International Journal Of Health, Engineering And Technology (IJHET) *E-ISSN 2829 - 8683*
Volume 1, Number 2, July 2022, *Page. 310 - 320*
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Factors Associated with Hypertension in Pregnant Women at Sukarejo Village, Tanjung Jabung Barat District

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Abstract

Hypertension in pregnant women is a factor in the occurrence of illness and death in the mothers or fetus. The causes of hypertension during pregnancy are influenced by various factors including maternal age, family history of hypertension, obesity, physical activity and parity. The purpose of this study was to analyze the factors associated with hypertension in pregnant women at Sukarejo Public Health Center, Tanjung Jabung Barat District. The design of the research was Cross Sectional. The population was all pregnant women in Sukarejo Village, Tanjab Barat Regency with a sample of 71 pregnant women (total sampling). The independent variables are maternal age, maternal occupation, parity, family history of hypertension, food consumption patterns and physical activity. Data collection was carried out by interview using questionnaires and measurements. The data obtained were analyzed by univariate and bivariate analysis using the Chi Square test. The proportion of hypertension in pregnant women is 54.9%. The proportion of mothers who had a family history of hypertension among pregnant women with hypertension was 86.2%, the proportion of poor food consumption patterns among pregnant women with hypertension was 69.7% and the proportion of active mothers in pregnant women with hypertension was 87.5%. Statistical analysis showed a relationship between family history of hypertension (p = 0.000, PR = 2.58), diet (p = 0.036, PR = 1.65) and physical activity (p = 0.000, PR = 0.43) with hypertension in pregnant women. The dominant cause of hypertension in pregnant women is a family history of hypertension. Pregnant women need to always check blood pressure and pregnancy checks so that they can detect early signs of hypertension.

Keywords: Hypertension, Pregnant Women, Risk Factors.

INTRODUCTION

Hypertension is said to be the Silent Killer, because in this disease often arise without any signs. Hypertension or known high blood pressure is systolic blood pressure (upper blood pressure) > 140 mmHg and diastolic blood pressure (lower blood pressure) > 90 mmHg. A total of 9.4 million deaths each year worldwide are caused by hypertension, of which 14% of these deaths occur in pregnant women who have hypertension (W.H.O., 2013). Hypertension experienced by pregnant women is a factor in the occurrence of pain and death globally that occurs in the mother and fetus. The direct cause of maternal death is 80% due to bleeding that usually occurs after childbirth (25%), abortion (13%), hypertension in pregnant women (12%), obstructed labor (8%) and other causes (7%) (KemenkesRI, 2014).

Health profile data of Jambi province in 2017 showed the prevalence of hypertension in women (27.30%) is greater than in men (22.48%). Judging from the data, West Tanjab Regency also has the highest prevalence in women at 13.16% compared to men at 10.38%. The prevalence in women increased from 2017 by 13.6% to 50.73% in 2018 (DinkesJambi, 2018, 2019). Based on data from the Health Office of West Tanjab Regency, the prevalence of hypertension in pregnant women in West Tanjab Regency in 2018 was 15% and increased in 2019 by 18%. Tanjung Jabung Barat Regency has 16 villages, where the highest incidence of hypertension in pregnant women in 2019 is located in Sukarejo village with a proportion of 30%, while the proportion of hypertension in pregnant women in 2018 was 2.71%. Hypertension in pregnant women in Sukarejo village has experienced a fairly high increase from 2018 to 2019.

The absence of signs and symptoms as an early warning on the occurrence of hypertension, making this disease a dangerous disease, especially in pregnant women (P. C. Sihotang, 2016). Hypertension that occurs in women is greater due to some carrier elements, much less often it occurs with pregnant women. Pregnancy is a sensitive condition and can cause complications in 2-3% of pregnancies. Hypertension in pregnancy is one of the three causes of maternal pain and death apart from infection and bleeding (Rambe, 2018).

RESEARCH METHODS

This study uses quantitative research design with cross sectional design. Cross sectional research is a research study used to describe and explain the factors causing hypertension in pregnant women in Sukarejo Village, Tanjung Jabung Barat Regency. The research was conducted in Sukarejo Village, West Tanjung Jabung regency. The study time runs from October 2019-November 2020.

RESULTS AND DISCUSSION

In Table 1. shows that most pregnant women aged 20-35 years (85.9%), the majority of pregnant women's education is upper secondary education (40.8%). Judging by the work, most pregnant women have the status of Housewives (77.3%). In addition, as many (53.8%) pregnant women are in the trimester III of gestation.

Table 1. Distribution of respondents based on sociodemographic characteristics in Sukarejo Village, West Tanjung Jabung regency

Characteristics	Amount	Percentage (%)
Mother's Age		
20-35 year	61	85,9
> 35 year	10	14,1
Education Of Pregnant Women	11	15,5
End SD/MI	28	39,4
End SMP/MTs	29	40,8
End SMA/MA	3	4,2
End D1-D3/PT/S1		
Occupation Expectant Mother		
Does Not Work	68	95,8
Working	3	14,4
Gestational Age		
Trimester II	33	46,6
Trimester III	38	53,8

In Table 2. it is known that more pregnant women have hypertension (54.9%). Parity in more at-risk pregnant women (52.1%) than in parity in Non-at-risk pregnant women (47.9%), most pregnant women had no family history of hypertension (59.2%). Meanwhile, for food consumption patterns of pregnant women, most have a good diet or rarely consume foods that can cause high blood pressure (53.5%) and for physical activity in pregnant women, more pregnant women who have light activity (66.2%) or more sedentary behavior.

Table 2. Distribution of respondents based on research variables in Sukarejo Village, West Tanjung Jabung regency

Variable	Amount	Percentage (%)
Blood Pressure		
Hypertension	39	54,9
Not Hypertension	32	45,1
Parity		
Risk	37	52,1
No Risk	34	47,9
HT family history		
Any	29	40,8
No	42	59,2
Food Consumption Patterns		
Often	38	53,5
Rarely	33	46,5
Physical Activity		
Weight	24	33,8
Lightweight	47	66,2

Table 3. Results of bivariate analysis of factors affecting Hypertension in pregnant women in Sukarejo Village, Tanjung Jabung Barat Regency

Variable	Hypertension of pregnant women				Total		PR (95% CI)	*P-Value*
	Yes		No					
	n	%	n	%	n	%		
Mother's Age								
Risk	7	70	3	30	10	100	1,33(0,83-2,13)	0,495
No Risk	32	52,5	29	47,5	61	100	1	
Mom's Job Pregnant								
Does Not Work	36	52,9	32	47,1	68	100	0,52(0,42-0,66)	0,312
Work	3	100	0	0	3	100	1	
Parity								
Parity at risk	19	51,4	18	48,6	37	100	0,87(0,57-1,33)	0,694
Parity is not risky	20	58,8	14	41,2	34	100	1	
History Hypertension Family								
Any	25	86,2	4	13,8	29	100	2,58(1,64-4,06)	0,000*
No	14	33,3	28	66,7	42	100	1	
Consumption Patterns Food								

Often	26	68,4	12	31,6	38	100	1,73(1,08-2,79)	0,027*
Rarely	13	39,4	20	60,6	33	100	1	
Physical Activity								
Weight	21	87,5	3	12,5	24	100	2,28(1,54-3,38)	0,000*
Lightweight	18	38,3	29	61,7	47	100	1	

Table 3. studies show that the proportion of maternal age at risk in hypertensive pregnant women (70%) is greater than the age of mothers not at risk (52.5%). Maternal age at risk has a risk of 1.33 times to develop hypertension during pregnancy compared with the age of the mother is not at risk (PR=1.33; 95% CI 0.83 – 2.14), but not significantly proven p-value = 0.495.

Based on the results of the analysis showed that the proportion of working mothers in hypertensive pregnant women (100%) is greater than that of non-working pregnant women (52.9%). Maternal work is a protective factor against the occurrence of hypertension during pregnancy (PR=0, 52; 95% CI 0.42 – 0.66), the results of statistical tests obtained p-value = 0.312.

The results showed that the proportion of parity of mothers who are not at risk in hypertensive pregnant women (58.8%) is greater than the parity of mothers at risk (51.4%). Parity is a protective factor against the occurrence of hypertension during pregnancy (PR=0.87; 95% CI 0.57–1.33), the results of statistical tests obtained p-value = 0.694.

Judging from the family history of hypertension, the proportion of mothers who have a family history of hypertension in hypertensive pregnant women (86.2%) is greater than that of mothers who do not have a family history of hypertension (33.3%). The presence of a family history of hypertension has a risk of 2.58 times to get hypertension during pregnancy compared with no family history of hypertension (PR=2.58; 95% CI 1.64–4.06), and proved significantly p-value = 0.000.

Based on the pattern of food consumption in pregnant women, showed the proportion of poor food consumption patterns in hypertensive pregnant women (68.4%) is greater than the good diet (39.4%). Poor food consumption patterns have a risk of 1.73 times to get hypertension during pregnancy compared with good food consumption patterns (PR=1.73; 95% CI 1.08–2.79), and proved significantly p-value = 0.027.

Related to physical activity in pregnant women, showed that the proportion of mothers with heavy activity in hypertensive pregnant women (87.5%) is greater than that of mothers with light activity (38.3%). Heavy physical activity has a risk of 2.28 times to develop hypertension during pregnancy compared with light physical activity (PR=2.28; 95% CI 1.54–3.38), and proved significantly obtained p-value = 0.000.

Discussion

Based on the results of research conducted by Rafsanjani et al. there are still mothers who pay less attention to the health of their pregnancy, seen from the aspect of diet, the desire to check pregnancy and still low understanding of pregnant women related to pregnancy. Still found pregnancy at a young age, diet and do not understand the conditions in pregnancy so do not care about the needs in pregnancy. Hypertension or high blood pressure can occur due to pregnancy, and will return to normal when the pregnancy ends. However, hypertension may not return to normal after the baby is born this condition will be more severe if before pregnancy the mother already has hypertension (Rafsanjani et al., 2019).

If the mother has done routine pregnancy checks, routine blood pressure checks, and other pregnancy health measures, it will be easier to help in preventing pregnancy problems such as hypertension. So it can reduce hypertension during pregnancy. Conducting early screening during pregnancy is an important step as early diagnosis and management in pregnant women who have hypertension, especially in pregnant women who have high risk factors. Pregnant women should always be side by side with health workers both at the health center, doctors, midwives who accompany during the pregnancy process that is in accordance with health service standards.

Age with hypertensive disease

In the findings of the results in the field, hypertensive pregnant women are more experienced by pregnant women who have no risk age compared to the age of pregnant women at risk. In this study, pregnant women who are not at risk are 20-35 years old, while those who are categorized as pregnant women at risk are <20 and > 35 years old.

This study is in line with Wahyuni's research which states that there is no significant relationship between age and the incidence of preeclampsia in pregnant women at Roemani Muhammadiyah Hospital Semarang (0.768). This is possible because most of the mother's age is at reproductive age.(6) however, this study is not in line with the research of Umi Nur Fajri (2019) which states that there is a relationship between maternal age and hypertension in pregnant women in Banjarnegara Regency (0.010). The results of this study prove the theory stating that age becomes a risk factor in the occurrence of pregnancy hypertension (Sukfitriyanty, 2016).

Reproductive age for a woman between the ages of 20 to 35 years, at this age is the safest stage when pregnant and giving birth because at this age the risk of experiencing pregnancy complications is lower. Age under 20 years and over 35 years is the age of high risk in the occurrence of complications during pregnancy. At the age of less than 20 years the size of the uterus has not reached a normal size to experience pregnancy, so it can be possible for the occurrence of disorders in pregnancy to be greater such as the occurrence of preeclampsia. At the age of over 35 years there is a degenerative process that results in structural and functional changes in peripheral blood vessels that are responsible for changes in blood pressure, so at this age are more prone to preeclampsia (Widyartha et al., 2016).

On the findings of the results in the field, the average pregnant women in Sukarejo Village are in the age group is not at risk. However, 39 pregnant women in Sukarejo village experienced hypertension. That means, the cause of Hypertension in pregnant women is not only caused by age alone. But there are other factors such as diet, physical activity, and heredity or family history of hypertension.

Employment of mothers with hypertensive disease

According to research that pregnant women who work are more prone to experiencing severe preeclampsia because at the time of pregnant women who work have higher stress levels compared to pregnant women who do not work. With the high level of stress, it causes high blood pressure in pregnant women, thereby triggering preeclampsia (Imaroh, 2018).

This study is in line with the Fatwa study (2019) which states that there is no relationship between work status and the incidence of hypertension in pregnant women at the Kalijudan Health Center, Surabaya City (0.314). Pregnant women with working status are at risk of hypertension 0.77 times compared to non-working pregnant women (PR=0.77 ; 95% CI=0.30-1.93) (Isnaniar, 2019). This study is not in line with Fuzia's research (2018) which states that there is a relationship between work and the incidence of hypertension in pregnant women in Bekasi city hospital (0.003). Women who work outside the home have a higher risk compared to mothers who work at home (Fuzia, 2018).

Work is a bridge to earn money in order to make ends meet. Green in his theory says that a person's work is a factor that can influence a person's behavior. According to Newburn

(2003)working mothers during pregnancy increase the risk of preeclampsia. Stress experienced by pregnant women at work is risky or can trigger high blood pressure. Preeclampsia occurs if a pregnant woman's blood pressure rises very high (Green, 2015).

In the results of the study can be seen that the majority of mothers are housewives or not working. Pregnant women who are working need to reduce the work stress they experience. Activity in a person's work can affect the work of muscles and blood circulation. Once it happens to a pregnant woman, blood circulation in the body can cause changes along with increasing gestational age resulting from the pressure of the enlarged uterus. The increasing age of a person's pregnancy will affect the consequences of the work of the heart that is increasing in order to meet the needs during the pregnancy process.

In pregnant women who do not work allows for activity is not too heavy and also does not have a psychological burden so as not to spur the occurrence of stress that can cause hypertension. That way preeclampsia does not occur in pregnant women who do not work.

Parity with hypertensive disease

Parity 1 is related to the lack of experience and knowledge of mothers in care during pregnancy, parity 2-3 is the safest parity, parity more than 3 is parity at risk because it has decreased reproductive organs, pregnant women who have just become mothers have a risk of 6 to 8 times more susceptible to hypertension. The first pregnancy is at risk of hypertension (3.9%), the second pregnancy (1.7%) and the third pregnancy (1.8%) which has been recorded in the new England journal of medicine (DinkesJambi, 2018).

This research is supported by Trisna research (2019) which states that there is no significant relationship between parity and the incidence of preeclampsia in pregnant women at Panembahan Senopati Bantul hospital (0.380). Parity is the number of live births or the number of children a woman has. Parity factors have an influence on childbirth because pregnant women are at higher risk of interruption during pregnancy (Trisna, 2018). The results of this study were supported by Situmorang (2016) statistical test results obtained p value = 0.765 which means there is no relationship between parity with the incidence of preeclampsia in Poli KIA RSU Anutapura Patu (Situmorang, 2016).

However, in contrast to the study of Putri Diah Pemiliana (2018) which states that there is a relationship between parity of pregnant women with hypertension in pregnancy at the Puskesmas Setabu of North Kalimantan province (0.024) (Pemiliana et al., 2019). Parity YAG ideal is 2-3, mothers who have children more than 5 have a tendency to occur hypertension pregnancy 2 times greater. However, it is possible that mothers with parity 2-3 have hypertension due to genetic / hereditary or other factors that affect the occurrence of hypertension (Singh et al., 2017).

Parity is one of the most common causes of preeclampsia in pregnant women. The younger the mother's gestational age (primipara) or the more mothers give birth (grandemultipara) will be more likely for pregnant women to experience preeclampsia. This can be caused by the first pregnant mother and in a state of pregnancy and young age at risk of injury to the onset of preeclampsia caused by immature reproductive organs to get pregnant while in women who have repeated childbirth is caused due to the condition of the body and health that becomes weak so that the possibility of preeclampsia is greater (Sari, 2017).

The results of the study occurred because in this study most of them had no risk. pregnant women who are not at risk of parity are more compared to pregnant women who are at risk of parity, this can happen because the average pregnant woman who is a respondent is in the 2nd or 3rd pregnancy, this causes parity not to be a factor in the occurrence of hypertension in pregnant women in Sukarejo Village, Tanjung Jabung Barat Regency.

The risk of hypertension can occur in primigravida and multigravida mothers. For example, in pregnant women and childbirth more than three times. Overstretching of the uterus causes

ischemia (lack of blood flow in certain parts of the body) which can lead to preeclampsia.

Family history of hypertension with hypertensive disease

In this study, pregnant women who experience hypertension are more than those who do not experience hypertension, this is because the average pregnant woman has experienced hypertension before either a history of hypertension that is owned at the time before pregnancy or during previous pregnancies. In addition, many of the respondents had a family history of hypertension, which is someone who has a family history of hypertension is most likely to experience hypertension.

In line with the Makmur & Fitrihadi study (2020) which states that there is a relationship between a family history of hypertension with factors that affect hypertension in pregnancy at Puskesmas X (0.007) (Makmur & Fitriahadi, 2020). Triyanto (2014) said the risk of suffering from hypertension is high if in a family has a history or hereditary hypertension (Triyanto, 2014). Family history is a problem that can lead to hypertension. If one of the parents has a history of hypertension then throughout his life will have a 25% chance to experience hypertension (Bobak, 2004; Prawirohardjo, 2008).

Supported by research from Imaroh (2018) which also states that there is a significant relationship between family history of hypertension and the incidence of hypertension (0.015) (Imaroh, 2018). Family history of hypertension is one of the factors to the occurrence of hypertension in pregnancy. Pregnant women who have a history of hypertension should routinely check their pregnancy at health workers to control blood pressure and maintain a healthy lifestyle, because with a healthy lifestyle and diligent pregnancy checks can prevent early on the occurrence of hypertension in pregnancy, especially for pregnant women who have a family history of hypertension (Setyawati, 2015; Walyani, 2015).

Different research results were obtained in the Simamora study (2019) which stated that there was no significant relationship between family history of hypertension and hypertension in pregnant women. The strength of the relationship is (PR: 1.55, 95% CI: 0.77-3.12) (Simamora et al., 2019).

This is the same as the theory put forward by sarwono about a history of hypertension that an increased risk of preeclampsia can occur in mothers who have a history of chronic hypertension. One of the factors associated with preeclampsia is a history of chronic hypertension or previous hypertensive vascular disease. This is also in line with the theory put forward by Beevers (2002) that cases of hypertension are 70% to 80% inherited from their parents. If there is a history of hypertension in both parents, the estimated occurrence of hypertension is greater for someone whose both parents suffer from hypertension (Alhuda, 2018).

Racial and genetic factors are one of the important elements because they favor the occurrence of a fundamental incidence of chronic hypertension. Factors of a family history of hypertension to hypertension in pregnancy can be minimized by counseling every pregnant woman especially in pregnant women with a family history of hypertension, in order to pay more attention to her lifestyle, and diligently check her pregnancy to health workers.

Food consumption patterns with hypertension

Food consumption patterns have a role in the occurrence of hypertension in pregnant women, in addition to food consumption patterns can cause hypertension, uncontrolled food consumption patterns can also cause health problems in the mother and fetus.

The results of this study are supported by research from Sihotang (2016) which revealed that there is a significant relationship between diet and the incidence of hypertension in pregnant women at the Biromaru Health Center. The dietary needs of pregnant women per trimester vary according to their needs (P. C. Sihotang, 2016). According Suhardjo (2003), diet is a way a person or group to choose or consume as a reaction to the influence of physiology, psychology, culture, and social. Diet is also referred to as food habits. Diet is also defined as a system, a way of working or trying to do

something. When doing something gets the results achieved or determined from doing these activities, so can diet determine health for our body. Diet that should be good for hypertensive patients according to the Ministry of Health in 2013 is to limit the intake of foods that can cause hypertension, such as salt intake as much as 6 grams per day (Suhardjo, 2003).

According to researchers Hami mother in the village Sukarejo diet mostly unfavorable such as containing excess fat, the use of salt or excessive sodium into the cooking and pregnant women there on average often consume salted fish. The habit of consuming foods with high sodium makes the mother pay less attention to diet while pregnant. In addition, lack of maternal knowledge about healthy foods is also the cause of some pregnant women affected by hypertension.

The dietary needs of pregnant women in each trimesternya different has been adjusted to their needs. A mother's habit of consuming fatty and salty foods is often associated with blood pressure because excess fat consumption can cause atherosclerosis (accumulation of fat, cholesterol, and other substances) which is a factor causing hypertension while excessive salt consumption causes blood circulation to be disturbed due to increased fluid deposits in the blood, so that the heart will work stronger and eventually a person's blood pressure will be high. Atherosclerosis causes thickening in the walls of the arteries so that the heart works stronger in pumping blood and ultimately lead to a person's blood pressure becomes high in accordance with the activity of the heart in pumping blood.

Physical activity with hypertensive disease

The activity of a worker can affect the work of muscles and blood circulation. Similarly, if it happens to a pregnant woman, blood circulation in the body can cause changes to coincide with the increase in the mother's gestational age due to pressure from the enlarged uterus. The increasing gestational age of the mother, it will have an impact on the effect of the work of the heart that is increasing as a form to meet the needs during the pregnancy process. Therefore, doing physical activity or doing consistent work can be done, but the work is not too burdensome for pregnant women who can make pregnant women become exhausted (Pudiastuti, 2011).

Physical activity in pregnant women preeclampsia tends to be lower than physical activity in mothers with normal pregnancy so that the mother does not experience fatigue and stress due to excessive physical activity. Pregnant women who experience preeclampsia are advised to rest more, sleep on their left side in order to relieve uterine pressure on the inferior vena cava which drains blood from the mother to the fetus, thereby increasing blood flow back and will increase cardiac output (Rimawati, 2019).

Although most pregnant women do not work or as a housewife, but physical activity in taking care of the household can also cause fatigue for pregnant women, so it can cause stress that can trigger a rise in blood pressure. Pregnant women who do not work also have the risk of experiencing hypertension because housewives can also experience stress, because they have several different household problems, such as economic problems, problems with family, and anxiety about pregnancy and childbirth.

Based on the results of research on factors that affect hypertension in pregnant women in Sukarejo Village, Tanjab Barat Regency in 2020, the following conclusions were obtained: most pregnant women experience hypertension in their pregnancy, as many as 54.9% or 39 pregnant women. There is a significant relationship between family history of hypertension, consumption patterns, and physical activity with hypertension in pregnant women in Sukarejo Village, Tanjung Jabung Barat Regency. Family history of hypertension is the greatest risk of its effect on pregnancy hypertension that has been proven significantly, so pregnant women who have a history of hypertension can also pass it on to their children later. Therefore, it is expected that pregnant women can check or control blood pressure in order to detect early signs of hypertension, thereby reducing the occurrence of hypertension in subsequent offspring. Do not forget to continue to regulate the

pattern of food consumption during pregnancy so that all food intake can be controlled and pregnant women should pay more attention to their activeness so as not to overdo their activities as a form of prevention of hypertension in pregnant women.

CONCLUSION

Based on the results of research on factors that affect hypertension in pregnant women in Sukarejo Village, Tanjab Barat Regency in 2020, the following conclusions were obtained: most pregnant women experience hypertension in their pregnancy, as many as 54.9% or 39 pregnant women. There is a significant relationship between family history of hypertension, consumption patterns, and physical activity with hypertension in pregnant women in Sukarejo Village, Tanjung Jabung Barat Regency. Family history of hypertension is the greatest risk of its effect on pregnancy hypertension that has been proven significantly, so pregnant women who have a history of hypertension can also pass it on to their children later. Therefore, it is expected that pregnant women can check or control blood pressure in order to detect early signs of hypertension, thereby reducing the occurrence of hypertension in subsequent offspring. Do not forget to continue to regulate the pattern of food consumption during pregnancy so that all food intake can be controlled and pregnant women should pay more attention to their activeness so as not to overdo their activities as a form of prevention of hypertension in pregnant women.

REFERENCES

Alhuda, T. R. (2018). Hubungan Antara Pola Makan dan Gaya Hidup dengan Tingkatan Hipertensi

Pada Middle Age 45-59 Tahun Di Wilayah Kerja Puskesmas Dinoyo Kota Malang. *Nurs News (Meriden*, *3*(1).

Bobak. (2004). *Buku Ajar Keperawatan Maternitas Edisi 4*. EGC.

DinkesJambi. (2018). *Profil Kesehatan Provinsi Jambi 2017*. Pemerintahan Provinsi Jambi.

DinkesJambi. (2019). *Profil Kesehatan Provinsi Jambi 2018*. Pemerintahan Provinsi Jambi.

Fuzia, A. (2018). *Faktor-Faktor Yang Berhubungan dengan Kejadian Preeklampsia Berat Pasa Ibu Hamil Trimester III Di RSUD Kota Bekasi Tahun 2017*.

Green, L. (2015). *Health Program Planning* (p. 255).

Imaroh, I. (2018). Faktor Risiko yang Mempengaruhi Kejadian Hiperensi pada Ibu Hamil di Wilayah Kerja Puskesmas Kedungmundu, Kota Semarang Tahun 2017. *J Kesehat Masy*, *6*(2), 570–580.

Isnaniar. (2019). *Pengaruh Obesitas Terhadap Kejadian Hipertensi dalam Masa Kehamilan di Puskesmas Harapan Raya Pekanbaru* (Vol. 9, Issue 2, pp. 75–87).

KemenkesRI. (2014). *Profil Kesehatan Indonesia Tahun 2013*. Kementerian Kesehatan RI.

Makmur, N. S., & Fitriahadi, E. (2020). *Faktor-faktor terjadinya hipertensi dalam kehamilan di Puskesmas X*. *4*(1), 66–72. https://doi.org/10.31101/jhes.561|

Pemiliana, P. D., Nasution, P., & Arsah, A. (2019). *Hubungan Karakteristik Ibu Hamil dengan Hipertensi pada Kehamilan di Puskesmas Setabu Provinsi Kalimantan Utara*. *2*(3), 126–135. https://doi.org/10.33085/jbk.v2i3.4116

Prawirohardjo, S. (2008). *Ilmu Kebidanan.* PT Bina Pustaka Sarwono Prawirohardjo.

Pudiastuti R. D. (2011). *Buku Obesitas*. Medical Book.

Rafsanjani, T. M., Yasir, Y., & Masyudi, M. (2019). *Hubungan Pola Makan, Umur, dan Pengetahuan dengan Kejadian Hipertensi pada Ibu Hamil di Kabupaten Aceh Besar*. *3*(1), 62–69. https://doi.org/10.20473/jphrecode.v3i1.14861

Rambe. (2018). Faktor-Faktor yang Mempengaruhi Hipertensi pada Kehamilan di Wilayah Kerja Puskesmas Pancur Batu Kecamatan Pancur Batu Kabupaten Deli Serdang Tahun 2017. *J Ilm Maksitek*, *3*(4), 42–49.

Rimawati, U. (2019). Indeks Massa Tubuh (IMT. *Jarak Kehamilan dan Riwayat Hipertensi Mempengaruhi Kejadian Preeklampsia*, *2*(2).

Sari, Y. (Ed.). (2017). *Berdamai dengan Hipertensi*. Bumi Medika.

Setyawati, B. (2015). *Faktor Risiko Hipertensi pada Wanita Hamil di Indonesia (Analisis Data Riskesdas 2013*.

Sihotang, P. C. (2016). Hubungan Pola Makan dan Kecukupan Istirahat Tidur dengan Kejadian Hipertensi pada Ibu Hamil di Wilayah Kerja Puskesmas Biromaru. *J Kesehat Tadulako*, *2*(1), 68–75.

Simamora, L., Sembiring, N. P., & Keluarga, S. M. P. R. (2019). Obesitas Dan Stress Psikosial Terhadap Kejadian Hipertensi Pada Ibu Pasangan Usia Subur Di Wilayah Kerja Puskesmas Simalingkar. *Program Studi Profesi Kebidanan*, *2*(1).

Singh, S., Shankar, R., & Singh, G. P. (2017). *Prevalence and Associated Risk Factors of Hypertension: A Cross-Sectional Study in Urban Varanasi* (Vol. 2017).

Situmorang, T. H. (2016). *Faktor—Faktor yang Berhubungan dengan Kejadian Preeklampsia Pada Ibu Hamil di Poli Kia Rsu Anutapura Palu* (Vol. 2, Issue 1, pp. 34–44).

Suhardjo, S. (2003). *Perencanaan Pangan*. Bumi Aksara.

Sukfitriyanty. (2016). *Faktor Risiko Hipertensi Pada Ibu Hamil Di Rumah Sakit Hikmah Kota Makassar* (Vol. 8, pp. 79–88).

Trisna. (2018). *Kejadian Pre-Eklamsi Pada Ibu Hamil Di Rsud Panembahan Senopati Bantul*

Tahun 2016-2017 Kejadian Pre-Eklamsi Pada Ibu Hamil Di Rsud Panembahan Senopati Bantul.

Triyanto. (2014). *Pelayanan Keperawatan Bagi Penderita Hipertensi Secara Terpadu*. Graha Ilmu.

Walyani, E. S. (2015). *Asuhan Kebidanan pada Kehamilan*. Pustaka Baru Press.

W.H.O. (2013). *A global brief on Hypertension*. World Health Organization.

Widyartha, I. M. J., IWGAE, P., Ani, L. S., Widyartha, I. M. J., IWGAE, P., Keluarga, A.

L. S. R., & Stres, A. F. R. (2016). *Obesitas dan Konsumsi Makanan Asin Berlebihan Sebagai Faktor Risiko Hipertensi* (Vol. 4).