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Factors Related to Hypertension in Pregnancy

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Abstract:
Hypertension in pregnancy measures systolic blood pressure ≥ 140 mmHg and diastolic ≥ 90 mmHg during pregnancy. According to the Indonesian Health Profile (2015), the five biggest causes of maternal death are bleeding (28%), hypertension in pregnancy (25%), infections (11%), prolonged labor (5%), and abortion (5%). This study aims to determine the factors associated with the incidence of hypertension in pregnancy in Harapan Jayakarta Hospital. This research is an analytical method with a cross-sectional study. The sample in this study was 190 pregnant women. The sampling technique is simple random sampling. The instrument is medical record data. Data were analyzed using chi-square statistical test. The results showed that there was a significant relationship between age (p=0.001), employment status (p=0.003), parity (p=0.009), pregnancy interval (p=0.003), history of diabetes mellitus (p=0.038), obesity (p=0.017), history of hormonal contraception (p=0.044) with incidence hypertension in pregnancy. There was a significant relationship between age, occupational status, gravida status, pregnancy interval, history of diabetes mellitus, obesity, and history of hormonal contraception with the incidence of hypertension in pregnancy. It is expected that health workers provide health education to anticipate complications in pregnancy and women are expected to carry out the health education provided.

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INTRODUCTION

Pregnancy is highly anticipated by every woman because pregnancy is a very important life event, even though major changes can occur that can endanger health (Laiskodat et al., 2021). During the antenatal visit, the expectant mother may complain that she is experiencing discomfort (Hamidah et al., 2022). Pregnancy will cause hormonal changes in women due to an increase in the hormones estrogen, progesterone, and the hormone chorionic gonadotropin (HCG) (Azizah et al., 2022). One of the causes of the high maternal mortality rate is hypertension in pregnancy with a prevalence of 24% (World Health Organization, 2015). According to the Indonesian Health Profile (2015), the five biggest causes of maternal death are bleeding (28%), hypertension in pregnancy (25%), infection (11%), prolonged/obstructed labor (5%), and abortion (5%). According to the DKI Jakarta Provincial Health Office, in 2018 the reported maternal deaths were 98 people. The main causes of maternal death in DKI Jakarta Province in 2018 were 39 cases of bleeding, 21 cases of hypertension in pregnancy, 8 cases of infection, 3 cases of circulatory system disorders and 27 other causes. The way to reduce the risk of death for pregnant women is to improve the health status of pregnant women until delivery (Novelia et al., 2022).

Hypertension in pregnancy measures systolic blood pressure 140 mmHg and diastolic 90 mmHg during pregnancy. Measurements were carried out at least 2 times at an interval of 4 hours.

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Another previous definition, an increase in systolic blood by 30 mmHg or diastolic by 15 mmHg, is no longer used (Cunningham, 2014). Hypertension in pregnancy is classified according to the American College of Obstetricians and Gynecologists (ACOG) (2013) into 4 types, namely (1) chronic hypertension, (2) gestational hypertension, (3) preeclampsia and eclampsia and (4) chronic hypertension with superimposed preeclampsia (superimposed preeclampsia).

Hypertension in pregnancy is a clinical symptom for which the exact cause is unknown, but some factors can influence the incidence of this disease. These factors are primigravida, hyperplacenosis in hydatidiform mole, multiple pregnancies, diabetes mellitus, extreme age, family history of preeclampsia/eclampsia, kidney disease, and pre-pregnancy hypertension, obesity (Prawirohardjo, 2014). Pregnancy hypertension can cause pre-eclampsia, brain hemorrhage, eclamptic seizures, kidney failure, pulmonary edema, and blood clots (Kurniyawan, 2023). The higher the level of stress experienced by pregnant women, the more frequent the recurrence of hypertension (Pusparini et al., 2021). Based on research conducted by Mustafa et al. (2012), it shows that hypertensive disorders are one of the main causes of maternal mortality related to pregnancy in the United States. Many factors cause the high incidence of hypertension in pregnancy. Meanwhile, according to the results of research by Saraswati and Mardiana (2014), there was a significant relationship between age and the incidence of hypertension in pregnant women <20 and >35 years having a risk of 15.731 experiencing hypertension compared to respondents aged 20-35 years. According to the results of Sri & Novi's research (2016), the highest proportion of pregnant women with hypertension is in the mothers who have given birth >3 times, which is 74%.

By determining the factors related to the incidence of hypertension in pregnancy, health workers should focus more on their role in prevention and promotion (Ruffa'ida, 2019). Based on a preliminary study conducted at the Harapan Jayakarta Hospital, hypertension in pregnancy was 11% of 350 pregnant women in 2018. This study aims to determine the factors associated with the incidence of hypertension in pregnancy in Harapan Jayakarta Hospital.

METHOD

This research is an analytical method with a cross-sectional design. The population in this study were all pregnant women in January - December 2019 at Harapan Jayakarta Hospital, with a total of 360 pregnant women. In this study, the sampling method was simple random sampling. The research instrument used in this study was medical record data to obtain the necessary data. The number of samples is based on the calculation using Slovin's formula. Based on the calculations that have been carried out using Slovin's formula, the number of samples is 190 pregnant women. Data were analyzed using a chi-square statistical test.

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RESULT

Table 1. Correlation Between Age, Career, Parity, Pregnancy Interval, Diabetes Mellitus History, Obesity, Contraception History, and Hypertension

Independent variable	Hypertension		Total	p
	Yes	No		
Age				
At risk (<20 or >35 years)	20 (49.8%)	25 (17.7%)	45 (23.7%)	0.001
Not at risk (20-35 years)	29 (59.2%)	116 (82.3%)	145 (76.3%)	
Career				
Working	21 (42.9%)	30 (21.3%)	51 (26.8%)	0.003
Not working	28 (57.1%)	111 (78.7%)	139 (73.2%)	
Parity				
At risk (1 or >3)	27 (55.1%)	48 (34%)	75 (39.5%)	0.009
Not at risk (2-3)	22 (44.9%)	93 (66%)	115 (50.5%)	
Pregnancy interval				
At risk (<2 or >5 years)	22 (51%)	39 (27.7%)	64 (37.7%)	0.003
Not at risk (2-5 years)	24 (49%)	102 (72.3%)	126 (66.3%)	
Diabetes Mellitus history				
Yes	9 (18.4%)	11 (7.8%)	20 (10.5%)	0.038
No	40 (81.6%)	130 (92.2%)	170 (89.5%)	
Obesity				
Obesity (BMI >25 kg/m^2)	34 (69.4%)	70 (49.6%)	104 (54.7%)	0.017
Not obesity (BMI ≤ 25 kg/m^2)	15 (30.6%)	71 (50.4%)	86 (45.3%)	
Contraception history				
At risk (hormonal)	29 (59.2%)	60 (42.6%)	89 (46.8%)	0.044
Not at risk (non-hormonal or not a user)	20 (40.8%)	81 (57.4%)	101 (53.2%)	

The results of the univariate analysis showed that from 190 respondents, most respondents did not experience hypertension in pregnancy (74.2%), were not at risk in terms of age (76.3%), not working (73.2%), gravida not at risk (60.5%), no history of diabetes mellitus (89.5%), not obese (54.7%), and not at risk for a history of contraception (53.2%). From table 1, it can be concluded that there was a significant relationship between age (0.001), occupation (0.003), parity (0.009), pregnancy interval (0.003), history of diabetes mellitus (0.03), obesity (0.017), and history of hormonal contraception (0.044) with hypertension in pregnancy.

DISCUSSION

Age greatly affects pregnancy and childbirth. A good age to get pregnant or give birth is between 20-35 years. At that age, the female reproductive organs have developed and functioned optimally. On the other hand, women under 20 years old or above 35 years old are not good at getting pregnant or giving birth, because pregnancy at this age has a high risk such as miscarriage, or failure to give birth, it can even cause death. Older women have a higher risk of childbirth complications than younger women. For women aged 35 years and over, in addition to being physically weak, there is also the possibility of the emergence of various risks of health problems, such as high blood pressure, diabetes and various other diseases (Gunawan, 2010). The results of this study are in line with the results of research conducted by Pemiliana and Nasution (2019), which found that there was a significant relationship between the age of pregnant women and hypertension in pregnancy. According to the researcher's assumption, the predominance of hypertension in pregnancy in women with no risk age (20-35 years) can occur because apart from age, the mother also has other factors that trigger hypertension in pregnancy.

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Based on research observations, both mothers with age at risk (<20 or >35 years) and age not at risk (20-35 years) are equally likely to experience hypertension in pregnancy. So, it is hoped that health workers can provide health education to anticipate complications in pregnancy, and mothers are expected to carry out regular ANC checks so that complications can be detected early.

Working women face role conflict. Women act as housewives who must first deal with family matters, husbands, children, and other matters relating to the household, on the other hand, women as workers who must complete their work in the workplace. This demand has the potential to cause working women to experience stress. Working women have dual roles as mothers as well as workers, so they are prone to stress. Pregnant women who work can experience stress caused by various factors originating from individual characteristics during pregnancy and related to the work they do (Sambara et al., 2010). The results of this study are in line with research conducted by Imaroh, Nugraheni, and Dharminto (2017), who found that there was a relationship between maternal employment status and hypertension in pregnant women where pregnant women with working status had a higher risk of 7.6 times suffering from gestational hypertension than pregnant women which do not work (Nugraheny & Prabandani, 2015). According to the researcher's assumptions, the predominance of hypertension in pregnancy in mothers who do not work can occur because, apart from work status factors, mothers also have other factors as triggers for hypertension in pregnancy, such as anxiety or problems experienced. Based on the observations of this study, both working and non-working mothers have the same chance of experiencing hypertension during pregnancy. So, it is hoped that husbands and families can support mothers to feel comfortable and calm in carrying out a pregnancy.

The immunological theory explains that the formation of blocking antibodies against placental antigens is not perfect in the first pregnancy to be the cause of hypertension in pregnancy. In pregnancies > 3, hypertension can occur because repeated deliveries risk pregnancy. When viewed from the incidence of hypertension in pregnancy, the safest gravidity is the second to third (Katsiki et al., 2011). This study's results align with the results of a study conducted by Pemiliana and Nasution (2019), which found a significant relationship between gravida status and hypertension in pregnancy. According to the researcher's assumption, the predominance of hypertension in pregnancy at risk gravida (1 or > 3) does not rule out the possibility of hypertension in pregnancy occurring in gravida (2-3) due to other risk factors such as obesity, age, or stress with the workload. Based on research observations, the incidence of hypertension in pregnancy can occur in primigravida, multigravida or grande-multi so it is hoped that health workers can provide health education to anticipate complications in pregnancy and mothers are expected to carry out regular ANC checks so that complications can be detected early.

The recommended pregnancy interval for pregnant women is 2-5 years. This is based on several considerations that will affect the mother and child. Pregnancy distance > 5 years has a great risk of hypertension in pregnancy, this is due to the increasing age of the mother, resulting in a degenerative process or weakening of the strength of the uterine and pelvic muscle functions which greatly affect the delivery process in the event of another pregnancy. Mothers who are > 35 years old in their bodies have experienced changes due to aging of the organs, decreased overall physical condition such as decreased kidney function, liver function, increased blood pressure and diabetes mellitus, so that it is possible to get diseases during pregnancy such as hypertension in pregnancy. pregnancy will increase. Women with a gestation interval of <2 years have a two-fold greater risk of dying than a longer gestational interval (Simarmata et al., 2012). The results of this study are in line with the results of research conducted by Yuliani and Hastuti (2019) that there is a relationship between pregnancy interval and hypertension in pregnancy. According to the researcher's assumption, the predominance of hypertension in pregnancy with risk pregnancy

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intervals (< 2 or > 5 years) because contraception can help space pregnancies so that mothers can prepare physically and mentally. While the incidence of hypertension in pregnancy at a distance of pregnancy is not at risk (2-5 years) can be caused by other factors such as obesity, age, or workload. Based on research observations, the incidence of hypertension in pregnancy can occur at a distance between risky and non-risk pregnancies, so it is hoped that health workers can provide health education to anticipate complications in pregnancy and mothers are expected to carry out regular ANC checks so that complications can be detected early.

Mothers who have experienced insulin resistance before pregnancy may experience vascular damage mechanisms characterized by chronic inflammation, atherogenic facilitation, and prothrombotic processes that will affect normal vascularization and normal placentation. While the pathophysiology of hypertension in pregnancy is abnormal placentation. This study's results align with the results of research by Kurniasari and Arifandini (2015) that there is a significant relationship between diabetes mellitus and the incidence of hypertension in pregnancy and a 14.375 times chance that mothers with a history of diabetes mellitus experience hypertension in pregnancy. According to the researcher's assumptions, mothers who experience diabetes mellitus are caused by poor lifestyles such as poor diet, lack of exercise or poor sleep patterns. It is hoped that health workers can provide health education to anticipate complications in pregnancy and mothers are expected to carry out regular ANC checks so that complications can be detected early.

High body mass index is a nutritional problem due to excess calories, excess sugar and salt which can be a risk factor for various types of degenerative diseases, such as diabetes mellitus, hypertension in pregnancy, rheumatic coronary heart disease and various types of malignancy (cancer) and other health disorders. This is related to excess fat deposits in the body (obesity) (Muflihan et al., 2011). The results of this study are in line with the results of research conducted by Prisusanti and Palandima (2017) which found a relationship between obesity and the incidence of hypertension in pregnancy. According to the researcher's assumption, the dominance of mothers with body mass index in the obesity category can occur due to poor diet and not balanced with exercise. Based on research observations, it is known that most respondents have a BMI in the obesity category so that it is expected that health workers can provide health education about a good lifestyle.

Most hormonal contraceptives contain the hormones estrogen and progesterone. Hormones in this contraceptive have been regulated in such a way that they are close to hormone levels in the acceptor's body, but side effects will occur when used for a long time. These two hormones facilitate sodium ion retention and water secretion, accompanied by an increase in plasma renin activity and the formation of angiotensin, it can trigger an increase in blood pressure (Setiawan, 2014). This study's results align with Suryani and Wulandari's research (2018) that contraception is associated with the occurrence of hypertension in pregnancy, and mothers who use hormonal contraception tend to develop hypertension in pregnancy 1.668 times greater than non-hormonal acceptors. According to the researcher's assumption, the dominance of hormonal contraceptive users is due to inaccurate information being heard by the mother, resulting in a reluctance or fear to use non-hormonal long-term contraception. It is hoped that health workers can provide health education regarding contraceptives and procedures for their use and convey them properly so that they are easily accepted by prospective family planning acceptors.

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CONCLUSION

The results of the bivariate test analysis showed that there was a significant relationship between relationship between age, occupation, gravida status, pregnancy interval, history of diabetes mellitus, obesity, and history of hormonal contraception with hypertension in pregnancy. It is hoped that health workers can further improve counseling for pregnant women regarding the danger signs and symptoms of hypertension in pregnancy so that it can be detected and anticipated early. Future research is expected to examine other factors that influence the incidence of hypertension in pregnancy.

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