100 mmol (about 2.4 grams or 6 grams of salt) per day or the equivalent of 1 teaspoon daily.(26) Excessive sodium consumption causes sodium concentration in the extracellular fluid.(27) The intracellular fluid is drawn outwards to normalize, so the extracellular fluid volume rises.(28) The increased importance of extracellular fluid causes an increase in blood volume, resulting in the onset of hypertension.(29)

The results of this study are contrary to the research on the effects of his study obtained a p-value of 0.0001 which means that there is a relationship between salt consumption and the incidence of hypertension.(30) Research obtained a p-value of 0.001, indicating a relationship between salt consumption and hypertension.(31) Researchers assumed that although there was no relationship between salt consumption and the incidence of pregnancy hypertension in this study, excess salt consumption also remained an aggravating risk factor for pregnancy hypertension.(32) Daily consumption of extra salt can lead to hypertensive disease. This is because excessive salt consumption can increase blood pressure. Salt retains water, which increases blood volume and can narrow the diameter of the arterial blood vessels. This circumstance forces the heart to pump more strongly, increasing blood pressure.(33)

Based on the study's results, a P-value of 0.000 was obtained, which means that there is a relationship between pregnancy stress and the incidence of hypertension in pregnant women. Results 6.044 means that pregnant women who experience pregnancy stress are 6.0 times more likely to suffer from hypertension than pregnant women who do not experience pregnancy stress.(33) Stress can increase blood pressure. The Adrenaline levels increase stressede, which can causee thee heart to pump blood faster increasing bloodd pressure.(34) If the stress level decreases, blood pressure will also decrease. According to the study results, most respondents who suffered from hypertension were those who experienced pregnancy stress (64.5 %). This proportion is more significant than the number of non-stressed respondents suffering from hypertension, 23.8%.(35)

Researchers have assumed that stress can temporarily increase blood pressure. Blood pressure usually increases when a person is scared, nervous, and chasing time. ((3)6 Howevertin mosttcasesebloodpressurebegins to fall nn as soon as it begins to relax. Stress can occur when a person is in a state of tension, feeling depressed, sad, frightened, or guilty. This condition will stimulate the kidney child to produce the hormone adrenaline, which will spur the heart to pump blood faster and more robust, so blood pressure increases.(39)

Based on the study's results, a p-value of 0.416 was obtained, meaning there was no relationship between age and hypertension in pregnant women.(40) The safest age for a woman to become pregnant and give birth is between 20-35 years since they

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are in a healthy reproductive period. Maternal mortality in expectant and parturient mothers aged < 20 years and > 35 years will increase significantly as they are exposed to medical and obstetric complications that can danger their life.(41) According to a study, although there is no relationship between age and the incidence of hypertension in pregnant women, age is still a risk factor for hypertension in pregnant women because hypertension is more often observed in the early and later reproductive years in women over 35 years old. Pregnant women < 20 years old easily experience an increase in blood pressure and cause seizures faster, while the age of more than 35 years is also a risk factor for hypertension.(42) So women who are at the beginning or end of reproductive age are more prone to suffer from hypertension during pregnancy.(43)

Based on the study's results, a p-value of 0.047 was obtained, meaning that there was a relationship between parity and hypertension in pregnant women.(37) Or result = 2, meaning that pregnant women with primigravida parity are 2.5 times more likely to suffer from hypertension than pregnant women with multigravida parity.(1) The first pregnancy is mainly in mothers who are > 35 years old.(10The frequency f of hypertensionin primigravidaais higherrthan thattin multigravidadbecauseee the immunological theory explains threlationship between the incidence of hypertension and parity. Theory statess that blocking ibodies against placentall antigens formed during the first pregnancy are the cause of hypertension.(11) This study supported the conclusions of the relationship between parity and the incidence of hypertension in pregnant women and supported other studies that parity is a risk factor for hypertension in pregnant women.(38)

Hypertension was observed in 4.5% aged 20-35 years and 0.7% of those younger than 20 years. Women less than 17 years of age or more than 30 years are significantly associated with hypertension.(9) Women over the age of 35yearsareatt riskofr developing hypertension. Women under 20 years old have a higher risk of developing hypertension and are at 1.6 times higher risk of death; women over 35 years of age have a 1.2 times higher risk of developing hypertension. For ages, 20-35 years the risk of having risk of developing hypertension is 0.87.(44)

An inadequate maternal immunological response to inherited fetal antigens has been suggested as a mechanism responsible for the development of hypertension. Increased hypertension in primigravida women and reduced incidence in those with previous abortions or late miscarriages are consistent with immunological causes of hypertension (45). However, data regarding previous miscarriages are not associated with the risk of hypertension.(46)

Body mass index at the beginning of the second trimester is highly predicted to increase the risk of hypertension, with the highest incidence (12.6%) among women whose body mass index is>34 kg/m^2.(47) These findings are consistent with other studies that report an increased incidence of hypertension in obese women.Obesity is the main risk factor for cardiovascular and cerebrovascular diseases (48). Indeed, obese women are at increased risk of hypertension, diabetes mellitus, hyperlipidemia, hyperuricemia, and poor heart function.(49)

In addition, obesity affects maternal hemodynamic changes during pregnancy, and the pathophysiological alterations associated with obesity are responsible for the incidence of gestational hypertension in obese women. Routine balance assessment of pregnant women and their babies is an important aspect of prenatal care. (51) The increase in weight gain at each visit was used to assess nutritional status and indicate the risk of hypertension. Again at least 2 pounds per week, especially during the third trimester associated with the risk of hypertension.(52) However, it should be emphasized that excessive weight gain (oedema) during pregnancy should not be

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considered diagnostic hypertension but should be noted as a risk factor for the potential development of hypertension.(53)

The index body mass and systolic and diastolic blood pressures were very close to the risk of hypertension. This information should be useful for counseling mothers and understanding the pathophysiological characteristics of hypertension.(54) When using the reported characteristics of patients to predict recurrent hypertension in this group with a high recurrence rate (45.2%), the introduction of women at risk was insufficient. Identification of women at low risk for recurrent diseases, who may benefit from less intensive antenatal surveillance, is not yet possible and individual counselling on risks in subsequent pregnancies remains a challenge.(55)

Blood pressure and proteinuria are established diagnostic criteria for defining hypertension. In addition, evaluating the risk factors for hypertension in a group of primigravida women showed that systolic and diastolic blood pressure in early pregnancy (before 22 weeks of pregnancy) were strong predictor of the risk of hypertension.(56) During pregnancy, major physiological changes occur in the cardiovascular system,particularly in the heart. These changes are due to the migratory and endovascular trophoblast action on the walls of the spiral arterioles, which help transform the placental artery bed of the uterus into a low-resistance, low-pressure, and high-flow system. It is recommended that the things in a bag start in the first trimester and are usually completed at 20 weeks gestation. This coincides with a physiological decrease in systemic blood pressure during normotensive pregnancy. In contrast, pregnancy was not associated with an increased risk of hypertension. The inadequate vascular response of the mother to the placenta is usually evident at 20 weeks gestation. Therefore the association of hypertension with an increase in maternal blood pressure reflects this abnormal physiological process.(57)

Blood pressure and proteinuria are established diagnostic criteria for defining hypertension. In addition evaluating the risk factors for hypertension in a group of primigravida showed that systolic and diastolic systolic blood pressure in early pregnancy (before 22 weeks of pregnancy) was highly predicted to be a risk of hypertension.(58) During pregnancy, normal major physiological chanoccur in thehthe cardiovascular systespecially in the uteroplacentalalal culture. These changes are due to the migratory and endovascular trophoblast action on the walls of the spiral arterioles, which help transform the placental artery bed of the uterus into a low-resistance, low-pressure, and high-flow system. It is recommended that things in a bag start in the first trimester and are usually completed at 20 weeks gestation. This coincides with a physiological decrease in systemic blood pressure during normotensive pregnancy. Conversely, pregnancies that are not at risk of hypertension, the mother's inadequate vascular response to the placenta is usually proven at 20 weeks gestation.(1) The association between hypertension and an increase in maternal blood pressure that we found in our study may reflect this abnormal physiological process.

Hypertension was found in women who smoked during menstruation. However, smoking when not menstruating was not a risk factor for hypertension. A similar analysis was performed to evaluate the contribution of hidden risk factors to the risk of severe hypertension.(38) No smoking during pregnancy iwomenhwhoen smoke during menstruati;n, an increasin hypertension was found. However, smoking when not menstruating was not a risk factor for hypertension. A similar analysis was performed to evaluate the hidden contribution of risk factors to the risk of severe hypertension.(38) Not smoking during pregnancy protects against hypertension. However, the protective effect of smoking is a contraindication for women who continue to smoke, especially after 20 weeks of pregnancy. Having a husband who has a habit of smoking can also increase the risk of increased hypertension.(2) Mothers who smoke have an increased

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risk of hypertension. The prevalence of hypertension was lowest in women who quit smoking during early pregnancy. An increased risk of hypertension was found in pregnant women who continued smoking for more than 20 weeks. In addition to the duration of cigarette consumption, the number of cigarettes consumed per day also affects hypertension.

Smoking more than three cigarettes per day can increase the risk of hypertension in primigravida mothers. The production of thromboxane A2 through inhibition of thromboxane synthase and placental acetylcholine by the way nicotine acts on nicotinic receptors in the placenta eventually stimulates the release of endothelium-derived relaxing factor and nitric oxide. This beneficial effect of smoking in hypertension can also be mediated by inhibiting cytokine production and the antioxidant activity of nicotine.(3) Blood lead levels above 4.2 µg/dl may increase the risk of hypertension by 105%. For each increase in blood lead level, 1 µg/dl. Blood lead levels during pregnancy are a risk factor for hypertension. Blood lead levels in patients with hypertension are higher than those in pregnant women. Every 1 µg/dl increase in the blood lead level in pregnant women increased the risk of hypertension by 1.6%. The safe range of blood lead levels in pregnant women is 5 µg/dl. A remarkable reduction in environmental lead sources has led to a decline in blood lead levels over the past few decades. However, lead exposure remains a risk factor for women's health, even at low concentrations. Lower blood lead levels (average = 2.3 µg/dl) were associated with a lower systolic blood pressure. Low blood lead levels in pregnant women have been associated with pregnancy-induced hypertension. Low levels of lead exposure have a dosing effect and a hypertensive relationship at 4.2 µg/dl. The risk of hypertension is not significantly increased with an increase in blood lead levels when blood lead levels are lower than 4.2 µg/dl. However, when blood lead levels are higher than 4.2 µg/dl, the risk of hypertension increases by 105% for every 1 µg/dl increase in blood lead levels. Lead exposure can accumulate in pregnant women through the air, skin contact, or the food chain.(4)

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Alcohol consumption may increase the risk of developing hypertension. A person who consumes Alcohol consumption can increase the severity of the disease in patients with hypertension. Blood vessels can become narrower if a person consumes alcohol to trigger damage to organs.(5) Alcohol consumption can be considered to improve heart health, but it is harmful if consumed within reasonable limits. Consumption of alcohol in small portions can dilate blood vessels, but if consumed in large quantities, it is the opposite.(6)

Calcium in pregnant women is obtained from food consumed in the amount of 1200 mg/day for pregnant women over the age of 30 years, and pregnant women over 20 years old require calcium in the amount of 1300 mg/day. In pregnant women, calcium is needed more because it is a substitute for the reserve of tissue formation in the fetus. So that if pregnant women lack calcium can increase the risk of hypertension four times.(7)

Calcium deficiency in pregnant women can also trigger hypertension due to increased blood and muscle contraction levels. Hypertension during pregnancy is important to pay attention to because dietary calcium deficiency can trigger hypertension. Calcium maintains concentration in the blood on muscle contraction activity.(37)

CONCLUSION

The risk factors associated with hypertension in pregnant women include a history of hypertension, cigarette smoking, obesity, exercise, salt consumption, stress, age, and parity. These results are expected to provide additional information on the factors causing hypertension in pregnant women. Therefore, midwives should be trained to prevent hypertension in pregnant women. For the community, this research is expected to increase knowledge among families to minimize the factors that cause hypertensionFor future researchers, because of the review of this literature using quantitative research articles, it would be better if they further deepened the qualitative approach to obtain more in-depth research results on the factors causing hypertension in pregnancy.

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