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Relationship of Age and Parity with Preeclampsia in Pregnant Women at Regional Technical Implementation Unit Robatal Public Health Center in 2022

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Abstract
Background: *Indonesia's maternal mortality rate is the second highest in Southeast Asia after Laos in 2015. Preeclampsia itself is a direct cause of maternal death with multisystem disorders that usually affect 2% - 5% of pregnant women in Indonesia.* ***Objective:*** *Determine the relationship between maternal age and parity on the incidence of preeclampsia.* ***Method:*** *What is used in this study is an observational study that is analytical in nature with a cross sectional design or approach. The population in this study is all pregnant women of more than 20 weeks gestation in the Regional Technical Implementation Unit of the Robatal Public Health Centering 2022, with a total sample of 258 people. Sampling technique using Systematic Random Sampling. The statistical test used is the chi square test.* ***Results:*** *Based on analysis with chi-square test, it was concluded that there was a significant association between age and severe preeclampsia (p=0.031 <0.05) and no significant association between parity and severe preeclampsia (p=0.497>0.05).* ***Conclusions:*** *Based on analysis with chi-square test, it was concluded that there was a significant association between age and severe preeclampsia and no significant association between parity and severe preeclampsia.*
Keyword: Parity; Preeclampsia; Pregnant Women;

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Introduction

An increase in blood pressure accompanied by proteinuria in pregnancy over 20 weeks is a condition of preeclampsia in pregnancy. If there is a seizure, it is called eclampsia (Rahayu, 2019). A study by the *World Health Organization* states that hypertension in pregnancy one of which is preeclampsia accounts for 16% of all maternal deaths in developing countries and is responsible for 9% of maternal deaths in Africa and Asia (Jeyabalan, 2013). In Indonesia alone, the maternal mortality rate reached 305 per 100,000 live births in 2015 caused by preeclampsia of 26.47% (Ministry of Health, 2019).

The Maternal Mortality Rate (MMR) in East Java increased in 2020. This is due to restrictions on pregnancy check-up visits so that the screening of high-risk pregnant women is less than optimal. According to Supas in 2016, the National Maternal Mortality Rate is 305 per 100,000 live births (Zainab, 2023). In 2019, the maternal mortality rate of East Java Province reached 89.81 per 100,000 live births. This figure is an increase compared to 2020 which reached 98.39 per 100,000 live births. One of the three highest causes of maternal death in 2020 is hypertension in pregnancy, which is 26.90% or as many as 152 people (East Java Provincial Health Office, 2020).

The Maternal Mortality Rate (MMR) in Sampang Regency increased in 2021 from 61 per 100,000 live births in 2020 to 106 per 100,000 live births in 2021. The highest Maternal Mortality Rate (MMR) in 2021 is found in Robatal District, which is 997 per 100,000 live births of 5 people. While the lowest MMR is in Omben, Karangpenang, and Sokobanah Districts. In Omben District, which is 1,411 per 100,000 live births as many as 1 person, Karangpenang District which is 1,306 per 100,000 live births as many as 1 person and Sokobanah District which is 1175 per 100,000 live births as many as 1 person for 6 sub-districts there are no maternal deaths. The three highest causes of maternal death in 2020 are the causes of HPP in pregnancy, namely 4 people, pulmonary embolism there is 1 person, Odem Lung there is 1 person, PEB there are 2 people, Hyperthyroid there is 1 person and eclampsia there is 1 person. Efforts to reduce maternal mortality due to bleeding and Pre-Eclampsia / Eclampsia continue to be carried out and be aware of other causes. (Sampang District Health Office 2021)

Many unknown risk factors for preeclampsia poor prognosis lead to high mortality and Morbi mortality (Perdana et al., 2017). Family history of having suffered from preeclampsia, nullipara women, multiparous pregnancy, multiple pregnancies, pregnancies with an interval of > 10 years, pregnancy by changing partners, mothers with a history of diabetes, maternal age ≥ 40 years, hypertensive disease, Nullipara, and women who were previously pregnant with preeclampsia is a risk factor preeclampsia.

Extreme maternal stress such as ≥ age 40 years has been associated with an increased risk of preeclampsia/eclampsia (Ukah et al., 2016). Extreme maternal age is a risk factor for preeclampsia and women aged 40 years have a 2-fold risk of developing preeclampsia compared to younger women (Vincent et al., 2018). In research conducted by Dekker and Robillard it was found that the risk of preeclampsia in the second pregnancy increases with maternal age (Indonesian Society of Obstetrics and Gynecology, 2016).

Parity is a risk factor associated with the onset of preeclampsia. In one study it was found that the frequency is higher in primigravida about 75% than multigravida. When compared with multipara, the frequency of nulliparous preeclampsia a is higher, especially for young nullipara. The effect of parity is large because almost 20% of people suffer from hypertension before, during childbirth, or the puerperium period rather than multipara camps are likely due to exposure to coronial villi for the first time (Amalina et al., 2022)

Method

This study is an analytical observational study with a cross-sectional design or approach, namely research in which the measurement of independent and dependent variables is carried out simultaneously (Madiyono et al., 2014). The independent variable in the study was maternal age, parity, while the dependent variable was the incidence of preeclampsia in pregnant women. The population in this study was all pregnant women in the Robatal Public Health Center recorded in the Medical Record Installation from January to December 2022 which had a total of 282 people. with a total sample of 258 people. The sample technique in this study is *systematic random sampling*.

The research sample is the part of the population that meets the inclusion criteria and exclusion criteria, where these criteria determine whether the sample can be used. The inclusion criteria are obtained from secondary data in the form of data on pregnant women with a gestational age of more than 20 weeks. The study was conducted in January 2023 at the Robatal Public Health Center. The data were analyzed by univariate analysis and bivariate analysis to assess the relationship between the dependent variable and the independent variable using the chi-square statistical test at $\alpha = 0.05$. The relationship is said to be meaningful when the p value ≤ 0.05 and there is no meaningful relationship when the p value is > 0.05 (Hastono, 2016).

Results and Discussion

1. Univariate Results

To find out the frequency distribution of each variable, namely the independent variable (maternal age, parity) and dependent variable (preeclampsia) which will be described as follows:

Table 1

Frequency Distribution Based on Preeclampsia Incidence, Age, Parity and Maternal

No.	Variable	Frequency (n)	%
1	**Preeclampsia**		
	Non Preeclampsia	227	88%
	Preeclampsia	31	12%
2	**Age**		
	<35 years	211	82%
	>35 years	47	18%
3	**Parity**		
	High risk	84	33%
	Low risk	174	67%

Based on table 1, from a total of 258 respondents, it is known that respondents who are no preeclampsia have a total of 227 people (88%) and who experience preeclampsia have a total of 31 people (12%), maternal age <35 years old have a total of 2 11 people (82%) and those at high risk have a total of 4 7 people (1 8%), low risk 174 people (67%) and high-risk total 84 people (33%).

2. Bivariate Results

Table 2

The Relationship Between Maternal Age and the Incidence of Preeclampsia

	Preeclampsia				**Total**		***p*-value**	**Odds Ratio (OR)**
	Not		**Already**		**n**	**%**		
	n	**%**	**n**	**%**				
Age <35	190	90%	21	10%	211	100%	0,031	4.662[a]
Age >35	37	79%	10	21%	47	100%		
Total	**227**		**31**		**258**			

Based on table 2, it was found that from 2 11 respondents in the age category of <35 years, there were 1 90 people (90%) who did not have preeclampsia, and 21 people (10%) who had preeclampsia. While of the 47 respondents with high-risk age, there were 37 people (79%) who did not have preeclampsia, and 10 people (21%) who had preeclampsia. Based on the results of the chi square test at the limit of α= 0.0 5 and df = 1 obtained p-value = 0.031< α=0.05, this shows that there is a relationship between maternal age and the incidence of preeclampsia so that the hypothesis that states there is a meaningful relationship is statistically proven. The Odds Ratio results obtained a value of 4.662 which means that respondents with the age of >35 years are 4.662 times more likely to experience preeclampsia than respondents whose age is <35 years

Table 3

The Relationship of Parity with the Incidence of Preeclampsia

	Preeclampsia				**Total**		***p*-value**	**Odds Ratio (OR)**
	Not		**Already**		**n**	**%**		
	n	**%**	**n**	**%**				
Low Risk	81	86%	13	14%	94	100%	0,497	0,460
High Risk	146	89%	18	11%	164	100%		
Total	**227**		**31**		**258**			

Based on table 3, it was found that out of 94 respondents with low-risk parity, there were 81 people (86%) who did not have preeclampsia, and 13 people (14%) who had preeclampsia. Of the 164 respondents with high-risk parity, 146 (89%) did not have preeclampsia and 18 (11%) had preeclampsia. Based on the results of the chi square statistical test at the limit of α=0.05 and df=1 obtained p value = 0.497 < α=0.05, this shows that there is no relationship between maternal parity and the incidence of preeclampsia so that the hypothesis that there is a meaningful relationship is not

statistically proven. The Odds Ratio results obtained a value of 0.460 which means that respondents with high-risk parity are 0.460 times more likely to experience preeclampsia than respondents with low-risk parity.

Discussion

1. The Relationship Between Maternal Age and the Incidence of Preeclampsia

The Relationship Between Maternal Age and the Incidence of Preeclampsia This study was conducted on 258 respondents, where age was divided into 2 categories, namely maternal age <35 years, maternal age >35 years. Based on the results of the chi square test at the limit of α= 0.0 5 and df = 1 obtained p value = 0.031 < α = 0.05, this shows that there is a relationship between maternal age and the incidence of preeclampsia so that the hypothesis that there is a meaningful relationship is statistically proven. The Odds Ratio results obtained a value of 4.662 which means that respondents with the age of >35 years are 4.662 times more likely to experience preeclampsia than respondents whose age is <35 years

This research is in line with several other studies, such as Mariati (2022) and research (Wahyuni, 2020) found that there is a significant relationship between maternal age and the incidence of preeclampsia with a *p*-value of 0.000. (Novianti, 2016) The results of statistical tests with the Chi Square formula obtained the value ρ value = 0.001. Because of the results of ρ < α (ρ < 0.05), there is a relationship between maternal age and the incidence of Severe Preeclampsia in the BLUD Maternity Room of Dr. Ben Mboi Ruteng Hospital in 2016. Ertiana (2019) Analysis using Chi Square obtained p value = 0.000 < α 0.05, CC value = 0.376, CI value = 2.962 – 10.718 and OR value = 5.6, so Ho was rejected and H1 was accepted meaning that there was a relationship between age and the incidence of preeclampsia in pregnant women at Kediri Regency Hospital

This is in accordance with the theory that age has a relationship with preeclampsia because p there is maternal age, 36% of preeclampsia outcomes occur at the age of more than 36 years, in accordance with the theory that pregnant women over the age of 35 years have a greater risk of preeclampsia than younger ages. This happens because at the age of more than 35 years degenerative diseases have begun to be found frequently (Setyorini et al., 2018). In addition, women aged > 35 years, can experience chronic hypertension where the muscle layer near the spiral artery will tighten and the lumen of the spinal artery also experiences vasoconstriction. This can lead to failure of spiral artery remodeling. Blood flow to the uteroplacental will decrease and cause hypoxia and placental ischemia (Vincent et al., 2018)

2. The Relationship of Parity with the Incidence of Preeclampsia

This research was conducted on 258 respondents, where parity was divided into 2 categories, namely low risk if multipara and Grande multipara, high risk if nullipara and primipara. The results of the study on the analysis of univariate, it was found that from 258 proportions of parity, yens low risk a total of 94 people and a high risk of a total of 164 people. Based on the results of bivariate sis analysis, 94 respondents with low-risk

parity there were 81 or who (86%) did not have preeclampsia, and 13 people (14%) who had preeclampsia, while in respondents with high-risk bag rays, there were 146 people (89%) who did not have preeclampsia and 18 (11%) who had preeclampsia.

Based on the results of the chi square test at the limit of α= 0.05 and df = 1 obtained p value = 0.497 > α=0.05, this shows that there is no relationship between maternal parity and the incidence of preeclampsia so that the hypothesis that there is a meaningful relationship is not statistically proven. The Odds Ratio results obtained a value of 0.460 which means that respondents with high-risk parity are 0.460 times more likely to experience preeclampsia than respondents with low-risk parity.

This research is in line with several other studies such as those conducted (Rospia et al., 2021) at Panembahan Senopati Bantul Hospital where there was no parity relationship with the incidence of severe preeclampsia (*value* 0.587>0.005) at Panembahan Senopati Hospital Bantul, Research (Asmana et al., 2016) at Achmad Mochtar Bukit Tinggi Hospital obtained results There was no significant relationship between parity and severe preeclampsia (p = 0.096>0.05), the study (Veftisia & Khayati, 2018) found that primiparous mothers had a risk of experiencing pre-eclampsia during pregnancy by 0.83 times but did not have a significant relationship (p = 0.702), and also the research conducted (Hermawati, 2020) obtained results There was no association between parity and preeclampsia (p-value = 0.489).

Based on Table 2, out of 258 samples, 211 (82%) of them are in the age group of <35 years. This means that of all cases, the same age group is the <35 age group which is not a risk factor for preeclampsia.

This was also obtained (Asmana et al., 2016) in Rumah Sakit Achmad Mochtar Bukit tinggi where of 162 cases of severe preeclampsia, 96 cases (59.26%) of them were in the age group of 20-35 years.

The difference in this data with existing theories can be caused by differences in total samples in both age groups, where the sample in the age group <35 years is much more.

Conclusion

Based on analysis with chi-square test, it was concluded that there was a significant relationship between age with severe preeclampsia (p = 0.031 <0.05) and no significant relationship between parity and severe preeclampsia (p = 0.497>0.05)

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