International Journal of Nursing and Health Services (IJNHS)
http://ijnhs.net/index.php/ijnhs/home
Volume 4 Issue 4, August 20, 2021, pp: 406-413
e-ISSN: 2654-6310

Risk Factors of Gestational Hypertension in Brebes Area

Naomi Christina Hutabarat[1], Ni Putu Dian Ayu Anggraeni[2]

1. Universitas Triatma Mulya, Indonesia
2. Poltekkes Kemenkes Mataram, Indonesia

Artikel info

***Article history*:**
Received; March 01st, 2021
Revised: July 01st, 2021
Accepted: July 20th, 2021

Coresponden author:
Naomi Christina Hutabarat
Email:
christinahutabarat190@gmail.com

DOI:
http://doi.org.10.35654/ijnhs.v4i4.443

Abstract. Gestational hypertension is one of the three leading causes of maternal death after bleeding and infection. The study at to determine the risk factors among gestational hypertension. The analytic survey with a cross-sectional approach was applied in this study. The research was conducted from May 20th to June 28th, 2019, in the working area of three Public Health Centers in Brebes District. The research sample consisted of 80 samples (40 average pregnant women and 40 pregnant women with hypertension). The analysis in this research is descriptive. The results showed that pregnant women with a previous history of hypertension (OR 12.176; 95% CI 3.637-40.765) had 12.176 times the risk of developing gestational hypertension. Family history of hypertension (OR 4.333; 95% CI 1.271 – 14.777) had a 4.333 times risk of developing gestational hypertension. Other risk factors are third trimester gestational age and education with a p-value <0.05. No significant difference between primigravida and multigravida was found for gestational hypertension with a p-value > 0.05. This study can be used as a reference to reduce the incidence of gestational hypertension.

Keyword: Risk factor, Gestational Hypertension, Pregnant Women

INTRODUCTION

Gestational hypertension is a complication that often occurs in pregnancy, is a significant cause of maternal and perinatal mortality (1), and has other severe effects during childbirth. Hypertension in pregnancy occurs in 5% of all pregnancies (2). In the United States, the incidence of pregnancy with hypertension reaches 6-10%, where there are 4 million pregnant women and an estimated 240.000 accompanied by hypertension each year (3).

Hypertension is a risk factor for stroke, and the incidence increases in pregnancy, where 15% of maternal deaths in America are caused by intracerebral hemorrhage (Malha et al., 2018). This condition requires a particular management strategy for better results. Gestational hypertension affects both mother and fetus and can cause maternal and fetal morbidity and mortality if not managed properly (2).

The impact of gestational hypertension is on the risk of premature delivery, IUGR (intrauterine growth retardation), morbidity and mortality, bleeding during and after delivery. HELLP (hemolysis of elevated liver enzymes and low platelet count), DIC (disseminated intravascular coagulation), cerebral hemorrhage, and seizures also remaining as the other impact of gestational hypertension (4). Planning is necessary for the safety of the mother but risks to the baby. (5)

Basic Health Research (Riskesdas) in 2013, the prevalence of hypertension in pregnancy was 25.8% (6). Based on the results of a demographic health survey in Indonesia, the number of maternal mortality rates (MMR) has decreased but not significantly, seen from 2012 to 2015, where the number of cases dropped from 359 per 100,000 to 305 per 100,000. One of the provinces in Indonesia that contributes the most MMR is the province of Central Java (7). In general, the incidence of MMR in Central Java Province has decreased, seen from the number of MMR during the 2015-2019 period, from 111.16 to 76.9 per 100,000 live births (8).

The leading causes of maternal mortality in Indonesia in 2019 are bleeding gestational hypertension, and infection. This has changed the proportion in 2012, where the incidence of bleeding and infection tended to decrease, while gestational hypertension has increased from year to year (9,10). For Central Java province in 2019, gestational hypertension was ranked first with a percent (29,06 %) of 76.9 from 100,000 complaints Iran live (8).

Districts/cities in Central Java with the highest maternal mortality cases are Brebes, namely 37 instances, then Grobokan, 36 cases, and Banjarnegara, 22 cases. Data obtained from the health profile of Brebes district in 201 9, the number of maternal deaths has increased from 30 cases in 201 8 to 37 cases. The causes of death were bleeding (1,280 cases), gestational hypertension (1,066 cases), and infection (207 cases) (8).

The government's management in handling these cases is still curative, and preventive May be redundant, which aims to prevent complications during pregnancy. As for the pharmacological treatment given is methyldopa, nifedipine, labetalol, hydralazine, and prazosin(11).

OBJECTIVE

The study aimed to determine and predict the risk factors associated with gestational hypertension among mothers in the Brebes area.

METHOD

A cross-sectional study was conducted in this study. The population in this study was pregnant women with hypertension in the Brebes district public health center region from May 20th to June 28th, 2019. Forty gestational hypertension patients were recruited from three Public Health Centers areas in Brebes District, including *Wanasari* Health Center,

Sitanggal Health Center, and *Siwuluh* Health Center. The selection of samples was conducted using consecutive sampling (12).

The inclusion criteria of this study including 1) mothers aged 20-35 years, 2) living with gestational hypertension with gestational age ≥ 20 weeks, 3) having blood pressure more than 140/90 mmHg, without urine protein. Mothers with psychological pressure and pregnant women with normal BMI were excluded from this study.

The characteristic information of patients was collected through medical records and including blood pressure levels. Other information, including parity status, gestational age, education history, family history of intervention, were obtained from the interview process. This research was conducted after obtaining Ethical Evidence from the Health Research Ethics Commission RSUD Dr. Moewardi with numbers: 566/V/HREC/2019

RESULTS

Table 1 above shows that out of 80 pregnant women, 40 pregnant women have gestational hypertension. Analysis data can be seen in the following table.

Tabel. 1. Analysis of risk factors for gestational hypertension

Variable	Gestational Hypertension						p-value	OR	CI 95 %	
	Yes		Not		Amount				Lower	Upper
	n	%	n	%	n	%				
Parity										
Primigravida	7	53.8	6	46.15	13.0	16.2	0.762	1.202	0.362	3.955
Multigravida	33	49.3	34	50.75	67.0	83.8				
Gestational Age										
Trimester II	14	35.9	25	64.10	39.0	48.8	0.014*	0.323	0.130	0.804
Trimester III	26	63.4	15	36.59	41.0	51.2				
Education										
≤9 Tahun	28	66.7	14	33.3	42	52.5	0.002*	0.231	0.090	0.589
>9 Tahun	12	31.6	26	68.4	38	47.5				
History of Gestational Hypertension										
Yes	23	85.2	4	14.81	27.0	33.8	0.000*	12.176	3.637	40.765
Not	17	32.1	36	67.92	53.0	66.2				
Family History of Hypertension										
Yes	13	76.5	4	23.53	17.0	21.2	0.019*	4.333	1.271	14.777
Not	27	42.9	36	57.14	63.0	78.8				

*Level significance

The data showed that the highest number of pregnant women with a history of hypertension in previous pregnancies was 85.2%. The p-value was 0.000, indicating that there is a significant difference between pregnant women who have a history of gestational

hypertension compared to those who do not have a history of hypertension. The Odds Ratio (OR) results showed the risk of pregnant women with a history of hypertension to gestational hypertension was 12.17 times that who do not have a history of hypertension.

Of the 40 pregnant women with gestational hypertension, 76.5% have a family history of hypertension. There is a significant difference between pregnant women who have a family history of gestational hypertension and those who do not have a history of hypertension with a p-value of 0.019. The results of the Odds Ratio (OR) analysis with 95% Confidence Interval (CI) showed the risk of pregnant women with a history of hypertension to gestational hypertension with OR value = 4.333; 95% CI 1.271 – 14.777.

Of the 40 pregnant women with gestational hypertension, most of the respondents, 63.4% occurred in the third trimester of pregnancy. There is a significant difference between the third-trimester pregnant women and the second-trimester pregnant women with a p-value of 0.014. The results of the Odds Ratio (OR) analysis with 95% Confidence Interval (CI) showed the risk of third trimester gestational age for gestational hypertension with OR value = 0.323; 95% CI 0.13-0.804.

Of the 40 pregnant women with gestational hypertension, most 66.7% had education ≤9 years. There is a significant difference between pregnant women with ≤9 years of schooling compared with >9 years of schooling with a p-value of 0.002. The results of the Odds Ratio (OR) analysis with 95% Confidence Interval (CI) showed pregnant women with education ≤9 years were at risk of hypertension with OR value = 0.231; 95% CI 0.090 - 0.589.

The data showed that the highest number of mothers with gestational hypertension with multiparity parity was 53.8%. There is no significant difference between primates and multiparas with a p-value of 0.762.

DISCUSSION

History of Gestational Hypertension

In this study, pregnant women who had a history of hypertension had a 12,176 times greater risk of developing gestational hypertension than pregnant women who did not have a history of hypertension. It was in line with a study that found a significant relationship between the history of maternal pre-eclampsia and the risk of pre-eclampsia with a p-value = 0.01 (13). Women who have had pre-eclampsia in a previous pregnancy or had hypertension for at least four years have a greater risk of developing pre-eclampsia (14).

It was similar to Surinati's study found a significant relationship between a history of hypertension. The incidence of pre-eclampsia with a p-value <0.05 and an OR value of 2.065 (15). A previous study reported a significant effect on hypertension history with pre-eclampsia incidence with p<0.001 and OR was 6.22. This shows that mothers who have a history of hypertension are at risk of experiencing pre-eclampsia by 6,22 times than mothers who have no history of hypertension. (16).

A history of hypertension is a risk factor for pre-eclampsia (17,18) and can increase maternal morbidity and mortality (19). The specific impact of pregnancy with a history of hypertension is the risk of severe pre-eclampsia, which may be almost 25% in women. Hypertension can cause ventricular hypertrophy and cardiac decompensation, cerebrovascular injury, and intrinsic renal damage. This can cause mild pre-eclampsia in previous pregnancies

to become severe pre-eclampsia during subsequent pregnancies so that it can trigger eclampsia. (20).

In contrast to research Rufaida, 2019 there is no relationship between the history of maternal pre-eclampsia and the incidence of pre-eclampsia at the Kresek puskesmas with a value of p> 0.05. (21)

Family History of Hypertension

In this study, pregnant women who have a family history have a 4.333 times more risk of developing gestational hypertension than pregnant women who do not have a family history of hypertension.

The results of this study are in line with research (Evitasari, 2020), where there is a relationship between family history and the incidence of gestational hypertension in pregnant women with a value of p = 0.000 (p <0.005) (Evitasari and Nuraeni, 2020). If one of our parents has hypertension, we have a 25% risk of developing hypertension. If both of our parents have hypertension, our chances of getting the disease are 60%. Families who have hypertension increase the risk of hypertension 2- 5 times. (22).

Another study states that women with a positive family history of hypertension have 7 times the chance of experiencing pre-eclampsia/eclampsia (23).

Family history with hypertension is the most dominant risk factor for pre-eclampsia in pregnant women (AOR: 5.04, 95% CI: 2.66, 9.56). Another study showed that regarding medical disease factors, 17.6% in the case group and 3.8% in the control group had positive hypertension with a pre-existing history, pregnant women who had a family history of hypertension were 5 times more likely to have hypertension in pregnancy. (24)

Hypertension tends to be a hereditary disease. If both of our parents have hypertension, there is a 60% chance of someone getting the disease (25).

Gestational Age

In this study, the third trimester of pregnancy has a 0,323 risk of developing gestational hypertension than the second trimester of pregnancy. Hypertension is a medical problem that often arises during pregnancy and can cause complications in 2-3% of pregnancies (26).

Gestational age is a risk factor for gestational hypertension and often occurs in the 3rd trimester of pregnancy or before delivery. This occurrence harms the immune system, including the placenta, which provides nutrition for the baby. The results of a study at a hospital in Southeast Sulawesi showed that pregnant women in the third trimester were prone to pre-eclampsia 2,975 times compared to pregnant women with pregnancy trimesters 1-2(27).

Facts related to gestational hypertension increase with more pregnancy, supporting the theory of placental implantation area ischemia with various symptoms. Pregnancy-induced hypertension has a greater risk of premature labor, IUGR (intrauterine growth retardation), morbidity and mortality, acute renal failure, acute liver failure, bleeding during and after delivery, HELLP (hemolysis elevated liver enzymes and low platelet count), DIC (disseminated intravascular coagulation), cerebral hemorrhage and seizures (4).

Education

In the study, pregnant women with ≤9 years of education had a 0.231 times risk of

developing gestational hypertension than pregnant women with >9 years of education. The results are consistent with studies in 2012 and (2016) showed that most pregnant women with low education with hypertension are highly educated.daripada yang berpendidikan tinggi (28,29). This is because highly educated pregnant women will give a more rational response than those who are not educated. Low educated pregnant, childbirth, and childbirth mothers will influence the receipt of information about preventing hypertension in pregnancy. It will be limited and will have an impact on the occurrence of pre-eclampsia. The higher the education, the better the ability to obtain and absorb information, especially about hypertension in pregnancy, to be prevented and minimized.

Parity

In this study, there was no difference between Primigravidas and multiparas with a p-value > 0.05. All women are at risk of developing pre-eclampsia during pregnancy, childbirth, and puerperium. Preeclampsia does not only occur in primigravidas / primiparous. In multigravidas who experience excessive uterine stretching can cause excessive ischemia, leading to pre-eclampsia (30). Every pregnancy, there will be a stretch of the uterus. If the pregnancy continues, the uterus will weaken so that it is feared that complications will occur during pregnancy, childbirth, and even postpartum (18)(31).

According to research conducted by Rufaida in 2017, there is no relationship between parity and the incidence of gestational hypertension (16). This result is possible that many parity respondents have ideal parity (2-3). The immunological theory states that primigravidas have a greater risk of developing pre-eclampsia when compared to multigravidas. In the first pregnancy, antibodies block against placental antigen often occurs so that it causes hypertension to the occurrence of pregnancy poisoning (32).

In contrast to Rahmani's 2015 study, primigravida was the parity with a higher risk of developing hypertension. In Primigravida, there is an immunologic mechanism for the formation of antibody inhibition carried out by HLA-G (human leukocyte antigen G) against placental antigens so that it is not fully formed, which causes the trophoblast implantation process to the maternal decidual tissue to be disrupted. Primigravida is also prone to experiencing stress in the face, stimulating the body to secrete cortisol, which increases the sympathetic response so that cardiac output and blood pressure will also increase (33,34).

Another study stated that multigravida pregnant women with parity > 1 had a 7-fold risk of developing gestational hypertension al. This happens because of psychological stress and physical boredom, so there is a risk of hypertension in pregnancy. (24). A previous study showed that multigravida women with a history of chronic hypertension have a higher prematurity risk than other pregnant women (35).

CONCLUSION

Based on data analysis and discussion, this study concludes that pregnant women with a previous history of hypertension (OR 12,176; 95% CI 3,637-40,765) had 12,176 times the risk of developing gestational hypertension. Family history of hypertension (OR 4,333; 95% CI 1,271 – 14,777) had a 4,333 times risk of developing gestational hypertension. Other risk factors are the third trimester of pregnancy and education with a p-value <0.05. And no significant difference between primigravida and multigravida was found for gestational hypertension with a p-value > 0.05.

STRENGTH AND LIMITATION

This study describes the risk factors for pregnant women with gestational hypertension. The limitation of this study is that the sample size is too small. However, this study can be used as a reference to reduce the incidence of gestational hypertension. Researchers hope that the Puskesmas can conduct early screening for hypertension in pregnancy. Future researchers can research by utilizing local wisdom, one of which is red ginger as a non-pharmacological option and complementary therapies, such as Prenatal Yoga, Acupressure, Aromatherapy, to reduce blood pressure in mothers with hypertension.

REFERENCE

(1) Ryan RM, McCarthy FP. Hypertension in pregnancy. Obstet Gynecol Reprod Med. 2018;28(5):141–7.
(2) Karthikeyan VJ. Hypertension in pregnancy. Nadar, S Lip, GYH, Hypertens. 2015;2.
(3) Malha L, Podymow T, August P. SPECIAL POPULATIONS AND SPECIAL SITUATIONS. Hypertens A Companion to Braunwald's Heart Dis E-b. 2017;361.
(4) Khosravi S, Dabiran S, Lotfi M, Asnavandy M. Study of the prevalence of hypertension and complications of hypertensive disorders in pregnancy. Open J Prev Med. 2014;4(11):860.
(5) Coutts J. Pregnancy-induced hypertension-the effects on the newborn. In. Pre-eclampsia, Etiology and Clinical Practice. Eds. Lyall F, Belfort M. Cambridge: Cambridge University Press; 2007.
(6) Balitbang Kemenkes RI. Riset Kesehatan Dasar; RISKESDAS. Jakarta Balitbang Kemenkes RI [Internet]. 2013; Available from: internal-pdf://167.234.183.212/Laporan_Riskesdas2013.pdf
(7) Kementerian Kesehatan Republik Indonesia SJ. Profil Kesehatan Indonesia 2017. In: Health Statistic [Internet]. Jakarta : Kementerian Kesehatan RI; 2018. Available from: internal-pdf://0240282812/profil-kesehatan-Indonesia-2015.pdf
(8) Dinas Kesehatan Provinsi Jawa Tengah. Profil Kesehatan Provinsi Jateng Tahun 2019. Dinas Kesehat Provinsi Jawa Teng. 2019;3511351(24):273–5.
(9) Kemenkes RI. Profil Kesehatan Indonesia Tahun 2019. Vol. 42, Kementrian Kesehatan Repoblik Indonesia. 2019. 97–119 p.
(10) Nasional BK dan KB, Statistik BP, Indonesia, Republik KK. Survei Demografi dan Kesehatan Indonesia (SDKI) 2012. 2013.
(11) Summary G. Hypertensive Disorders in Pregnancy. 2013;(May).
(12) Satroasmoro I. Dasar-Dasar Metodologi Penelitian Klinis. 5th ed. Jakarta: Sagung Seto; 2014.
(13) Sutrimah, Mifbakhudin M, Wahyuni D. Faktor-Faktor Yang Berhubungan Dengan Kejadian Preeklampsia Pada Ibu Hamil Di Rumah Sakit Roemani Muhammadiyah Semarang. J Kebidanan [Internet]. 2015;4(1):1–10. Available from: https://jurnal.unimus.ac.id/index.php/jur_bid/article/view/1383
(14) Cunningham FG; Leveno KJ; Hauth JC; Bloom SL; Rouse DJ; Spong CY. Williams Obstetric. In: 23rd ed. New York: McGraw-hill Companies; 2010.
(15) Surinati I, Juliawan KD. RIWAYAT HIPERTENSI PADA KEHAMILAN SEBELUMNYA DENGAN PREEKLAMPSIA PADA IBU BERSALIN. J Gema Keperawatan [Internet]. 2017;10(2):138–42. Available from: http://repository.poltekkes-denpasar.ac.id/id/eprint/7079%0A
(16) Aini RN, Sulistyoningtyas S, Hani U. Hubungan usia, gravida, dan riwayat hipertensi dengan kejadian kehamilan preeklamsia di rsud wonosari tahun 2015. 2016;

(17) Saifuddin AB, Rachimhadhi T, Winkjosastro GH. Ilmu Kebidanan Sarwono Prawirohardjo Ed. 4 Cet. 3. Jakarta PT Bina Pustaka Sarwono Prawirohardjo. 2010;
(18) Wiknjosastro H, Saifuddin AB, Rachimhadhi T. Ilmu bedah kebidanan. Jakarta PT Bina Pustaka. 2010;
(19) Bobak IM, Lowdermilk DL, Jensen MD, Perry SE. Buku ajar keperawatan maternitas. Jakarta Egc. 2005;
(20) Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, et al. Obstetrícia de Williams. McGraw Hill Brasil; 2016.
(21) Evi Rufaida, Septy Ariani AS. Factors Pregnant Women With the Incidence of Preeclampsia At Puskesmas Kresek in 2017. J Kesehat. 2019;8(1).
(22) Corwin EJ. Buku saku patofisiologi. Buku Kedok. Sistem Kardiovaskuler. Jakarta : EGC: EGC; 2009.
(23) Tessema GA, Tekeste A, Ayele TA. Preeclampsia and associated factors among pregnant women attending antenatal care in Dessie referral hospital, Northeast Ethiopia: a hospital-based study. BMC Pregnancy Childbirth. 2015;15(1):1–7.
(24) Hinkosa L. BMC Pregnancy and Childbirth Risk factors associated with hypertensive disorders in pregnancy in Nekemte referral Hospital, from July 2015 to June 2017, Ethiopia: a case-control study." hypertensive disorders in pregnancy in Nekemte referral Hospital. BMC Pregnancy Childbirth. 2017;9(July 2015):1–9.
(25) Evitasari D, Nuraeni R. Faktor-Faktor Yang Berhubungan Dengan Kejadian Sumberjaya Kabupaten Majalengka. Pros Senantias. 2020;1(1):1203–14.
(26) Sarlis N. Hubungan Pola Makan Dengan Risiko Hipertensi Dalam Kehamilan Pada Ibu Hamil Trisemester III DI Puskesmas Rejo Sari Pekan Baru Tahun 2017. Ensiklopedia J [Internet]. 2018;1(1):147–52. Available from: https://media.neliti.com/media/publications/271780-hubungan-pola-makan-dengan-risiko-hipert-ab7d09c4.pdf
(27) Afridasari SN, Saimin J, Sulastrianah S. Analisis Faktor Risiko Kejadian Preeklampsia. Medula. 2013;1(1).
(28) Sirait AM. Prevalensi hipertensi pada kehamilan di Indonesia dan berbagai faktor yang berhubungan (Riset Kesehatan Dasar 2007). Bul Penelit Sist Kesehat. 2012;15(2):21333.
(29) Sari NK, Hakimi M, Rahayujati TB. Determinan gangguan hipertensi kehamilan di Indonesia. Ber Kedokt Masy. 2016;32(9):295–6.
(30) Suwanti EPW, Safitri NA. Hubungan tekanan darah dan paritas dengan kejadian preklampsia di ruang bersalin rsup ntb tahun 2012. Media Bina Ilm. 2012;8(1):25–30.
(31) Nurfatimah N, Mohamad MS, Entoh C, Ramadhan K. Gambaran Faktor Risiko Kejadian Hipertensi dalam Kehamilan pada Ibu Hamil Trimester III. Poltekita J Ilmu Kesehat. 2020;14(1):68–75.
(32) Manuaba IBG. Ilmu kebidanan, penyakit kandungan & keluarga berencana untuk pendidikan bidan. In EGC; 1998.
(33) Rohmani A, Setyabudi MT, Puspitasari DR. Faktor resiko kejadian hipertensi dalam kehamilan. J Kedokt Muhammadiyah. 2015;4.
(34) Djamil RM. Hubungan Status Gravida dan Usia Ibu terhadap Kejadian. J Penelit Sist Kesehat. 2015;4(1):212–7.
(35) Subki AH, Algethami MR, Baabdullah WM, Alnefaie MN, Alzanbagi MA, Alsolami RM, et al. Prevalence, risk factors, and fetal and maternal outcomes of hypertensive disorders of pregnancy: a retrospective study in Western Saudi Arabia. Oman Med J. 2018;33(5):409.