



THE IMPACT OF PREECLAMPSIA ON NEONATAL OUTCOMES AMONG LABORING MOTHERS STUDY AT THE GAYATRI WARD, DR. WAHIDIN SUDIRO HUSODO REGIONAL GENERAL HOSPITAL, MOJOKERTO

Indah Kusmindarti¹, Lusi Rusdiana²

¹ PPNI Mojokerto Healthy Development University

² Dr. Wahidin Sudiro Husodo Regional General Hospital, Mojokerto

Corresponding Email: Indahk903@gmail.com*

ABSTRACT	Keywords
Preeclampsia is a major pregnancy complication contributing to maternal and neonatal morbidity and mortality. Impaired uteroplacental perfusion associated with preeclampsia can result in adverse neonatal outcomes, including asphyxia, prematurity, low birth weight (LBW), and intrauterine growth restriction (IUGR). This study aimed to analyze the impact of preeclampsia in laboring mothers on neonatal outcomes. A retrospective descriptive-analytic design was employed using medical records of 53 women with preeclampsia who met the inclusion criteria at Dr. Wahidin Sudiro Husodo Regional General Hospital, Mojokerto City, during 2025–2026. Data were analyzed using univariate analysis and Chi-square tests. Most mothers were aged 20–35 years (83.1%), multiparous (51%), and delivered at term (85%). Cesarean section was performed in 77.4% of cases. Normal neonatal outcomes were observed in 49.1% of infants, while asphyxia (39.6%), prematurity (15.1%), LBW (7.5%), and IUGR (1.9%) were also identified. Maternal age and gestational age were associated with neonatal outcomes, whereas parity showed no significant relationship. Gestational age was the most influential factor. Early detection and proper management of preeclampsia are essential to reduce neonatal complications	Preeclampsia, Newborn, Asphyxia, Prematurity, Low birth weight

INTRODUCTION

Preeclampsia is one of the leading causes of maternal and perinatal morbidity and mortality worldwide. It is characterized by an increase in blood pressure $\geq 140/90$ mmHg after 20 weeks of gestation accompanied by proteinuria or other organ dysfunction (American College of Obstetricians and Gynecologists [ACOG],

2020). According to the World Health Organization (WHO, 2023), approximately 10–15% of global maternal deaths are associated with hypertensive disorders in pregnancy, including preeclampsia. In Indonesia, hypertension in pregnancy remains one of the major causes of maternal mortality alongside hemorrhage and

infection (Ministry of Health of the Republic of Indonesia, 2024).

Vascular disorders in preeclampsia lead to decreased uteroplacental perfusion, resulting in fetal oxygen and nutrient deprivation. This condition can cause various complications in newborns, such as asphyxia, prematurity, low birth weight (LBW), and intrauterine growth restriction (IUGR) (Backes et al., 2011). Several studies have shown that maternal age, parity, and gestational age may influence neonatal outcomes in mothers with preeclampsia. Therefore, this study aims to analyze the impact of preeclampsia in laboring mothers on the condition of newborns.

METHOD

This study employed a descriptive-analytic design with a retrospective approach. The study was conducted using medical records of women with preeclampsia during labor. The study population consisted of all women who delivered between January 2025 and May 2026, totaling 820 respondents. The sampling technique used was purposive sampling, resulting in a final sample of 53 women with preeclampsia.

The independent variables included: Maternal age, Parity, Gestational age

The dependent variable was the neonatal outcome, which was categorized as: Normal, Low birth weight (LBW), Asphyxia, Prematurity, Intrauterine growth restriction (IUGR)

Data were analyzed as follows:

- 1. Univariate analysis was performed to describe the frequency distribution of respondents' characteristics.
- 2. Bivariate analysis was conducted using the Chi-square test with a significance level of $\alpha = 0.05$.
- 3. Multivariate analysis was performed using logistic regression

to identify the dominant factors influencing neonatal outcomes.

Data were collected using a checklist form completed based on the medical records of laboring mothers and their newborns. The variables collected included maternal characteristics, preeclampsia status, and neonatal outcomes.

RESULTS

Table1. Distribution of Respondent Characteristics

Characteristics	Frequency	Percentage (%)
Age		
20–35 years old	44	83,1
>35 years old	9	16,9
Paritas		
Primipara	18	34
Multipara	27	51
Grandemultipara	8	15
Gestasional age		
Preterm	8	15
Aterm	45	85
Methode of delivery		
Spontan	12	22,6
Sectio caesaria	41	77,4

Most respondents were aged 20–35 years (83.1%), were multiparous (51%), had term pregnancies (85%), and delivered by cesarean section (77.4%)

Table 2. Distribution of newborn conditions

Newborn conditions	Frequency	Percentage (%)
Normal	26	49,1
BBLR	4	7,5
Asphyxia	21	39,6
Prematuritas	8	15,1
IUGR	1	1,9

Most newborns were in normal condition at birth (49.1%), whereas the most common neonatal complication was asphyxia (39.6%)

Table 3. Association of Maternal Variables with Newborn Outcomes

Variable	p-value
Age moms	0,049
Paritas	0,210
Gestational age	<0,001

There was a significant association between maternal age and gestational age with neonatal outcomes ($p < 0.05$), whereas parity was not significantly associated with neonatal outcomes ($p > 0.05$).

The present study demonstrated that although nearly half of the newborns were delivered in normal condition, neonatal asphyxia remained the most common complication. These findings are consistent with previous studies showing that preeclampsia compromises uteroplacental perfusion, leading to chronic fetal hypoxia and increasing the risk of neonatal asphyxia, prematurity, and low birth weight (ACOG, 2020; WHO, 2023). Similarly, Magee et al. (2022) reported that hypertensive disorders of pregnancy substantially increase neonatal morbidity and the need for neonatal intensive care. However, compared with studies reporting higher rates of adverse neonatal outcomes, the relatively large proportion of normal neonatal outcomes observed in this study may reflect differences in the severity of preeclampsia, earlier diagnosis, improved antenatal surveillance, timely referral, and advances in obstetric and neonatal care. This suggests that adverse neonatal outcomes are not solely determined by the presence of preeclampsia but are also influenced by the quality and timing of clinical management.

Maternal age was significantly associated with neonatal outcomes, with women aged over 35 years experiencing more adverse neonatal events. This finding supports previous evidence indicating that advanced maternal age is associated with endothelial dysfunction, reduced placental vascular adaptation, and a higher prevalence of chronic diseases, all of which may worsen placental insufficiency (ACOG, 2022; Prawirohardjo, 2020). Nevertheless, several recent studies have shown that the effect of maternal age becomes less pronounced after adjustment for confounding factors such as obesity, chronic hypertension, diabetes mellitus, and socioeconomic status. Therefore, maternal age should not be

interpreted as an isolated determinant but rather as a marker that interacts with multiple maternal risk factors. This perspective may explain why some studies have reported inconsistent associations between maternal age and neonatal outcomes.

Gestational age emerged as the strongest predictor of neonatal outcomes, which is consistent with recommendations from FIGO (2023) and WHO (2023). Preterm infants are inherently more susceptible to respiratory distress, neonatal asphyxia, low birth weight, and other complications because of physiological immaturity. While Xiong et al. (2002) emphasized placental insufficiency as the primary mechanism leading to fetal growth restriction, more recent evidence indicates that gestational age also reflects clinical decision-making regarding the timing of delivery. In severe preeclampsia, early delivery is often necessary to prevent maternal complications, although it inevitably increases the risk of prematurity-related neonatal morbidity. Consequently, gestational age represents both a biological indicator of fetal maturity and a clinical consequence of obstetric management, which may explain its stronger predictive value compared with other maternal characteristics.

In contrast, parity was not significantly associated with neonatal outcomes. This finding differs from several earlier studies suggesting that primiparity increases the risk of adverse pregnancy outcomes. A possible explanation is that parity is primarily associated with the occurrence of preeclampsia rather than with neonatal outcomes after preeclampsia has developed. Because all participants in the present study had preeclampsia, the influence of parity may have been overshadowed by more dominant determinants, including disease severity, placental dysfunction, gestational age at delivery, and the quality of perinatal care. This interpretation is supported by recent evidence indicating that parity has limited

predictive value for neonatal outcomes once maternal clinical condition and gestational age are taken into account.

Overall, these findings emphasize that gestational age is the most important determinant of neonatal outcomes among pregnancies complicated by preeclampsia. The study highlights the importance of early identification of women at risk, comprehensive antenatal monitoring, timely referral to higher-level healthcare facilities, and individualized decisions regarding the optimal timing of delivery. Such strategies are essential to balance maternal safety with fetal maturity and ultimately improve neonatal outcomes.

CONCLUSIONS

Most mothers with preeclampsia were aged 20–35 years, were multiparous, and delivered at term by cesarean section. Neonatal asphyxia was the most common adverse outcome observed. Maternal age and gestational age were significantly associated with neonatal outcomes, whereas parity showed no significant association. Gestational age emerged as the strongest predictor of adverse neonatal outcomes, highlighting the critical role of fetal maturity in determining neonatal prognosis among pregnancies complicated by preeclampsia.

These findings contribute to the growing evidence that neonatal outcomes in preeclamptic pregnancies are influenced more by gestational age and disease severity than by maternal parity. From a theoretical perspective, the study supports the concept that placental dysfunction and impaired uteroplacental perfusion are the principal mechanisms underlying adverse neonatal outcomes in preeclampsia. From a practical perspective, the findings underscore the importance of early identification of women at risk, comprehensive antenatal surveillance, timely referral, and individualized decisions regarding the timing of delivery to optimize both maternal and neonatal outcomes. Future multicenter prospective studies with larger sample sizes are recommended to validate these findings

and further identify modifiable factors that may improve neonatal outcomes in pregnancies complicated by preeclampsia.

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