Article

RISK FACTORS ASSOCIATED WITH PREECLAMPSIA IN PREGNANT WOMEN (PARITY, OBESITY, MULTIPLE PREGNANCY, HISTORY OF HYPERTENSION AND AGE WITH THE PREVALENCE OF PREECLAMPSIA AT SYAMRABU BANGKALAN HOSPITAL, BANGKALAN IN 2022

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A B S T R A C T

Background: Preeclampsia is a complication of pregnancy that is characterized by hypertension, edema, and proteinuria. This syndrome usually appears in the second to the third trimester of pregnancy. In East Java, preeclampsia is the dominant factor causing maternal mortality. Based on a preliminary study at Syamrabu Bangkalan Hospital, the incidence of preeclampsia was 35% of all referral cases.

Objective: This research aimed to analyze the high-risk factors for preeclampsia in pregnant women (parity, obesity, multiple pregnancies, history of hypertension, and age with the incidence of preeclampsia at Syamrabu Bangkalan Hospital in 2022

Methods: This research was quantitative with a cross-sectional approach. The population in this study were all pregnant women recorded in the medical records of Syamrabu Bangkalan Hospital in 2022, as many as 204 pregnant women. The sample in this study was 162 respondents. Samples were taken from the data using a systematic random sampling system and analyzed using the Chi-Square statistical test. The analysis used univariate and bivariate analysis. The time of the study was conducted on July 01-09, 2022.

Results: Based on the chi-square test, there is a significant relationship between high-risk factors for preeclampsia (parity, obesity, multiple pregnancies, history of hypertension, and age with the incidence of preeclampsia in pregnant women at Syamrabu Hospital Bangkalan in 2022.

Conclusion: The results of this study are expected to prevent the incidence of preeclampsia in pregnant women early in an effort to reduce the incidence of preeclampsia, morbidity, and mortality in mothers and babies due to existing pregnancy complications such as preeclampsia

I. INTRODUCTION

Preeclampsia is a pregnancy-specific disorder characterized by hypertension, proteinuria at gestational age after 20 weeks, occurs in 3% to 8% of pregnancies in the United States and affects more than 200,000 women and newborns per year. In the United States there is a 25% increase in the incidence of PE, largely due to increased risk factors, including obesity and cardiovascular disease. Although the etiology of PE is unclear, it is believed that impaired remodeling of the placental spiral arteries reduces perfusion, leading to placental ischemia. Furthermore, the ischemic placenta releases antiangiogenic and pro-inflammatory factors, such as cytokines, reactive oxygen species, and angiotensin II receptor type 1 (AT1-AA) autoantibodies, among others, into the maternal circulation. These factors cause widespread endothelial activation, upregulation of the endothelin system, and vasoconstriction. In turn, these changes affect the function of several organ systems including the kidneys, brain, liver, and heart. Despite extensive research on the pathophysiology of PE, the only treatment option remains early delivery of the baby and most importantly, the placenta (Miller et al., 2021; Zainiyah et al., 2018).

According to the 2015 SUPAS data, the number of reported maternal deaths was 305/1000 live births. The cause of maternal death in Indonesia is still dominated by bleeding (50.14%), followed by hypertension in pregnancy (preeclampsia) (41.75%), and infection (8.11%). In East Java, the maternal mortality rate in 2019 was 520 cases, with 31.15% of them caused by hypertension in pregnancy, preeclampsia in 2019 was still the dominant factor causing maternal death in East Java (Indonesia Ministry of Health, 2020), based on a preliminary study at Syamrabu Hospital Bangkalan incidence of preeclampsia is 35% of all referral cases.

Risk factors for preeclampsia are hypertension during pregnancy/before pregnancy, diabetes during pregnancy/before pregnancy, and past history of pregnancy complications such as (induced pregnancy, hypertension, gestational diabetes mellitus, preeclampsia or eclampsia, intrauterine growth restriction (IUGR).), Placental abruption and fetal date (FD)), multiple pregnancies, extreme age i.e., <20 or >35 years, BMI > 30, family history (sister, mother, and/or grandmother) complications of pregnancy (PIH, GDM, PE or E, IUGR, FD) (Wicaksono et al., 2015).

Efforts to predict PE effectively in the first trimester of pregnancy are driven by the desire to identify women at high risk of developing PE, so that the necessary actions can be initiated early enough to correct placentation and thereby prevent or at least reduce the frequency of its occurrence, identification of risk groups will allow antenatal surveillance. adapted to anticipate and recognize clinical syndromes early and manage them immediately (Liona C. Poon, et al., 2019). The purpose of this study was to analyze the high-risk factors for preeclampsia in pregnant women (parity, obesity, multiple pregnancies, history of

hypertension, and age with the incidence of preeclampsia at Syamrabu Bangkalan Hospital in 2022.

II. METHODS

Research design

This research is quantitative using an analytical survey method with a cross-sectional approach. This research was conducted at Syamrabu Bangkalan Hospital in 2022 with a research time of 9 days (Asep et al, 2014).

Study Participants

The population in this study were all pregnant women who were recorded in the medical records of Syamrabu Bangkalan Hospital in 2022, amounting to 204 pregnant women. Inclusion criteria for hypertension during pregnancy/before pregnancy, diabetes during pregnancy/before pregnancy, past history of pregnancy complications such as induced pregnancy, hypertension, gestational diabetes mellitus, preeclampsia or eclampsia, (IUGR), placental abruption and (FD), multiple pregnancies, extreme age i.e., <20 or >35 years, BMI > 30, Family history (sister, mother, and/or grandmother) of pregnancy complications (PIH, GDM, PE or E, IUGR, FD). Exclusion criteria for research object: Major medical disease (heart, kidney) or neurological disease) or mental illness (psychosis, neurosis, addiction, etc.) or any structural abnormalities of the reproductive system of normal pregnancy (Wicaksono., et al. 2015). The sample in this study was 162 respondents. Samples are taken from the data using a systematic random sampling system

Instrument and Data Collection

The dependent variables are parity, obesity, multiple pregnancies, history of hypertension, and age. Independent variable incidence of preeclampsia.

Data Analysis

Data analysis includes descriptive analysis and hypothesis testing.

Categorical data are expressed by frequency distribution. The variable hypothesis test was carried out using analysis using the Chi-Square statistical test with a p-value considered significant if <0.05. The time of study was carried out on July 1-9, 2022.

III. RESULT

1) Distribution based on the general characteristics of the mother

Table 1:Distribution of respondents based on characteristics

No	Characteristics	Category	Frequency	
			Σ	%
1	Education Level	Elementary	50	30,9
		Junior	34	21
		Senior	78	48,1
	Total		162	100
2	Profession	Employee	89	55
		Housewife	73	45
	Total		162	100

Primary data: 2022

Based on the results of the study, almost half of the mother's education was higher education with a percentage of 48.1%. And most of the mother's work is working with a percentage of 55%.

Table 2 Cross-Tabulation of High-Risk Factors for Preeclampsia In Pregnant Women (Parity, Obesity, Multiple Pregnancies, History Of Hypertension, And Age With The Incidence Of Preeclampsia At Syamrabu Bangkalan Hospital, 2022

Variable	Preeclampsia Incidence				Total		X 2
	not preeclampsia		Preeclampsia				
	f	%	f	%	f	%	
Parities							
a. Primigravida	26	15,4	57	67,6	83	51.2	0,000
b. Multigravida	0	0	24	14,8	24	14,8	
c. Grande multigravida	4	2,5	51	31,5	55	34	
Total	30	18,5	132	81,5	162	100	
Obesity							
a. Normal	7	4,3	39	24,1	46	28,4	0,010
b. Overweight	11	6,8	15	9,3	26	16	
c. Obesity	12	7,4	78	48,1	90	55,6	
Total	30	18,5	132	81,5	162	100	
Multiple Pregnancies							
a. Single	24	14,8	129	79,6	153	94,4	0,001
b. Double	6	3,7	3	1,9	9	5,6	
Total	30	18,5	132	81,5	162	100	
History of hypertension							
a. Yes	20	12,3	5	3,1	25	15,4	0,000
b. No	10	6,2	127	78,4	137	84,6	
Total	30	18,5	132	81,5	162	100	
Age							
a. Risk	24	14,8	126	77,8	150	92,6	0,010
b. No Risk	6	3,7	6	3,7	12	7,4	
Total	30	18,5	132	81,5	162	100	

IV. DISCUSSION

Based on the results of statistical tests using Chi-Square with a significance level of = 0.05, we get = 0.000. The value of = 0.000 < = 0.05 (ρ <) then Ho is rejected and Ha is accepted, there is a parity relationship with the incidence of preeclampsia in Syamrabu Bangkalan Hospital. The parity of mothers at risk for preeclampsia is primigravida, the increased risk of developing PE has been widely reported to be 3 times in primigravida women (Poon et al., 2019). Primigravida often experiences stress in the face of childbirth. Emotional stress that occurs in primigravida causes an increase in the release of a corticotropic-releasing hormone (CRH) by the hypothalamus, which then causes an increase in cortisol. The effect of cortisol is to prepare the body to respond to all stressors by increasing sympathetic responses, including responses aimed at increasing cardiac output and maintaining blood pressure. In women with preeclampsia/eclampsia, there is no decreased sensitivity to these vasopeptides, so a large increase in blood volume directly increases cardiac output and blood pressure. All women have a risk of preeclampsia during pregnancy, childbirth, and puerperium. Preeclampsia does not only occur in primigravida/primiparas, grandemultiparas also have a risk of developing eclampsia. For example, pregnant women give birth more than three times. Excessive stretching of the uterus causes excessive ischemia which can lead to preeclampsia (Suwanti, et al. 2012).

Based on the results of statistical tests using Chi-Square with a significance level of = 0.05, we get = 0.01. The value of = 0.01 < = 0.05 (ρ <) then Ho is rejected and Ha is accepted, there is a relationship between obesity and the incidence of preeclampsia in Syamrabu Bangkalan Hospital. Obesity experienced by pregnant women is a very important risk factor in the development of preeclampsia. Where mothers with obesity have 4 times the risk of being obese compared to mothers who have a normal body mass index. Being overweight in pregnant women can increase the risk of gestational hypertension which will progress from severe preeclampsia to eclampsia. This condition will increase various pregnancy complications that can result in emergency conditions for the mother and fetus and also increase the risk of death, both during the third trimester of maternal and prenatal (Wafiyatunisa, n.d. 2016).

Based on the results of statistical tests using Chi-Square with a significance level of = 0.05, we get = 0.001. The value of = 0.001 < = 0.05 (ρ <) then Ho is rejected and Ha is accepted, there is a relationship between multiple pregnancies and the incidence of preeclampsia in Syamrabu Bangkalan Hospital. Multiple pregnancy or twin pregnancy is a pregnancies with two fetuses. Multiple pregnancies can present a higher risk to both the baby and the mother. The growth of multiple fetuses is more often disturbed than single fetuses such as the incidence of preeclampsia due to the burden of increasing blood circulation to the fetus. Researchers assumed that the risk factors for the incidence of preeclampsia were a history of chronic high blood pressure before pregnancy, a history of having preeclampsia was a history of preeclampsia in the mother or sister, obesity, and carrying more than one baby. Therefore, multiple

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pregnancies are the cause of preeclampsia (Nurnaningtiyas Aminoto et al., 2013)

Based on the results of statistical tests using Chi-Square with a significance level of = 0.05, we get = 0.000. The value of = 0.000 < = 0.05 (ρ <) then Ho is rejected and Ha is accepted, there is a relationship between a history of hypertension and the incidence of preeclampsia in Syamrabu Bangkalan Hospital. The part of the brain that controls the mechanism of constriction and relaxation is the medulla, called the vasomotor center. From this vasomotor center, the sympathetic nerve pathway begins, which continues down the spinal cord and exits from the spinal cord column sympathetic ganglia in the thorax and abdomen. Stimulation of the vasomotor center is delivered in the form of impulses that travel downward through the sympathetic nervous system to the sympathetic ganglia. At this point, preganglionic neurons release acetylcholine, which will stimulate postganglionic nerve fibers to the blood vessels, where the release of norepinephrine causes blood vessel constriction (Nurnaningtiyas Aminoto et al., 2013)

Based on the results of statistical tests using Chi-Square with a significance level of = 0.05, we get = 0.010. The value of = 0.010 < = 0.05 (ρ <) then Ho is rejected and Ha is accepted, there is a relationship between age and the incidence of preeclampsia in Syamrabu Bangkalan Hospital. The age of pregnant women 30 years has a significant relationship with the risk of preeclampsia and eclampsia. According to existing theory, preeclampsia is more often found in the early and late reproductive years, namely adolescence or over 35 years (Djannah, 2012).

V. CONCLUSION

Risk factors associated with preeclampsia in pregnant women (parity, obesity, multiple pregnancies, history of hypertension, and age with the incidence of preeclampsia at Syamrabu Bangkalan Hospital in 2022 from the results of statistical analysis that there is a relationship

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ETHICAL CONSIDERATION

This research has passed the ethical feasibility test with Number: 1395/KEPK/STIKES-NHM/EC/VI/2022issued by the Ethics Commission of STIKes Ngudia Husada Madua on Juni 21, 2022