

Birth Weight Outcomes in Advanced Maternal Age (AMA) with Pre-eclampsia and Severe Pre-eclampsia at Dr. Soetomo Surabaya Period 2021-2022

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ABSTRACT

Background: Preeclampsia is one of the leading causes of maternal mortality in Indonesia and leads to severe fetal complications, including low birth weight (LBW). LBW not only affects the health of the fetus at birth but also increases the risk of cognitive and developmental disorders later in life. Advanced Maternal Age (AMA) is a recognized risk factor for preeclampsia, and several studies have demonstrated an association between preeclampsia and an increased risk of LBW. **Objective:** This study aimed to analyze the frequency distribution of preeclampsia severity advanced maternal age and its association with low birth weight for the period 2021-2022 at RSUD Dr. Soetomo Surabaya. **Method:** A retrospective observational descriptive study design. The objects of this study were 69 preeclampsia patients who had an age of more than 35 years. The variables of this study were maternal age, the severity of preeclampsia, and LBW. **Result:** This study analyzed 69 preeclampsia patients who met the inclusion criteria. Among these, 10 patients (14,49%) had preeclampsia, while 59 patients (85,51%) had severe preeclampsia. Mothers with severe preeclampsia were more often associated with low birth weight at 72,88%, while preeclampsia was 70%.

Keywords: severity of preeclampsia; Low Birth Weight (LBW); Advanced Maternal Age (AMA).

INTRODUCTION

Preeclampsia is a condition that can lead to risks to maternal and fetal health, including LBW, which is defined as a birth weight of less than 2500 grams. Preeclampsia contributes to more than 500,000 maternal deaths, more than 50,000 fetal deaths, and 2-8% of pregnancy complications worldwide [1]. According to WHO data, about a tenth of maternal deaths in Asia and Africa and a quarter of maternal deaths in Latin America are associated with preeclampsia and eclampsia. Based on data from the Indonesian Ministry of Health, in 2023, the prevalence of maternal mortality due to preeclampsia and eclampsia in Indonesia was 24%, and 23% was caused by bleeding. Meanwhile, the prevalence in East Java, according to data from the health department in 2021, amounted to 9.62% or 123 cases of preeclampsia, being one of the three highest causes of maternal death in East Java.

Meanwhile, the global prevalence of low birth weight infants is approximately 15.5%, which translates to around 20 million babies born with low birth weight

each year, 96.5% of whom are born in developing countries. According to data from the Indonesian Nutrition Status Survey (SSGI), the incidence of LBW in Indonesia in 2022 was 6.0% of all babies born, while in East Java, it was 4.1% [2].

Based on data from the East Java Provincial Health Office, LBW became the most significant cause of death in neonates in 2022, which amounted to 36% of the total number of deaths of 3,171 deaths.

One of the maternal factors that contribute to preeclampsia and LBW is maternal age [3]. Women over 35 years of age have an increased risk of delivering premature babies, either spontaneously or iatrogenically, as well as the risk of LBW [4]. Birth weight is a good indicator of a baby's future development. In some developing countries, the average increase in birth weight and the decrease in the proportion of LBW are indicators of success [5]. Because LBW can cause increased economic and disease burdens, it is now designated as a global threat to developing countries that causes child growth and

development obstacles. Preventing factors that cause LBW is an essential step in reducing morbidity and mortality in early childhood [6].

METHOD

This study is a descriptive-analytic design with retrospective data using secondary data. The variables studied were AMA, severity of preeclampsia, and low birth weight. The population in this study were mothers with preeclampsia who were over 35 years old and delivered at Dr. Soetomo Surabaya Hospital in 2021-2022, with a total of 69 patients. This study used a total sampling technique by taking all subjects who met the inclusion criteria. These, namely complete patient medical records including the patient's name, patient's age, and diagnosis of the severity of preeclampsia, mothers who delivered babies over 35 years of age, mothers who delivered a live baby, single pregnancies, and all babies born who had complete medical records with the mother's name and birth weight. Meanwhile, the exclusion criteria were mothers with gestational diabetes, infection, and incomplete medical record data.

RESULT AND DISCUSSION

Based on the results of this study listed in Table 1. The results showed that in the period January 2021-December 2022 the incidence of preeclampsia at Dr. Soetomo Surabaya Hospital was dominated by patients with severe preeclampsia, which were 59 patients (85.51%), while those with preeclampsia were 10 patients (14.49%). This may be due to the involvement of maternal age factors.

TABLE 1: The Frequency Distribution of Preeclampsia Severity in Pregnant Women Aged Over 35 Years.

Severity of Preeclampsia	Frequency (n)	Percentage (%)
Preeclampsia	10	14.49%
Severe Preeclampsia	59	85.51%
Total	69	100%

The results of this study are in line with research by [7]. in Finland, showing that mothers aged more than 35 years have a higher prevalence of severe preeclampsia than mothers with younger ages, as many as 9.4% of mothers aged more than 35 years experience preeclampsia, while mothers with younger ages experience preeclampsia as much as 6.4% [7]. Research by [8] said that severe preeclampsia complicates 0.6 - 1.5% during pregnancy, the incidence of which occurs more at the age of more than 35 years than at a younger age. Likewise, complications that arise in severe preeclampsia accompanied by maternal age, which is included in the age of risk, will be higher experiencing premature birth, fetal growth disorders, gestational diabetes, HELLP syndrome, and thrombocytopenia [8]. In addition, the management of preeclampsia cases can be done at primary health facilities so that RSUD Dr. Soetomo, which is a type A hospital, gets more referral cases of severe preeclampsia.

Table 2. Shows that the results of this study showed that mothers diagnosed with preeclampsia delivered babies weighing less than 1500 grams in as many as 13 people (18.84%), weight 1500 - 2499 in as many as 37 people (53.62%), while weight more than 2500 grams in as many as 19 people (27.54%). Based on previous research, this may be due to reduced uteroplacental blood perfusion that occurs in patients with preeclampsia, resulting in reduced blood flow into the uterus and will impact the inadequate distribution of oxygen and nutrients to the fetus and end in LBW [9].

TABLE 2: The Frequency Distribution of Birth Weight In Preeclampsia.

Birth Weight	Frequency (n)	Percentage (%)
< 1500	13	18.84%
1500 - 2499	37	53.62%
> 2500	19	27.54%
Total	69	100%

These results are in line with research by [10] which found that as many as 43 patients diagnosed with preeclampsia delivered babies weighing less than 2500 grams (LBW), while as many as 16 other preeclampsia patients delivered babies with an average weight.

The results of this study are shown in Table 3. In mothers with severe preeclampsia, 31 mothers (52.54%) delivered babies with a weight of 1500 - 2499 grams and a weight of fewer than 1500 grams as many as 12 mothers (20.34%). Mothers with preeclampsia were 6 mothers who delivered babies with a weight of less than 2500 grams (60%) and as many as 1 person who delivered a baby with a weight of less than 1500 grams (10%). This finding underscores the need for careful monitoring and management of severe preeclampsia to prevent adverse neonatal outcomes. The increase in pathological progressivity in severe preeclampsia leads to worse hypovolemic, vasospasm, and endothelial damage to placental blood vessels, disrupting the flow of oxygen and nutrients to the fetus [11].

TABLE 3: Distribution of Birth Weight by Severity of Preeclampsia.

Severity of Preeclampsia	Birth Weight						Total	
	> 2500		1500 - 2499		< 1500		n	%
	n	%	n	%	n	%		
Preeclampsia	3	30.00	6	60.00	1	10.00	10	100
Severe Preeclampsia	16	27.12	31	52.54	12	20.34	59	100
Total	19	27.54	37	53.62	13	18.84	69	100

CONCLUSIONS

AMA with preeclampsia at Dr. Soetomo Surabaya Hospital in the 2021-2022 period was dominated by severe preeclampsia as much as 85.51% with the delivery of LBW babies as much as 72.88%, while the incidence of preeclampsia was 14.49% with the delivery of LBW babies as much as 70%.

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