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Risk Factors Associated with the Incident of Hypertension in Pregnant Women in the Gununghalu Community Health Center Working Area

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Abstract

Introduction: Hypertension or high blood pressure is a condition where blood pressure continuously increases in the blood vessels (WHO, 2018). Gestational hypertension is detrimental to the mother and fetus and carries a risk of developing other cardiovascular diseases in the future. Women with a history of pre-eclampsia or hypertension have a seven to eight times increased risk of morbidity and mortality from coronary heart disease (Subki et al, 2018).

Objective: The aim of this research is to determine the relationship between factors that influence the occurrence of hypertension in pregnant women in the Gununghalu Community Health Center working area.

Method: This research design used case control with a population of 1,473 and a sample of pregnant women and 63 women with hypertension. Research analysis uses Chi-Square and multivariate analysis using logistic regression analysis.

Result: The results of this study show that there is a significant relationship between age and the incidence of hypertension ($p=0.0001$) OR value of 13,600 (95% CI = 5,782-31,989) which means that pregnant women aged <20 years and >35 years have a risk of hypertension of 13.6 compared to pregnant women aged 20-35 years, there is a significant relationship between gravidity and the incidence of hypertension in pregnant women ($p=0.020$) OR value obtained of 2,313 (95% CI = 1,132-4,724) which means that pregnant women with primigravida and grande multigravida have a risk of experiencing hypertension of 2.3 compared to pregnant women with multigravida, there is a significant relationship between a history of hypertension and the incidence of hypertension in pregnant women ($p=0.000$) The OR value obtained was 9.615 (95% CI = 4.238-21.815) which means that people with a history of hypertension in the family have a risk of 9.6 times compared to pregnant women who do not have a history of hypertension in the family, there is a significant relationship between obesity and the incidence of hypertension in pregnant women ($p = 0.009$) The OR value obtained was 3.949 (95% CI = 1.347-11.574) which means that people who are obese have a risk of suffering from hypertension of 3.9 times compared to pregnant women who are not obese.

Conclusion: The conclusion is that all variables in this study have a significant relationship with the incidence of hypertension. It is hoped that all pregnant women will always carry out pregnancy checks with health workers to risks during pregnancy.

Keywords: Hypertension; Pregnant Woman; Health Center

INTRODUCTION

Hypertension or pressure blood tall is a condition with pressure increased blood pressure in a way continuously on the vessels blood. Hypertension defined as pressure blood systolic ≥ 140 millimeters of mercury (mmHg) and pressure blood diastolic ≥ 90 mmHg (1). The Indonesian Ministry of Health defines hypertension as improvement pressure blood systolic more from 140 mmHg and pressure blood diastolic more from 90 mmHg on two measurements with hose five minutes in condition calm or Enough rest. Hypertension including one of disease cardiovascular disease suffered by all public in the world. so that including in global problems that hit the world(1)

Disturbance hypertension pregnancy (gestational) can causes 10-15% of deaths mothers, especially in developing countries. Hypertension gestational This harm for mother and fetus as well as at risk experience disease cardiovascular more later day. Women with history of pre- eclampsia or hypertension own seven until eight times increase risk morbidity and mortality disease coronary (2)heart disease

Pressure blood tall can lower flow blood to placenta, which will influence supply oxygen and nutrients from baby. This is can slow down growth baby and improve risk moment giving birth. Pressure blood height can also increase risk damage suddenly from placenta, where placenta will separated from the uterus before time. Hypertension in pregnancy namely 5-15% complications pregnancy and is one of the from three reason highest mortality and morbidity Mother giving birth (3)

. Data based on the World Health Organization (WHO) in 2020, there were 295,000 women and teenagers Woman die Because complications related pregnancy and childbirth. Disorders hypertension in pregnancy is reason main morbidity, disability term long, and even death in mothers and their babies. Worldwide, hypertension pregnancy about 14% of all Mother's (4).

In Indonesia in 2019, the number of highest maternal mortality second caused by hypertension pregnancy totaling 1,066 cases after reason Because bleeding and causes third is Because infection as many as 207 cases. It is estimated that in 2024 the number Maternal mortality in Indonesia decreases to 183/100,000 births live and in 2030 down to 131 per 100,000 births life (5)

Amount Mother's death collected from health program recording families in the Ministry of Health increased every year. In 2021, there were 7,389 deaths in Indonesia. The number This show improvement compared to in 2020 there were 4,627 deaths. Based on cause, part big maternal deaths in 2021 related to COVID-19 were 2,982 cases, bleeding as many as 1,330 cases , and hypertension in pregnancy as many as 1,077 cases (6)

Based on data from the West Java Provincial Health Service, the MMR in West Java in 2021 shows that the magnitude risk maternal death in the phase pregnancy, childbirth and postpartum period among 100,000 births life in one area in a period time certain. Amount maternal mortality in 2021 based on reporting Health Profile of Districts /Cities in West Java : 1,206 cases or 147.43/100,000 KH, an increase of 461 cases compared to in 2020, there were 746 cases . Causes Maternal deaths in 2021 were dominated by 38.97% COVID-19, there were 19.32% bleeding, 17.41 % hypertension in pregnancy, 6.30% heart, 2.40% infection, 1.08% metabolic disorders, 0.91% circulatory system disorders blood, 0.17% abortion, and 13.43% causes other (7)

In 2021, West Bandung Regency became ranked 11th in West Java with amount case death Mother of 192/100,000 KH, with causes that are still tall that is from hypertension by 33.07%, obstetric bleeding 27.03%, non-obstetric complications 15.7%, other obstetric complications 12.04%, infection in pregnancy 6.06%, and others 4.81%(8)

Based on results survey introduction in the region DTP Health Center work Gununghalu in 2023 there were 1,473 pregnant women, researchers find that incident preeclampsia or effect from hypertension that occurs in pregnant women influenced by several factor like age that is already No in condition good reproduction and inspection pregnancy that is not *Continuity Of Care* for personnel health local. In August -September 2023, around 63 people or (4.0%) pregnant women experience hypertension which can at risk tall For the occurrence preeclampsia in pregnancy, in 2022 there were 13 pregnant women who experienced protein in the urine (+) and it was known that in the month December 2022 ago there is about 2 people experienced eclampsia in late pregnancy Where incident That is impact from hypertension that is not handled with Good.

METHOD

Types of research This is analytic observational with case control study design, namely a study For compare exposure between group case (person suffering from disease) with group control (person who does not suffer disease), then study done For know whether factor risk truly influence the occurrence case under study with compare closeness exposure factor risk to the group case with group control (9)

In research this is what it becomes population case is Mother pregnant who is experiencing hypertension, pregnant women No suffer annoying disease hypertension (heart , hyperthyroidism , and other diseases) kidney (DM) at the Health Center Mount Halu as many as 63 respondents in August -September 2023. Population control that is Mother pregnant who is not hypertension with amount population 1,473 pregnant women with place domicile

The same with taking same case /RW. Sample in study This using total sampling/ saturated sampling namely Mother with hypertension totaling 63 people, then with 1:1 ratio so amount sample control as many as 63 people and the total sample to 126 respondents pregnant women. Instruments in study This in the form of sheet data entry containing identity data Respondent consists of from name, age, gravity, weight / height , medical history hypertension and age pregnancy .

Analysis univariate Used For distribute variable study use to obtain description or characteristics before done analysis bivariate. Analysis bivariate used For test whether There is connection between factor risk (age, gravidity, history hypertension, obesity) with incident hypertension with using the X2 (Chi Square) test. Data processing in study This will use technique computerized and assisted by data processing software. Odds Ratio (OR) analysis is used For compare exposure between group case to exposure to groups control. Multivariate analysis was used is with analysis regression logistics multiple For evaluate factor which risk is greater dominant relate with hypertension.

Study This Already through methods and procedures ethical research from institution related with number ethics 062/KEPK/ FITKes -UNJANI/VIII/2023 for ensure that study done with the way that fulfills interest individuals, groups and/ or public in a way overall.

RESULTS

Study This based on distribution characteristics can seen in the table following:

Table 1. Distribution frequency characteristics based on age, gravidity, history hypertension and obesity

No	Variables	Hypertension				Amount	
		Case		Control		n	%
		n	%	n	%		
1	Age						
	Age < 20 years and > 35 years (at risk)	51	81.0	15	23.8	66	52.4
	20-35 years (not at risk)	12	19.0	48	76.2	60	47.6
2	pregnancy						
	Primigravida/grande multigravida (at risk)	39	61.9	26	41.3	65	51.6
	Multigravida (no risk)	24	38.1	37	58.7	61	48.4
3	Parity						
	Do not have yet child	6	9.5	12	19.0	18	14.3
	Child 1	1	1.6	9	14.3	10	7.9
	Child 2	12	19.0	20	31.7	32	25.4
	Child 3	16	25.4	10	15.9	26	20.6
	Child 4	21	33.3	10	15.9	31	24.6
	Child 5	6	9.5	2	3.2	8	6.3
	Child 6	1	1.6	0	0.0	1	0.8
4	History of Hypertension						
	There is a history of hypertension	45	71.4	13	20.6	58	46.0
	No History of Hypertension	18	28.6	50	79.4	68	54.0
5	Obesity	16	25.4	5	7.9	21	16.7
	Not obese	47	74.6	58	92.1	105	83.3
	Total	63	100	63	100	126	100

Analysis results obtained that majority Respondent aged < 20 and > 35 years as many as 66 people with pregnant women who experienced hypertension as many as 51 people (81.0%), and those who did not experience hypertension that is as many as 15 people (23.8%). The majority Respondent with primigravida and grande multigravida who experience hypertension as many as 39 people (61.9%) and those who did not experience hypertension as many as 26 people (41.3%). Respondent with highest parity that is is at parity 4 with incident hypertension as many as 21 pregnant women (33.3%) and those who were not experience hypertension as many as 10 people (15.9%). Respondents who have history hypertension in the family and experienced hypertension as many as 45 people (71.4%), and those who did not experience hypertension as many as 13 people (20.6%). The results of the analysis obtained that Respondent with obesity and experiencing hypertension as many as 16 people (25.4%), and respondents obesity that is not experience hypertension as many as 5 people (7.9%).

Table 2. Relationship between age and incidence of hypertension

Age	Hypertension				OR	P value
	Yes		No			
	n	%	n	%		
Age < 20 and > 35 years	51	77.3	15	22.7	13,600 (5,782-31,989)	0.0001
20-35 years	12	20.0	48	80.0		
Total	63	50	63	50		

The analysis results obtained p-value = 0.0001 (<0.05) which means there is a significant relationship between the age of pregnant women and the incidence of hypertension in pregnant women. The OR value was obtained at 13,600 (95% CI = 5,782-31,989) which means that pregnant women aged <20 years and > 35 years have a risk of hypertension of 13.6 compared to pregnant women aged 20-35 years.

Table 3. Relationship between gravidity and hypertension incidence

Gravidity	Hypertension				OR	P value
	Yes		No			
	n	%	n	%		
Primigravida/grand multigravida	39	61.9	26	41.3	2.313 (1.132 - 4.724)	0.020
Multigravida	24	38.1	37	58.7		
Total	63	50	63	50		

The results of the analysis obtained p value = 0.020 (<0.05) which means there is a significant relationship between gravida and the incidence of hypertension in pregnant women. Then the results of the OR value obtained were 2,313 (95% CI = 1,132-4,724) which means that pregnant women with primigravida and grande multigravida have a risk of experiencing hypertension of 2.3 compared to pregnant women with multigravida.

Table 4. Relationship between history of hypertension and incidence of hypertension

History of hypertension	Hypertension				OR	P value
	Yes		No			
	n	%	n	%		
There is a history of hypertension	45	77.6	13	22.4	9,615 (4,238-21,815)	0,0001
No History of Hypertension	18	26.5	50	73.5		
Total	63	50	63	50		

The analysis results obtained p-value = 0.0001 (<0.05) which means there is a significant relationship between a history of hypertension and the incidence of hypertension in pregnant women. Then from the OR value obtained 9.615 (95% CI = 4.238-21.815) which means that people with a history of hypertension in the family have a risk of 9.6 times compared to pregnant women who do not have a history of hypertension in the family.

Table 5. Relationship between obesity and the incidence of hypertension

Obesity	Hypertension				OR	P value
	Yes		No			
	n	%	n	%		
Obesity	16	76.2	5	23.8	3,949 (1,347-11,574)	0.009
Not obese	47	44.8	60	55.2		

Total	63	50	63	50
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The analysis results obtained a p-value of 0.009 = (<0.05) which means that there is a significant relationship between obesity and the incidence of hypertension in pregnant women. Then from the OR value obtained 3,949 (95% CI = 1,347-11,574) which means that people who are obese have a risk of suffering from hypertension of 3.9 times compared to pregnant women who are not obese.

Table 6. Results of multivariate analysis with multiple logistic regression test

Variables	B	p value	OR (95% CI)
Mother's Age pregnant	3.115	.000	19,914 (5,721-69,318)
history hypertension	2,779	.000	13,580 (3,962-46,545)
gravity	1,343	.406	1.625 (0.517-5.104)
Obesity	1,613	.200	3.258(0.535-19.865)

Based on the data in table 6, there are The variables that have a significant relationship with the incidence of hypertension in pregnant women are the age of the pregnant woman and a history of hypertension in the family. The results of the analysis obtained the highest Odd Ratio (OR) value, namely the age variable with an odd ratio value of 19.914, meaning that pregnant women aged <20 and > 35 years have a 19.9 times higher chance of suffering from hypertension compared to pregnant women with age 20-35 years after controlling for history variables hypertension, gravidity and obesity. These are in other words the variables Age is the determinant or variable that has the most influence on the incidence of hypertension in pregnant women.

DISCUSSION

On the characteristic data study from total 1,473 pregnant women in the work area Health Center Mount Halu counted January -August 2023, there are as many as 63 pregnant women experienced hypertension seen from report data every midwife village and PWS KIA results found at the Health Center Gununghalu. In the research this, researcher do data collection on every pregnant woman with do coordination together midwife related villages. Retrieval sample case of pregnant women experiencing hypertension and also sample control (no experience hypertension) researcher come to in a way direct everytime the house that has been previous data researchers. Research (10)with results study There are 194 pregnant women and those experiencing it hypertension as many as 114 people (58.8%). In the (11)research conducted there is amount pregnant women population as many as 939 people and as many as 79 pregnant women experience hypertension (8.4%). Hypertension (blood pressure) blood high) normal found in women pregnant. In some woman with history hypertension weight, hypertension can worsening, especially in pregnancy next. Hypertension aggravated by pregnancy marked at least with improvement by 15 mmHg for pressure diastolic or 30 mmHg for pressure systolic.

This matter in accordance with study previously done(10) show that there is connection between age mother and with prevalence hypertension in mothers pregnant. The results of the study show that There were 52 pregnant women (68.4%) with age risk and experience hypertension from a total of 76 pregnant women. It was found statistical test results with p value = 0.041 and OR 1.957 (95% CI 1.070-3.579)(10)

Age 20 and above 35 years are also considered age at risk high experienced complications during pregnancy. At the age of 35, this process happen degeneration cause change structural and functional in blood vessels blood peripheral responsible answer on change pressure blood, so that prone to to preeclampsia. During pregnancy <20 years condition reproduction Not yet Ready accept pregnancy and will increase risk pressure blood tall during pregnancy. age more from 35 years can cause hypertension in pregnancy due to the degenerative process that causes structural changes as well functional in blood vessels blood peripherals that make Mother pregnant more prone to affected. Compared Mother normal pregnancy age of around age 20-30 years (12)

On the results connection between gravida and event hypertension in pregnant women in line with research conducted by (11)which shows that there is significant relationship between gravity and incidence hypertension in pregnant women. Research results This show that There were 46 pregnant women (10.6%) with risky gravity experience hypertension of 434 pregnant women. Statistical test results showed p value = 0.034 and OR result 1.696 (95% CI = 1.063-2.705).

Parity is condition woman related with amount child born. Parity child second and child third is the safest parity reviewed from corner maternal death. At parity tall more of 3 have number maternal mortality is higher high. So because of that That mothers who are pregnant child first and more from child third must check it out her pregnancy as often as possible maybe so as not to at risk to maternal death. At parity low, mothers pregnant Not yet so understand about pregnancy and its importance inspection pregnancy (13)

Analysis results obtained that there is significant relationship between history hypertension with incident hypertension in mothers pregnant. Research This in line with research conducted by (14) that there is connection between history hypertension with incident hypertension in pregnant women. Research results This show that There were 7 pregnant women (43.8%) out of 16 pregnant women with history hypertension experience hypertension in pregnancy. The statistical test results p -value = 0.023 and OR value 6.028 (95%CI 1.435-25.320).

History of hypertension in family is notes Health information about someone and relatives nearby about history disease hypertension (15) There is role genetics in hypertension pregnancy. This is can happen Because there is history family with hypertension in pregnancy (16). Hypertension can happen Because factor genetics, if somebody own history family hypertension in pregnancy so he have risk more big experience preeclampsia / eclampsia moment pregnancy (17)

Analysis results in study This obtained that there is significant relationship between obesity with incident hypertension in pregnant women. In line with research conducted by Marlina (2020) stated that there is influence between obesity with incident hypertension in pregnancy. The results of the study show that as many as 12 pregnant women (25.5%) out of 13 mothers with obesity experience hypertension. After statistical test was performed and obtained p = 0.003 and OR results were 15.771 (95%CI 1.957-127.107)(18)

Obesity is an increase in body mass due to fatty tissue in large quantities excessive. In fat people often there is hypertension, even though the reasons are not yet known clear. Therefore that person is too much fat For more lower heavy his body. Overweight people usually more fast tired, breathless shortness of breath, heart pounding even though activities carried out by him No how much. Because always carry burden heavy body so heart must Work more heavy and must breathe more fast so that need body will blood and oxygen can fulfilled. Because of that it takes time will result in hypertension (19)

Analysis results multivariate obtained that variable age and history hypertension become factor dominant in influence the occurrence hypertension. Analysis results obtained mark Highest *Odd Ratio* (OR) that is variable age with mark *Odds ratio* of 19,914, meaning Mother pregnant with age < 20 and > 35 years own opportunity by 19.9 times more tall suffer hypertension compared to Mother pregnant with age 20-35 years after controlled variable history hypertension, gravidity and obesity. This is in other words variable age is determinant or the most influential variable to incident hypertension in mothers pregnant. In line with research conducted by (20) that there is connection between age with incident hypertension in pregnant women with results multivariate test analysis p value = 0.000 OR value 1.327 (1.017-1.732).

Age is one of reason maternal death, at a younger age from 20 years can cause hypertension in pregnancy because of size of uterus that has not reach normal size for pregnancy so that cause disturbance pregnancy. While age more from 35 years can cause hypertension in pregnancy due to the degenerative process that causes structural changes as well functional in blood vessels blood peripherals that make Mother pregnant more prone to affected. Compared Mother normal pregnancy age of around age 20-30 years (12). Therefore that, the importance inspection sustainability or Continuity of care for the mother during pregnant For avoid the occurrence the risk that will caused, and will get Handling if found existence factor risk the occurrence hypertension during pregnancy That ongoing .

CONCLUSION

Research result This underline importance consider various factor risk especially age, in effort prevention and treatment hypertension in mothers pregnant. Combination from a number of factor risk can increase risk in a way significant, necessary existence prevention measures taken like give comprehensive prenatal counseling to all Mother pregnant, with emphasis on the importance of guard style life healthy, like pattern eat balance, sport regularly, and avoid stress. Do inspection pressure blood regularly during pregnancy for detect early existence improvement pressure blood, and giving proper treatment and monitoring strict is very important For prevent complications.

SUGGESTION

Recommendations that can be researcher give For Mother pregnant especially on power health both in the Health Center area Mount Halu and in other regions in Indonesia in reduce risk hypertension during pregnancy, it is recommended For conduct comprehensive prenatal education programs where is this program must emphasize importance nutrition balance and activity regular physical like walking or prenatal exercise. In addition, counseling individual nutrition and support family is also very important For help Mother pregnant apply style life healthy. With thus, the risk complications pregnancy consequence hypertension can minimized.

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