

The Relationship between Maternal Age and Parity and the Incidence of Preeclampsia among Pregnant Women in the Mawar Ward of RSUD H. Abdul Aziz Marabahan in 2025

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Abstract: **Background:** Preeclampsia is a pregnancy complication that contributes to maternal and perinatal morbidity and mortality. Maternal age and parity are frequently used as early obstetric risk indicators, although their association with preeclampsia may vary across local health-service settings. **Purpose:** This study aimed to analyze the relationship between maternal age and parity and the incidence of preeclampsia among pregnant women in the Mawar Ward of RSUD H. Abdul Aziz Marabahan in 2025. **Method:** This quantitative analytic observational study used a retrospective design. The sample consisted of 534 pregnant women recorded in medical records from January to December 2025, selected using total sampling. Maternal age and parity were categorized into risk and non-risk groups, while preeclampsia status was categorized as yes or no. Data were analyzed using Spearman rho. **Results:** Most respondents were aged 20-35 years (72.5%), and 52.1% were in the risk parity group. Preeclampsia occurred in 79 respondents (14.8%). Maternal age was significantly associated with preeclampsia ($p = 0.024$, $r = -0.097$), with a higher proportion in the risk age group (20.4%) than in the non-risk age group (12.7%). Parity was not significantly associated with preeclampsia ($p = 0.315$, $r = 0.044$). **Conclusion:** Maternal age was associated with preeclampsia, whereas parity showed no significant association.

Keywords: maternal age; parity; preeclampsia; pregnant women

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Introduction

Maternal health is an important indicator of the quality of a health-care system. A high maternal mortality rate indicates that complications during pregnancy and childbirth have not been fully controlled. The World Health Organization (2024) reported that approximately 287,000 women died from complications of pregnancy and childbirth in 2023, with a larger burden in developing countries. One major contributing complication is hypertensive disorders of pregnancy, including preeclampsia and eclampsia. Preeclampsia is often regarded as a condition that can progress rapidly and cause severe complications when not detected early (Alfatina, 2025).

Globally, the prevalence of preeclampsia is estimated to range from 2% to 8% of all pregnancies (World Health Organization, 2025). In Indonesia, hypertensive disorders of pregnancy remain among the leading causes of maternal death and are reported to account for approximately 5% to 10% of all pregnancies (Utami et al., 2020). At the regional level, the South Kalimantan Provincial Health Office (2025) reported that hypertension during pregnancy, childbirth, and the puerperium was the dominant cause of maternal death in South Kalimantan in 2024. This situation confirms that preeclampsia is not only a clinical problem but also a public health issue requiring locally grounded risk detection.

In Barito Kuala Regency, RSUD H. Abdul Aziz Marabahan functions as a referral hospital for obstetric services and manages various high-risk pregnancy, childbirth, and postpartum cases. Based on medical record data in 2025, 534 pregnant women received care, and 79 cases were diagnosed as preeclampsia, equivalent to 14.79%. This proportion exceeds the estimated global prevalence and the commonly reported national range. These findings indicate that preeclampsia is a concrete and urgent maternal health problem in the local service context. Preeclampsia is closely related to maternal factors, including age and parity. Pregnancies among women younger than 20 years or older than 35 years are commonly categorized as high risk because they are associated with

reproductive immaturity, vascular changes, and an increased risk of pregnancy complications. National studies have reported that mothers at extreme ages have a higher risk of developing preeclampsia than those in the healthy reproductive age group (Maryana et al., 2024).

Parity is also considered an important obstetric factor. Primigravida mothers may face a higher risk because maternal immunological tolerance to placental antigens has not fully developed, whereas grand multipara mothers may be vulnerable because of repeated uterine adaptation and changes in vascular function (Putri et al., 2021). However, findings across studies vary, possibly due to differences in population characteristics, antenatal care quality, referral access, and local sociocultural conditions (Hanifa et al., 2023). Therefore, local analysis is needed to identify whether maternal age and parity are associated with preeclampsia in a specific hospital setting. This study aimed to analyze the relationship between maternal age and parity and the incidence of preeclampsia among pregnant women in the Mawar Ward of RSUD H. Abdul Aziz Marabahan in 2025. The results are expected to support early detection, risk screening, and prevention of hypertensive complications in pregnancy in Barito Kuala Regency.

Method

This study used a quantitative analytic observational design with a retrospective approach. The retrospective approach was conducted by reviewing medical record data of pregnant women who had received care in the Mawar Ward of RSUD H. Abdul Aziz Marabahan from January to December 2025. The study was conducted without intervention because the analysis was based on existing secondary data.

The population consisted of all pregnant women treated in the Mawar Ward of RSUD H. Abdul Aziz Marabahan in 2025. The sample included 534 pregnant women who met the research criteria. Total sampling was applied, meaning that all accessible population members who met the criteria were included in the analysis.

The independent variables were maternal age and parity, while the dependent variable was the incidence of preeclampsia. Maternal age was categorized into risk age, namely younger than 20 years or older than 35 years, and non-risk age, namely 20-35 years. Parity was categorized into risk parity, namely G1, G4, G5 or more, and non-risk parity, namely G2-G3. The incidence of preeclampsia was classified as yes or no based on medical record documentation.

Data were collected using a medical record review sheet and analyzed using SPSS. Univariate analysis was used to describe the frequency distribution of maternal age, parity, and preeclampsia. Bivariate analysis was performed using Spearman rho to determine the relationship between maternal age and parity and the incidence of preeclampsia. Statistical significance was determined at $p < 0.05$.

Results and Discussion

The univariate analysis showed that most pregnant women were in the non-risk age group, namely 20-35 years, with 387 respondents (72.5%), while 147 respondents (27.5%) were in the risk age group. Based on parity, 278 respondents (52.1%) were categorized as having risk parity, while 256 respondents (47.9%) were in the non-risk parity group. Preeclampsia occurred in 79 respondents (14.8%), while 455 respondents (85.2%) did not experience preeclampsia.

The distribution of maternal age, parity, and preeclampsia is presented in Table 1. The relationship between maternal age and preeclampsia is presented in Table 2, while the relationship between parity and preeclampsia is presented in Table 3. The results showed that 79 of 534 pregnant women (14.8%) experienced preeclampsia, while 455 respondents (85.2%) did not. This proportion indicates that preeclampsia remains an obstetric problem that requires attention in maternal health services. Although most respondents did not develop preeclampsia, the proportion of 14.8% has clinical relevance because preeclampsia may progress to eclampsia, HELLP syndrome, organ dysfunction, preterm birth, and perinatal complications if it is not detected and managed properly.

The proportion of preeclampsia in this study was higher than the finding reported by Anto et al. (2023) in Ghana, where the prevalence of preeclampsia was 8.8% among 1,174 pregnant women. Differences in proportion may be influenced by population characteristics, inclusion criteria, level of health-care facility, and patient referral patterns. RSUD H. Abdul Aziz Marabahan is a referral hospital that receives pregnant women with various obstetric complications, which may explain why the proportion of preeclampsia among hospitalized pregnant women was higher than that in primary-care or general population settings.

The bivariate analysis showed a significant relationship between maternal age and the incidence of preeclampsia, with a p-value of 0.024. The proportion of preeclampsia was higher in the risk age group, namely younger than 20 years or older than 35 years, at 20.4%, compared with 12.7% in the non-risk age group. The correlation coefficient of $r = -0.097$ indicated an inverse relationship with a very weak strength. This finding suggests that maternal age is associated with preeclampsia, although it is not the only factor related to its occurrence.

The relationship between maternal age and preeclampsia can be explained by differences in physiological adaptation and vascular condition during pregnancy. In women younger than 20 years, especially adolescents who become pregnant within the first few years after menarche, biological maturity and the body's capacity to adapt to pregnancy-related physiological changes may not be optimal. This condition, together with poor nutritional status and inadequate antenatal care, may increase vulnerability to hypertensive complications of pregnancy (Calle et al., 2021). In women older than 35 years, aging is associated with increased arterial stiffness and changes in vascular function that may reduce cardiovascular adaptability during pregnancy (Lee et al., 2025).

The risk may be greater when mothers also have comorbid factors such as chronic hypertension, diabetes mellitus, obesity, or metabolic disorders (Chang et al., 2023). Impaired vascular adaptation and comorbid conditions may disrupt uteroplacental circulation, reduce placental perfusion, and trigger endothelial dysfunction involved in the development of preeclampsia (Jung et al., 2022). Hennessy et al. (2026) also explained that advanced maternal age may contribute to variations in preeclampsia manifestations together with obesity, diabetes mellitus, chronic hypertension, multifetal pregnancy, and renal disorders. These explanations support the finding that the relationship between maternal age and preeclampsia was statistically significant but very weak.

In contrast, parity was not significantly associated with the incidence of preeclampsia, with a p-value of 0.315. The proportion of preeclampsia in the risk parity group was 13.3%, while the proportion in the non-risk parity group was 16.4%. The correlation coefficient of $r = 0.044$ indicated a very weak positive relationship. Based on the coding of the variables, risk parity was coded as 1 and non-risk parity as 2. Descriptively, the proportion of preeclampsia was slightly higher in the non-risk parity group than in the risk parity group. However, because the p-value was greater than 0.05 and the correlation coefficient was close to zero, the relationship was not statistically meaningful.

This result is consistent with Rahmatika et al. (2025), who reported that parity was not significantly associated with preeclampsia at Puskesmas Pelambuan. Similar findings were reported by Rumampuk et al. (2025), who found no significant relationship between parity and severe preeclampsia among women giving birth at RSUP Prof. Dr. R. D. Kandou Manado. Nainggolan et al. (2026) also reported that parity was not meaningfully associated with preeclampsia, while body mass index and history of hypertension showed significant relationships. These consistent findings suggest that parity may not act as an independent factor in the occurrence of preeclampsia.

The occurrence of preeclampsia is likely influenced by an interaction of several factors, including maternal age, history of hypertension, nutritional status, previous preeclampsia, and comorbid disease. Gilboa et al. (2023) reported that maternal age of 40 years or older was an independent risk factor for acute kidney injury and de novo postpartum preeclampsia among patients with severe preeclampsia. Other risk factors were also identified by Heryani et al. (2025), including body mass index, edema, proteinuria, headache, and increased Mean Arterial Pressure in severe preeclampsia cases. Therefore, future studies should include broader maternal, clinical, and obstetric variables and apply multivariate analysis. This study has a limitation because it used a retrospective observational design with secondary data from medical records in one hospital. Thus, the findings are more appropriately interpreted as a description of the relationship between maternal age and parity and preeclampsia among pregnant women treated in the Mawar Ward of RSUD H. Abdul Aziz Marabahan in 2025. However, this limitation does not reduce the value of the findings because total sampling was applied to 534 medical records over a one-year period, meaning that the analyzed data covered the entire population that met the study criteria during that period.

Table 1. Frequency distribution of maternal age, parity, and preeclampsia among pregnant women in the Mawar Ward of RSUD H. Abdul Aziz Marabahan in 2025

Variable	Category	n	%
Maternal age	Risk (<20 years or >35 years)	147	27.5
	Non-risk (20-35 years)	387	72.5
Parity	Risk (G1, G4, G5 or more)	278	52.1
	Non-risk (G2-G3)	256	47.9
Preeclampsia	No	455	85.2
	Yes	79	14.8
Total		534	100.0

Table 2. Relationship between maternal age and preeclampsia among pregnant women in the Mawar Ward of RSUD H. Abdul Aziz Marabahan in 2025

Maternal age	No preeclampsia n (%)	Preeclampsia n (%)	Total n (%)	r	p-value	Interpretation
Risk (<20 years or >35 years)	117 (79.6)	30 (20.4)	147 (100)	-0.097	0.024	Significant association
Non-risk (20-35 years)	338 (87.3)	49 (12.7)	387 (100)			
Total	455 (85.2)	79 (14.8)	534 (100)			

Table 3. Relationship between parity and preeclampsia among pregnant women in the Mawar Ward of RSUD H. Abdul Aziz Marabahan in 2025

Parity	No preeclampsia n (%)	Preeclampsia n (%)	Total n (%)	r	p-value	Interpretation
Risk (G1, G4, G5 or more)	241 (86.7)	37 (13.3)	278 (100)	0.044	0.315	No significant association
Non-risk (G2-G3)	214 (83.6)	42 (16.4)	256 (100)			
Total	455 (85.2)	79 (14.8)	534 (100)			

Conclusion

Maternal age was significantly associated with the incidence of preeclampsia among pregnant women in the Mawar Ward of RSUD H. Abdul Aziz Marabahan in 2025, although the strength of the relationship was very weak. Pregnant women younger than 20 years or older than 35 years had a higher proportion of preeclampsia than those aged 20-35 years. In contrast, parity was not significantly associated with preeclampsia in this study population. These findings emphasize the need for early risk screening, especially among pregnant women in risk age groups, through blood pressure monitoring, urine protein examination when indicated, education on danger signs of preeclampsia, and more intensive antenatal surveillance.

Declaration of Generative AI

The authors independently created this manuscript without relying on generative AI or automated text generation software.

Authors' Contribution

Every author shared equal responsibility across all stages, from initial research design and data analysis to the final manuscript approval.

Conflict of Interests Statement

The authors confirm the absence of any financial or personal conflicts of interest regarding this work.

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Data Availability

Datasets from this research are accessible from the corresponding author upon reasonable request and compliance with standard terms.

Informed Consent

Prior to participating, all individuals provided signed consent forms to take part in this study.

References

- Agnesha, F., & Rahardjo, S. (2020). Eklampsia dan sindroma HELLP pada kehamilan awal: Penegakan diagnosis dan manajemen anestesia. *Jurnal Anestesi Obstetri Indonesia*, 1(1), 40-46. doi:10.47507/obstetri.v1i1.26
- Alfatina, Z. A. (2025). Hubungan faktor risiko ibu hamil terhadap kejadian preeklamsia: Studi observasional analitik terhadap ibu hamil dengan faktor risiko usia ibu, paritas, indeks massa tubuh, dan riwayat preeklamsia di Rumah Sakit Umum Asy Syifa Sambi, Boyolali. Universitas Islam Sultan Agung Semarang.
- Anto, E. O., Boadu, W. I. O., Ansah, E., Tawiah, A., Frimpong, J., Tamakloe, V. C. K. T., Korsah, E. E., Acheampong, E., Asamoah, E. A., Opoku, S., Adua, E., Afrifa-Yamoah, E., Annani-Akollor, M. E., Anto, A. O., & Obirikorang, C. (2023). Prevalence of preeclampsia and algorithm of adverse foeto-maternal risk factors among pregnant women in the Central Region of Ghana: A multicentre prospective cross-sectional study. *PLOS ONE*, 18(6), e0288079. doi:10.1371/journal.pone.0288079
- Calle, M., Bartha, J. L., Lopez, C. M., Turiel, M., Martinez, N., Arribas, S. M., & Ramiro-Cortijo, D. (2021). Younger age in adolescent pregnancies is associated with higher risk of adverse outcomes. *International Journal of Environmental Research and Public Health*, 18(16), 8514.
- Chang, K.-J., Seow, K.-M., & Chen, K.-H. (2023). Preeclampsia: Recent advances in predicting, preventing, and managing the maternal and fetal life-threatening condition. *International Journal of Environmental Research and Public Health*, 20(4), 2994.
- Cunningham, F. G., Leveno, K. J., & Bloom, S. L. (2022). Hypertensive disorders in pregnancy. Dalam *Williams Obstetrics*. doi:10.1097/OGX.0000000000001044
- Dinas Kesehatan Provinsi Kalimantan Selatan. (2025). *Kompilasi Profil Kesehatan Provinsi Kalimantan Selatan Tahun 2024*. Dinas Kesehatan Provinsi Kalimantan Selatan.
- Gilboa, I., Kupferminc, M., Schwartz, A., Landsberg Ashereh, Y., Yogev, Y., Rappaport Skornik, A., Klieger, C., Hirsch, L., & Rimon, E. (2023). The association between advanced maternal age and the manifestations of preeclampsia with severe features. *Journal of Clinical Medicine*, 12(20), 6545. doi:10.3390/jcm12206545
- Hanifa, M., Dwi Cahyani, D., Studi Kebidanan, P., & Kemenkes Malang, P. (2023). Faktor-faktor yang berhubungan dengan kejadian preeklamsia pada ibu hamil: A literature review. *An Idea Nursing Journal*, 2.
- Hennessy, A., Ng, J., & Makris, A. (2026). The pathophysiology of pre-eclampsia. *Nature Reviews Nephrology*. Advance online publication. <https://doi.org/10.1038/s41581-026-01085-x>
- Heryani, A. C., Amalia, R., & Wulandatika, D. (2025). Deteksi dini dan penanganan awal pre eklampsia berat dengan melakukan asuhan kebidanan continuity of care pada Ny. M di wilayah Puskesmas Kayu Tangi Kelurahan Sungai Miai Kecamatan Banjarmasin Utara Provinsi Kalimantan Selatan. *Prosiding Seminar Nasional UNIMUS*, 8, 141-153.
- Jung, E., Romero, R., Yeo, L., Gomez-Lopez, N., Chaemsaitong, P., Jaovisidha, A., Gotsch, F., & Erez, O. (2022). The etiology of preeclampsia. *American Journal of Obstetrics and Gynecology*, 226(2S), S844-S866.
- Lee, R., Santillan, M. K., Santillan, D. A., Stroud, A. K., Nuckols, V. R., DuBose, L. E., Holwerda, S. W., Luehrs, R. E., Betz, A. M., Brandt, D., Pierce, G. L., & Stanhewicz, A. E. (2025). Pregnant women of advanced maternal age have higher central arterial stiffness than younger pregnant women throughout pregnancy and postpartum. *Journal of Applied Physiology*, 139(6), 1420-1431.
- Maryana, N., Pribadi, P. S., & Anggraini, V. (2024). Konsep kehamilan dan adaptasi fisiologis pada ibu hamil. Penerbit NEM.
- Nainggolan, B. J., Lintang, L. S., Prananda, A. T., & Sufitni. (2026). Hubungan karakteristik ibu hamil dengan kejadian preeklampsia di Rumah Sakit Prof. Dr. Chairuddin Panusunan Lubis Universitas Sumatera Utara tahun 2020-2024. *SCRIPTA SCORE Scientific Medical Journal*, 7(2), 136-145.
- Putri, S. I., Yunita, A., & Viridula, E. Y. (2021). Systematic review: Deteksi dini pencegahan preeklamsia pada ibu hamil. *Jurnal Medika: Karya Ilmiah Kesehatan*, 6(1).
- Rahmatika, N., Tunggal, T., Yulastuti, E., & Hipni, R. (2025). Hubungan usia ibu, paritas dan kenaikan berat badan ibu hamil terhadap kejadian pre eklamsia di Puskesmas Pelambuan Tahun 2024. *Jurnal Penelitian Multidisiplin Bangsa*, 1(8), 1351-1360. doi:10.59837/jpnmb.v1i8.247
- Rumampuk, T. Z. S., Tendean, H. M. M., & Wantania, J. J. E. (2025). Hubungan antara faktor risiko dengan kejadian preeklampsia berat. *e-CliniC*, 13(1), 106-112.
- Utami, B. S., Utami, T., & Siwi, A. S. (2020). Hubungan riwayat hipertensi dan status gizi dengan kejadian preeklampsia pada ibu hamil: Literature review. *Jurnal Ilmu Keperawatan Maternitas*, 3(2), 22-28.
- World Health Organization. (2024). Maternal mortality. World Health Organization.
- World Health Organization. (2025). Pre-eclampsia. World Health Organization.