

ANALYSIS THE AGE OF PREGNANT WOMAN AND STAGES OF HYPERTENSION AS RISK FACTORS OF PREECLAMPSIA-ECLAMPSIA ON PREGNANT WOMEN IN DR. MURJANI GENERAL HOSPITAL SAMPIT AT JUNE PERIODE 2018

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Abstract: *Preeclampsia is a syndrome characterized by an increase in blood pressure and proteinuria that appears in the second trimester of pregnancy which is always recovered in the postnatal period. Preeclampsia can be influenced by many factors, but the analysis of risk factors for preeclampsia in Dr. Murjani Hospital has never been done, especially in relation to the pregnant women age, history of pregnancy, abortion, and stages of hypertension. Thus, this research needs to be done. This research was analytical study with cross sectional approach, which aims to explain the relationship between the age of pregnant women and the stages of hypertension with preeclampsia. Research subjects were patients who came to Dr. Murjani Hospital on 28 May-9 June 2018. Data were collected from the Medical Record section and analyzed by t-test to compare the average of two groups (normal and preeclampsia). Chi Square test with 95% confidence interval was used to find out the relationship between two variables. The results showed that there was no relationship between the age of pregnant mother with preeclampsia incident in Dr. Murjani Hospital, but the stages of hypertension is related with preeclampsia incident in Dr. Murjani Hospital.*

Keywords: *preeclampsia, stage of hypertension, the age of pregnant women*

INTRODUCTION

Preeclampsia is a syndrome characterized by an increase in blood pressure and proteinuria that appears in the second trimester of pregnancy which is always recovered in the postnatal period. Preeclampsia can occur in the antenatal, intranatal, and postnatal period.^{1,2} Preeclampsia can be influenced by many factors among others age less than 20 years or more than 35 years, increase in body mass index, primipara (mothers who give birth for the first time), large placenta, mothers who smoke, young primigravidas, excessive uterus distension, a history of preeclampsia, a history of hypertension, multiple pregnancies, and diseases that accompany pregnancy such as diabetes mellitus and obesity.¹ This is in accordance with the results of the research by Bangkele et al (2014) which states that maternal age and gravidity are associated with the incidence of preeclampsia in Undata Palu General Hospital.³ In other studies, gestational age and maternal employment were also a risk factors for preeclampsia in Moewardi Hospital Surakarta. The study also mentions that pregnant women with a gestational age more than 28 weeks have a risk 16,125 times to experience a pregnancy with severe preeclampsia than mothers with gestational age less than equal to 28 weeks. Meanwhile, pregnant women who work have a risk 4,173 times to experience a pregnancy with severe preeclampsia than pregnant women who do not work.⁴

Based on the results of the research by Dewi (2014) showed that the incidence of preeclampsia is associated with obesity and a history of hypertension.⁵ History of hypertension is a mother who has experienced hypertension before pregnancy or before 20 weeks of gestation. Mothers who have a history of hypertension are at greater risk of developing preeclampsia, as well as can increase maternal and neonatal morbidity and mortality. Mothers who experience gestational hypertension are

around 10%, 3-4% have preeclampsia, 5% have hypertension and 1-2% have chronic hypertension⁶. Preeclampsia diagnosis is based on an increase in blood pressure accompanied by proteinuria or anasarca edema.⁷

Data from Central Kalimantan Health Office in 2015 reported that the number of cases of maternal deaths due to childbirth was found in 80 cases with 13% caused by hypertension in pregnancy, severe preeclampsia and eclampsia. Meanwhile, based on medical record data on 2 April until 21 April 2018 as many as 250 pregnant women visited Dr. Murjani Hospital, and found as many as 8 pregnant women have high blood pressure and 5 of them have mild preeclampsia to severe preeclampsia.⁸

Until now research about preeclampsia and its risk factors has been carried out. However, analysis of risk factors for preeclampsia in Dr. Murjani General Hospital Sampit has never been done, especially related with pregnant women age and the stages of hypertension. Thus, this research needs to be done so that the results of this study can be used for prevention in order to reduce maternal morbidity and mortality in Central Kalimantan especially in Sampit City.

RESEARCH METHOD

This research is an analytic research with cross-sectional approach which aims to explain the relationship between the age of pregnant woman, history of pregnancy, abortion, and stages of hypertension. Research subjects were patients who came to Dr. Murjani General Hospital on 28 May-9 June 2018. Data was collected from the medical record section and analyzed by t-test to determine the differences of variables and *chi square test* with 95% confidence interval degree was used to find out the relationship between independent variables and dependent variables.

RESULTS AND DISCUSSION

Based on the results of the study, there were 31 pregnant women in which 18 pregnant women with preeclampsia and 13

pregnant women without preeclampsia. Data related to pregnant women in this study are presented in table 1.

Table 1. Data of Pregnant Woman With Preeclampsia or Without Preeclampsia

Total (people)	Normal 13	Preeclampsia 18	p
Age (Year)			
• Average	31,61	31,15	0,7971
• Maximum	41,00	43,00	
• Minimum	22,00	22,00	
• Modus	31,00	31,00	
Weight (Kg)			
• Average	70,11	67,85	0,6365
• Maximum	104,00	88,00	
• Minimum	50,00	53,00	
• Modus	59,00	54,00	
Blood Pressure			
a. Systolic Blood Pressure(mmHg)			
• Average	158,89	142,30	0,0001*
• Maximum	180,00	160,00	
• Minimum	140,00	140,00	
• Modus	160,00	140,00	
b. Diastolic Blood Pressure (mmHg)			
• Average	103,33	89,23	0,0002*
• Maximum	120,00	100,00	
• Minimum	90,00	80,00	
• Modus	100,00	90,00	
Protein urine			
• Positive 1 (%)	55,55	-	
• Positive 2 (%)	5,56	-	
• Positive 3 (%)	38,89	-	
• Negative(%)	-	100	

(*)=there is a difference

Based on table 1, it can be seen that systolic blood pressure and diastolic blood pressure is significantly different between normal pregnant woman and pregnant woman with preeclampsia. In table 1, shows that the age and weight of pregnant women have no differences, this means that both groups have the same characteristics, especially in metabolism and nutritional status. Maternal weight during pregnancy is affected by maternal weight before pregnant. Meanwhile, the

weight of pregnant women is one of the factors that influence nutritional status. Nutritional status during pregnancy can affect the fetus growth and development. If the nutritional status of the mother is normal before and during pregnancy it is most likely to give birth a healthy baby and mature with normal birth weight.⁹ In this study, it was found that there was no relationship between the age of pregnant women with preeclampsia ($p=0.636$; $p < 0.05$). This result can be seen in table 2.

Table 2. Relationship Between The Age of Pregnant Woman With Preeclampsia

The Age of Pregnant Woman	Preeclampsia					p
	Yes	%	No	%	Total	
< 20 years old and >35 years old	3	9,68	2	6,45	16,13	0,636
20-35 years old	15	48,39	11	35,48	83,87	
Total	18	58,06	13	41,94	100,00	

Based on table 2 is known as much as 83,87% pregnant women at the reproductive age of a woman (20-35 years old), at this age range, degenerative processes can be improved so that structural and functional changes that occur in peripheral blood vessels are not disturbed. Thus changes in blood pressure can be maintained normally, so preeclampsia can be avoided. In table 2, also found 9.68% of patients with preeclampsia. At the age less than 20 years old, the size of the uterus has not reached a normal size for pregnancy, so the possibility of a disorder in pregnancy such as preeclampsia becomes greater. At the age more than 35 years old a degenerative process occurs and caused change on structural and functional of peripheral blood vessels and that are responsible for changes in blood pressure, and making pregnant woman more vulnerable to experiencing preeclampsia.^{10,11} The results of this study are in accordance with the results of the research by Sutrimah et al (2015) which stated that the age of pregnant women was not related with preeclampsia incident.⁶

However, the results of this study are different from the results of previous studies, which stated that the age of pregnant women who visited at Dr. M. Djamil Hospital Padang in 2012-2013 is associated with the risk of preeclampsia.¹⁰ Research at Sidoarjo General Hospital showed that the age of high-risk pregnant women 5,88 times increases the risk of preeclampsia.¹¹ Research by Bangkele et al (2016) also states that the age of pregnant women affects the risk of preeclampsia.³

In addition to the age of pregnant women, in this study also researched the relationship between the stages of hypertension with preeclampsia. The chi square test showed that there was relationship between the stages of hypertension with preeclampsia ($p=0.008$; $p < 0.05$). This result can be seen in table 3.

Table 3. Relationship Between The Stages of Hypertension With Preeclampsia

Stages Of Hypertension	Preeclampsia					p
	Yes	%	No	%	Total	
Stages 1	7	22,58	12	38,71	61,29	0,008*
Stages 2	11	35,48	1	3,23	38,71	
Total	18	58,06	13	41,94	100,00	

(*) : significant relationship

Table 3 showed that there was relationship between the stages of hypertension with Preeclampsia ($p=0.008$; $p < 0.05$). The value of Odds Ratio (OR) shows that pregnant women who experience stage 2 hypertension during pregnancy have a risk 18.86 times more likely to experience the incidence of

preeclampsia compared with pregnant woman who experience hypertension degree 1. Based on the contingency coefficient it can be seen that the level of relationship between stages of hypertension and preeclampsia in pregnant women has a weak relationship (0.476).

The incidence of hypertension during pregnancy can be explained that under

normal conditions, uterine spiral arterial remodeling when in invasion by the endovascular trophoblast. These cells replace the blood-defending endothelium and muscle lines so that the diameter of the blood vessels enlarges. Veins are superficially in invasion. However, in cases of preeclampsia, incomplete trophoblast invasion occurs. Invasion occurs superficially limited to decidual blood vessels but does not reach the myometrial blood vessels. In normal pregnancy without preeclampsia, trophoblast invasion completely reaching the myometrium. In women with preeclampsia do not have a good ability to release a vasodilating trigger, namely nitric oxide. In addition, the endothelium also produces coagulation precipitating compounds and increased sensitivity to vasopressors. In preeclampsia, endothelial proacycline production (PGI₂) is reduced with increased platelet production of thromboxane. That way, the ratio of prostacyclin to thromboxane is reduced. The end result of all these events is narrowed blood vessels, increased blood pressure, and fluid coming out of the blood vessel space.⁷

Hypertension due to blood vessel vasospasm as an impact of preeclampsia will affect the function of other organs. Blood vessel vasospasm can result in intrinsic damage to kidney tissue. Glomerular cell damage can caused an increase of basal membrane permeability so that leakage and caused proteinuria. Thus, an increase in blood pressure and proteinuria is an important consideration for knowing the prognosis of preeclampsia-eclampsia.¹² This result of this research is in accordance with the results of research by Suwanti et al (2014). In the study it was proven that mothers with blood pressure $\geq 160/110$ mmHg had a 6,6 times more likely to developing preeclampsia compared with mothers with blood pressure 140/90 mmHg-150/100 mmHg.¹²

CONCLUSION

Based on the results and discussion of this research, concluded that the incidence of preeclampsia in Dr. Murjani General Hospital Sampit is not related with the age of pregnant women but related with the stages of hypertension.

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