



## RISK FACTORS FOR SEVERE PRE-ECLAMPSIA IN PREGNANT WOMEN IN RIAU ISLANDS 2019

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### ABSTRACT

Pre-eclampsia is a specific disorder in pregnancies older than 20 weeks characterized by an increase in blood pressure (hypertension) and the presence of protein in the urine (proteinuria). The incidence of pre-eclampsia/ eclampsia is associated with a low level of maternal education, and others. Tanjungpinang City Hospital, which is the main referral hospital in Tanjungpinang City, noted that pre-eclampsia/eclampsia complications have increased. The purpose of this study is to determine the risk factors for PEB in pregnant women in the Riau Islands region in 2019. This type of research uses descriptive research methods with an approach that includes nursing assessment, diagnosis, intervention, implementation and evaluation of nursing. This research was carried out in the Riau Islands area. The subjects of the study were 30 pregnant women who lived in Berakit village and Pengudang village. From the results of the study, it was found that there was a relationship between age (p-value = 0.01), last education (p-value = 0.01), and a history of hypertension (p-value 0.000) with the incidence of preeclampsia. Meanwhile, in the factors of employment status (p-value = 0.361), parity (p-value = 0.414) and gestational age (p-value = 0.381) there was no significant relationship with the incidence of preeclampsia.

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### 1. INTRODUCTION

Maternal Mortality Rate (MMR) is one of the indicators that can be used to assess women's health so that it is included in the fifth Millennium Development Goals (MDGs) target. Indonesia's target of MMR in 2015 in accordance with the MDGs is 102 deaths per 100,000 live births. Meanwhile, the 2015 Inter-Census Population Survey (SUPAS) recorded an MMR of 305 per 100,000 live births (Satatistic Central Agency, 2016). The achievement of this figure caused Indonesia to fail to achieve the 2015 MGDs target and return Indonesia to its 2002 condition (UNICEF, 2012).

The cause of maternal death from a systematic analysis of WHO (World Health Organization) from 115 countries in the world from 2003 to 2012 found that 73% of maternal deaths were caused by direct causes with the three largest main causes being bleeding (27.1%), then, hypertension in pregnancy (pre-eclampsia/ eclampsia) (14%) and infection (10.7%) (Say L et al, 2014).

Data in Indonesia, the cause of maternal death in 2014 is still occupied by the three largest causes, namely bleeding (30.3%), pre-eclampsia/eclampsia (27.1%) and infection (7.3%). However, the proportion of the three causes of maternal death began to change, where bleeding and infection tended to decrease while pre-eclampsia/eclampsia the proportion increased every year. Data from the Ministry of Health of the Republic of Indonesia recorded that the 2010 year was 21.5%; in 2011 it was 24.7%; in 2012 it was 26.9% and increased again in 2013, namely 27.1% (Ministry of Health ri, 2014).

Pre-eclampsia is a specific disorder in pregnancies older than 20 weeks characterized by an increase in blood pressure (hypertension) and the presence of protein in the urine (proteinuria), while eclampsia is an advanced condition of pre-eclampsia in the form of seizures and or coma. The prevalence of these pregnancy complications is about 2–10% of all pregnancies in the world (Koffreh ME et al, 2014).

The incidence of pre-eclampsia/ eclampsia is associated with a low level of maternal education, unemployed mothers and insufficient family income (Astrina N, 2015; Prasetyo R et al, 2014, Moseley et al, 2011). Maternal health status such as overweight maternal nutritional status (BMI)  $\geq 23$ , a history of hypertension, a history of diabetes mellitus, and a family history of pre-eclampsia are also associated with the incidence of pre-eclampsia / eclampsia (Kartasurya MI, 2015; Shamsi U et al, 2013; Ramesh et al, 2013).

Other factors that are also related to the incidence of pre-eclampsia / eclampsia are high risk age (<20 years or >35 years), primiparity (birth of the first child), not using contraception, incomplete antenatal care visits and antenatal services received are not in accordance with integrated antenatal service standards (Puspitasari AA, 2010; Kashanian et al, 2011; Gane B et al, 2013; Agrawal S et al, 2014).

Tanjungpinang City is an area of Riau Islands province with the largest cause of death is pre-eclampsia / eclampsia (Riau Islands Provincial Health Office, 2014). It was noted that maternal mortality due to pre-eclampsia/eclampsia in 2012 amounted to 40% of the total maternal deaths, then decreased to 25% in 2013 and increased again in 2014 to 45.54% of the total maternal deaths in Tanjungpinang City (Tanjungpinang City Health Office, 2015).

Tanjungpinang City Regional General Hospital (RSUD) is the main referral hospital of Tanjungpinang City. Data from the perinatal maternal audit report of Tanjungpinang City Hospital noted that pre-eclampsia/eclampsia complications per total number of deliveries in the hospital showed an increasing trend. In 2013 it was 11.72% of the 793 deliveries; in 2014 it was 14.65% of 778 deliveries and in 2015 it was 16.06% of 859 deliveries. The purpose of this study was to determine various factors related to the increase in the incidence of pre-eclampsia / eclampsia at Tanjungpinang City Hospital in 2015 to be used in the development of public health intervention programs in the context of efforts to prevent pre-eclampsia / eclampsia.

## 2. RESEARCH METHOD

The design of this case study is a simple descriptive to explore the problem of PEB Risk Factors in the Riau Islands region. The approach used is an approach that includes assessment, nursing diagnosis, nursing intervention, nursing implementation and nursing evaluation.

The hypothesis in this study is that there is a relationship between mother's age, gravida status, gestational age and history of disease with the incidence of severe preeclampsia in pregnant women.

The population and samples from this study were PEB pregnant women in the Riau Islands region. Researchers use non-probability sampling with the purposive sampling method, which is a sampling technique based on certain goals and objectives in accordance with inclusion and exclusion criteria. The sample size in the experimental study ranged from 20 to 30 samples (Sugiyono, 2010). So in this study took a sample of 30.

## 3. RESULTS AND ANALYSIS

The subjects of this study were 30 pregnant women who lived in Berakit village and Pengudang village. The distribution about the characteristics of the subject of the study is described in the form of frequency distribution based on research variables.

**Table 1. Characteristics of Respondents**

No	Characteristics of Respondents	Frequency (f)	Percentage (%)
1.	Age		
	< 30 years	10	33,3 %
	30 – 35 years	12	40 %
	> 35 years	8	26,7 %
2.	Employment Status		
	Civil Servants	6	20 %
	Housewives	24	80 %
3.	Recent Education		
	Primary school	5	16,7 %

	Junior High School	10	33,3 %
	Senior High School	8	26,7 %
	D3	1	3,3 %
	S1	6	20 %
4.	Parity		
	Primipara	5	16,7 %
	Multipara	25	83,3 %
5.	History of Hypertension		
	Yes	4	13,3 %
	No	26	86,7 %
6.	Gestational Age		
	1 – 13 weeks	6	20 %
	14 – 27 weeks	18	60 %
	28 – 40 weeks	6	20%

Based on Table 5.1, most of the pregnant women who were respondents were aged 30–35 years, namely 11 (36.7%) respondents, the most employment status was IRT, namely 24 (80%), the respondents' education level was mostly junior high school as many as 10 (33.3%), the most parity was multipara, namely 25 (83.3%) respondents. 26 (86.7%) respondents had no history of hypertension, and the respondent's gestational age was at most 14–27 weeks, which was 18 (60%) respondents.

Table 2. Risk Factors for PEB Based on PEB Knowledge Level

Risk Factors for PEB	Preeclampsia Knowledge Level							
	Good		Keep		Less		Total	
	F	%	F	%	F	%	F	%
<b>Age</b>								
< 30 years	10	33,3	0	0	0	0	9	33,3
30 – 35 years	12	40,0	0	0	0	0	12	40,0
> 35 years	5	16,7	3	10,0	0	0	8	26,7
<b>Employment Status</b>								
Civil Servants	6	20,0	0	0	0	0	6	20,0
Housewives	21	70,0	3	10,0	0	0	24	80,0
<b>Recent Education</b>								
Primary school	3	10,0	3	10,0	0	0	6	20,0

Junior High School	10	33,3	0	0	0	0	10	33,3
Senior High School	8	26,7	0	0	0	0	8	26,7
D3	1	3,3	0	0	0	0	1	3,3
S1	5	16,7	0	0	0	0	5	16,7
<b>Parity</b>								
Primipara	5	16,7	0	0	0	0	5	16,7
Multipara	22	73,3	3	10,0	0	0	25	83,3
<b>History of Hypertension</b>								
Yes	3	10,0	3	10,0	0	0	6	20%
No	24	80,0	0	0	0	0	24	80%
<b>Gestational Age</b>								
1 – 13 weeks	5	16,7	1	3,3	0	0	6	20,0
14 – 27 weeks	16	53,3	3	10,0	0	0	19	63,3
28 – 40 weeks	5	16,7	0	0	0	0	5	16,7

Based on Table 5.2, it is known that characteristics based on age with knowledge of preeclampsia which include the definition of preeclampsia / pregnancy poisoning, causes, signs and symptoms, as well as prevention of preeclampsia, were obtained by respondents aged < 30 years, totaling 10 respondents (33.3%) had good knowledge. 8 people, 5 (16.7%) respondents have good knowledge and 3 (10%) respondents have a moderate level of knowledge.

On the characteristics of the respondents' employment status, it can be seen that 6 respondents (20%) with the employment status of civil servants have a good level of knowledge. 21 respondents (70%) with a working status as a Housewife also had a good level of knowledge, but 3 respondents (10%) had a moderate level of knowledge.

The characteristics of the last education showed that 6 respondents with the last elementary school education, 3 (10%) of whom had good knowledge and 3 (10%) respondents had a moderate level of knowledge (16.7%). Respondents with the last education in junior high school were 10 (33.3%), high school as many as 8 respondents (26.7%), D3 as many as 1 respondent (3.3%), and S1 as many as 5 respondents (16.7%) had a good level of education.

The characteristics of respondents based on parity were obtained by 5 respondents with primiparous status or equivalent to 16.7% had a good level of knowledge. However, in multipara status, 22 respondents or equivalent to 73.3% had a good level of knowledge and 3 respondents (10%) had a moderate level of knowledge.

On the characteristics of the history of hypertension, it can be seen that respondents who have a history of hypertension with 3 respondents (10%) good knowledge levels and 3 respondents (10%) moderate knowledge levels. Meanwhile, the other 24 respondents (80%) did not have a history of hypertension showing a good level of knowledge.

Gestational age is divided into 3 categories. At 1-13 weeks gestational age, there were 5 respondents or equivalent to 16.7% having a good level of knowledge and 1 respondent (3.3%) a moderate level of knowledge. At 14-27 weeks gestational age, there were 16 respondents or equivalent to 53.3% having good knowledge and 3 respondents (10%) moderate knowledge levels. At 28-40 weeks gestation, there were 5 respondents or 16.7% had a good level of knowledge.

**Table 3. Analysis of the Relationship between PEB And PEB Knowledge Level**

Risk Factors for PEB	Knowledge Level of Severe Preeclampsia						Asymp. Sig (2-tailed)	
	Good		Keep		Less			
	F	%	F	%	F	%		
<b>Age</b>								
< 30 years	10	33,3	0	0	0	0	30 0,01	
30 – 35 years	12	40,0	0	0	0	0		
> 35 years	5	16,7	3	10,0	0	0		
<b>Employment Status</b>								
Civil Servants	6	20,0	0	0	0	0	30 0,361	
Housewives	21	70,0	3	10,0	0	0		
<b>Recent Education</b>								
Primary school	3	10,0	3	10,0	0	0	30 0,01	
Junior High School	10	33,3	0	0	0	0		
Senior High School	8	26,7	0	0	0	0		
D3	1	3,3	0	0	0	0		
S1	5	16,7	0	0	0	0		
<b>Parity</b>								
Primipara	5	16,7	0	0	0	0	30 0,414	
Multipara	22	73,3	3	10,0	0	0		
<b>History of Hypertension</b>								
Yes	3	10,0	3	10,0	0	0	30 0,000	
No	24	80,0	0	0	0	0		
<b>Gestational Age</b>								
1 – 13 weeks	5	16,7	1	3,3	0	0	30 0,381	
14 – 27 weeks	16	53,3	3	10,0	0	0		
28 – 40 weeks	5	16,7	0	0	0	0		

Based on Table 5.3, it can be seen that there is an association between age risk factors ( $p=0.01$ ), last education ( $p=0.01$ ), and a history of hypertension ( $p=0.000$ ). Meanwhile, other factors show that there is no relationship between factors and knowledge levels. The results of Asymp.Sig (2-tailed) showed that in the age factor of  $p$  value=0.010, the employment status factor  $p=0.061$ , the last education factor  $p=0.178$ , the parity factor  $p=0.414$ , the factor history of hypertension  $p=0.283$ , the gestational age factor  $p=0.610$ .

## ANALYSIS

In this study, it is known that there are 3 (three) variables that have a meaningful relationship with this study, namely age variables, last education, and a history of hypertension. While those that are not related are employment status, parity, and gestational age. The age of healthy reproduction in a female is 20-35 years. This age group is able to reduce the risk of maternal death due to pre-eclampsia as well as due to other causes of maternal death in Indonesia. The age of 35 years is among the times at risk of reproduction. This age group can be one of the direct causes of maternal death which is often referred to as Too Young and Too Old (Vivian et al, 2011). The results of the analysis found that there was a significant relationship between age risk factors and the level of knowledge of the p value = 0.01. In this study, respondents found more at the normal reproductive age of 20-35 years. This result is in line with Wuryandari's findings, that the frequency of pre-eclampsia events is the highest in the age group of 20-35 years (Wuryandari, 2012). However, it is not in line with the opinion of Robson, et al., that pregnant women with the age of 35 years are a risk factor for the occurrence of pre-eclampsia in addition to vascular and kidney diseases, diabetes mellitus, chronic hypertension and other diseases (Robson & Waugh, 2013). Supported by the findings of Abalos, et, al., that there was a significant relationship between maternal age >35 years and the incidence of pre-eclampsia. The same researcher also said that the age of 35 years and at the normal reproductive age between the ages of 20-35 years must be carried out intensive pregnancy monitoring in order to minimize the risk factors that may occur through adequate and regular Ante Natal Care (ANC) visits.

Prevention of pre-eclampsia is very limited because its etiology is not yet known. Examination by screening has not been able to show adequate results to determine the risk factors for pre-eclampsia. Therefore, health workers need to take a thoughtful approach by identifying pregnant women who are at risk or pregnant women who show symptoms. These risk factors can usually be known through the assessment of the history of disease in pregnant women and the results of examinations carried out carefully. These various risk factors have their own roles and the interaction of these risk factors is not fully understandable. However, there is a tendency that a pregnant woman who has more risk factors will generally indicate a worse state. Hypertension in pregnancy is defined as systolic blood pressure  $\geq 140$  mmHg and or diastolic blood pressure  $\geq 90$  mmHg. The signification of any blood pressure measurement is related to gestational age in pregnancy and generally the earlier hypertension occurs in pregnancy, the more likely it is that the hypertension becomes chronic (Christiana, 2014). The results of the analysis found a significant association between the risk factors of the history of hypertension and the level of knowledge about preeclampsia with a value of p = 0.000. These results are in line with the research of Safitri, et al., that there is a significant relationship between the history of the disease and the incidence of pre-eclampsia with a p value = 0.000.

The research conducted found that there was a meaningful relationship between maternal education and the incidence of PEB, based on bivariate results, namely the value of p = 0.01. Another study conducted by Moghadam (2012) found that there was a meaningful relationship in increasing the risk factor of peb events with maternal education p value 0.04. According to Bilano (2014), education increases the incidence of PEB. Mothers who are uneducated or poorly educated have an increased risk of peb events due to lack of information about PEB.

The results of the study of risk factors for employment status to the occurrence of PEB According to North (2011) in his study, there was no significant relationship or difference in the incidence of PEB in the group of working or non-working mothers. Similarly, this study showed a p value of 0.361. Another study conducted by Moghadam (2012) found that there was no meaningful relationship in increasing the risk factor of PEB events with maternal work (comparing working and non-working mothers) with a p value of 0.09.

Preeclampsia usually occurs in the first pregnancy, this is due to the presence of immunologically vascular damage to the placenta that often occurs in primigravida mothers and pregnant women with autoimmune disorders. However, preeclampsia can also occur in multipara pregnant women, especially if there are other predisposing factors such as pregnancy at an older age (Hacker, et al, 2016). This theory is in line with the results of this study that more pregnant women with multipara who are over 35 years old have preeclampsia. From the results of the study, it was also found that pregnant women with older multipara are at risk of severe preeclampsia. This can be because in older multipara mothers, the risk of cardiovascular disease increases and there is a decrease in body function which results in the faster development of preeclampsia (Simkin, Whalley, Keppler, Durham & Bolding, 2016).

However, the results of the analysis found no significant relationship with the value of p=0.414. In accordance with research conducted in Banjarmasin, the results of a weak relationship between parity variables and preeclampsia with pvalue = 0.862 (Khodarsih, Panghiyangani, Noor, Husaini & Marlinae, 2019). From the two studies, it can be concluded that there is no meaningful relationship between parity and preeclampsia. Other studies conducted in Ethiopia also explained that there was no significant association between maternal parity and the incidence of preeclampsia. This study got results from a total of 239 pregnant women who experienced preeclampsia, 95 pregnant women (39.75%) were nullipara, 66 pregnant women (27.62%) were primipara, and 78 pregnant women (32.64%) were multipara. The results of the statistical test obtained a p-value value = 0.119 which means that there is no relationship between parity and the incidence of preeclampsia, thus showing that preeclampsia

is not only a cendering occurs in primipara but can also occur in multipara mothers (Walesemayat, Taye, Seid, Fetwi & Gufue, 2020).

The role of health workers in relation to blood pressure disorders in pregnancy lies in their thoroughness in conducting examinations, identifying early and conducting consultations, collaboration with doctors. Pre-eclampsia can have a very serious impact on both the mother and the fetus. Therefore, maintaining a high level of suspicion and avoiding the excessive assumption that the findings obtained indicate normal conditions will help establish the correct diagnosis and proper treatment. The level of knowledge of all risk factors for the occurrence of PEB is expected to reduce the number of PEB sufferers in pregnant women.

#### 4. CONCLUSION

Based on the results of a study entitled Risk Factors for the Occurrence of PEB in Pregnant Women in the Riau Islands Region 2019, it can be concluded that the respondents used were as many as 30 pregnant women. The results obtained were a relationship between age (p-value = 0.01), last education (p-value = 0.01), and a history of hypertension (p-value 0.000) with the incidence of preeclampsia. Meanwhile, in the factors of employment status (p-value = 0.361), parity (p-value = 0.414) and gestational age (p-value = 0.381) there was no significant relationship with the incidence of preeclampsia.

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