



Received: 01/October/2025

IJRAW: 2025; 4(11):130-132

Accepted: 12/November/2025

Factors Related to Severe Preeclampsia in Pregnant Woman: Literature Review

¹Sherly Vermita Warlenda, ²Alya Ramadhani and ^{*3}Hastuti Marlina

^{1, 2, *3}Undergraduate Study Program in Midwifery, Universitas Hang Tuah Pekanbaru, Riau, Indonesia.

Abstract

Severe preeclampsia is a pregnancy complication that is a leading cause of maternal and neonatal morbidity and mortality worldwide, including in Indonesia. The purpose of this article is to identify and analyze factors associated with the occurrence of severe preeclampsia in pregnant women. The method used was a literature review, compiling journals from Google Scholar published between 2015 and 2025. The results of the literature review revealed factors significantly associated with the occurrence of severe preeclampsia, including: a history of hypertension, obesity, maternal age (less than 20 years or more than 35 years), parity, previous preeclampsia, and kidney disease. Other factors such as gestational diabetes mellitus, autoimmune disorders, and low socioeconomic status also contribute. The conclusion of this study is that severe preeclampsia is influenced by multiple factors, requiring a comprehensive screening and risk management approach from early pregnancy to prevent further complications.

Keywords: Severe preeclampsia, risk factors, screening.

Introduction

Preeclampsia remains a leading cause of high maternal and infant mortality worldwide (Asmana *et al*, 2016) ^[7]. Globally, more than 70,000 maternal deaths and 500,000 fetal deaths occur due to preeclampsia (Facrozi *et al*, 2023). According to the Indonesian Ministry of Health, in 2021, the maternal mortality rate reached 7,389 cases, with hypertension /preeclampsia accounting for 1,077 cases. It remains the leading cause of maternal mortality, accounting for 33.7%, according to the 2018 Village Health Research (Hikmah & Patimah, 2025) ^[20].

Preeclampsia is a hypertensive disorder that occurs during pregnancy, with blood pressure exceeding 160/110 mmHg and occurring after 20 weeks of gestation (Femilia *et al*, 2022) ^[15]. Several underlying risk factors for preeclampsia include age, a history of hypertension, a history of preeclampsia, kidney disease, obesity, and others (Sumampouw *et al*, 2019) ^[36].

The purpose of writing this literature review article is to identify, analyze, and synthesize the latest evidence regarding factors that are related to the occurrence of severe preeclampsia in pregnancy.

Literature Study

i). **Definition of Severe Preeclampsia:** Preeclampsia is a condition where the organ system is disrupted during pregnancy and can trigger an increase in maternal and infant morbidity and mortality, especially when the

pregnancy is not yet full term (Annafi *et al*, 2022) ^[2]. Severe preeclampsia is a condition in which a pregnant woman's blood pressure is above 160/110 mmHg, accompanied by the presence of more than 5g of protein in the urine or more than +3 in two urine samples per 6 hours. There is pain in the epigastric region, specifically around the upper right abdomen, as well as swelling in the lungs, brain damage, and visual disturbances (Annafi *et al*, 2022) ^[2].

ii). **Diagnosis and Criteria Severe Preeclampsia:** Severe preeclampsia is characterized by systolic blood pressure >160 mmHg and diastolic blood pressure >110 mmHg, accompanied by urinary protein >5 grams/24 hours. Preeclampsia has several symptoms. Common symptoms include chest pain, vomiting, elevated blood pressure exceeding 160/110 mmHg, decreased urine output, and excessive weight gain. Symptoms of severe preeclampsia include severe abdominal pain, weak breathing, kidney failure, swelling, reduced vision, and eye irritation (Sohimah, 2025) ^[34].

iii). **Risk Factors for Severe Preeclampsia:** Risk factors for preeclampsia can generally be categorized into maternal factors, obstetric factors, and pre-existing medical factors. Maternal factors include age, BMI, and nulliparity. Obstetric factors include a history of preeclampsia. Medical factors include chronic hypertension, kidney disease, diabetes, and others (Bardia, 2020).

Method

This literature review was conducted by collecting journals from Google Scholar. The keywords used were "severe preeclampsia," "risk factors," and "pregnant women." The search was limited to journals published between 2015 and 2025.

The search results identified 40 journals relevant to the study, based on their titles and abstracts, as well as other inclusion criteria. These 40 journals met the requirements for further analysis.

Result and Discussion

Discussion based on the analysis of 40 reviewed journals, the following factors significantly contribute to an increase in severe preeclampsia:

- i). **Obesity (BMI > 30):** Obesity is one of the factors that causes preeclampsia during pregnancy. A study conducted by Arisandi *et al.* in 2024 showed that of 296 pregnant women who experienced preeclampsia, 106, or 35.8%, were obese (Arisandi *et al.*, 2020; Fakhriantono *et al.*, 2025; Harahap 7 Situmeang, 2022; Legawati & Utama, 2017; Stiyaningsih *et al.*, 2025; Surtika *et al.*, 2025) [6, 14, 18, 24 37].
- ii). **Maternal Age:** Maternal age <20 years or >35 years is a risk factor that can lead to preeclampsia during pregnancy, because at such a young age, the reproductive and vascular systems are not yet fully mature. Meanwhile, at age >35 years, endothelial function declines and comorbidities increase. A study conducted by Hikmah *et al.* in 2025 showed a relationship between maternal age and the incidence of severe preeclampsia at Pangkal Pinang Regional General Hospital (RSBT) in 2022-2023. Respondents experiencing severe preeclampsia (cases) were more likely to be at-risk than non-risk age groups (32 individuals (51.6%)), while respondents without severe preeclampsia (controls) were more likely to be at-risk than non-risk age groups (49 individuals (80.0%)) (Himah & Patimah, 2025; Arda & Hartaty, 202; Diniyati & Afriyanti, 2021; Nurmainah *et al.*, 2021; Handayani & Nurjanah, 2021; Utami *et al.*, 2020) [34, 5, 12, 26, 17, 38].
- iii). **History of Hypertension:** A history of hypertension is a risk factor for preeclampsia during pregnancy because uncontrolled hypertension can increase the risk of a heart attack during pregnancy. A study conducted by Putri *et al.* in 2023 showed that of 55 pregnant women, 66.6% of women with high-risk hypertension experienced preeclampsia, while only 13.4% of women with low-risk hypertension experienced preeclampsia. Therefore, it can be concluded that there is a significant association between a history of hypertension and the development of severe preeclampsia (P-Value = 0.006) (Putri *et al.*, 2023; Hineo *et al.*, 2022; Kundarto & Faizah, 2021; Apriliyanti *et al.*, 2023; Rachmaini *et al.*, 2022) [29, 21, 23, 4, 30].
- iv). **Parity:** Parity is also a risk factor for severe preeclampsia during pregnancy. A study conducted by Suhimah and Sujianti in 2023 showed that of 56 multiparous pregnant women at the study site, the majority experienced preeclampsia (32 women) (57.1%), while all three grand multiparous women experienced preeclampsia (3 women) (100%). Statistical analysis using the Spearman rank test yielded a p-value of 0.005, indicating a significant association between parity and the development of severe

preeclampsia (Sohimah, 2025; Nabella, 2021; Promadevi & Indriani, 2022; Rumampuk *et al.*, 2025) [34, 25, 27, 31].

Conclusion

Severe preeclampsia is a pathological condition in pregnancy influenced by multifactorial interactions and remains a major contributor to maternal and neonatal morbidity and mortality. Factors significantly associated with an increased risk of PEB include maternal factors such as extreme age (≤ 20 years or ≥ 35 years) and obesity, obstetric factors such as nulliparity and grand multiparity, and pre-pregnancy medical factors such as a history of chronic hypertension and kidney disease. These findings underscore the urgency of a comprehensive prevention approach, emphasizing the importance of systematic risk screening from early pregnancy, accompanied by appropriate risk management and ongoing health education for pregnant women, to identify vulnerable groups early and prevent further complications.

References

1. Adawiah R, Istiqomah I, Kusvitasari H & Zulliati Z. Hubungan Pre Eklamsi Berat (PEB) dengan kejadian bblr di rumah sakit sultan suriansyah kota banjarmasin. *Journal of healthcare technology and medicine.* 2025; 11(1):119–126.
2. Annafi MI, Jumsa MR & Budyono C. Gambaran Preeklampsia Berat dengan Komplikasi di Rumah Sakit Umum Daerah Provinsi Nusa Tenggara Barat Periode Januari 2018 sampai Desember 2019. *Lombok Medical Journal.* 2022; 1(1):17–22.
3. Annisa H, Yuseran H, Hendriyono FX, Abimanyu B & Devi WR. Perbedaan Kadar Ureum Dan Kreatinin Pada Preeklampsia Dan Preeklampsia Berat. *Homeostasis.* 2024; 7(1):93–102.
4. Apriliyanti E, Putri R & Nancy A. Hubunganriwayat Preeklampsia, Pemeriksaan Antenatal, Dan Tingkat Stres Dengankejadian Pre-Eklamsia Berat Pada Ibu Hamil Di Desa Permis Tahun 2022. *SENTRI: Jurnal Riset Ilmiah.* 2023; 2(4):1214–1224.
5. Arda D & Hartaty H. Penerapan Asuhan Keperawatan Post Op Section Caesarea dalam Indikasi Preeklampsia Berat. *Jurnal Ilmiah Kesehatan Sandi Husada.* 2021; 10(2):447–451.
6. Arisandi D, Suryani I, Iriani OS & Kartika I. Hubungan Obesitas Pada Ibu Hamil Dengan Preeklampsia Berat Di Rumah Sakit Umum Daerah Pameungpeuk Garut, 2020.
7. Asmana SK, Syahredi S & Hilbertina N. Hubungan Usia dan Paritas dengan Kejadian Preeklampsia Berat di Rumah Sakit Achmad Mochtar Bukittinggi Tahun 2012-2013. *Jurnal Kesehatan Andalas,* 2016, 5(3).
8. Azyenela L, Dharma MES & Azyenela AHL. Ketepatan penggunaan obat antihipertensi pada preeklamsia berat di rsup dr. M. Djamil padang. *Jurnal ilmiah farmasi akademi farmasi jembar,* 2025, 8(1).
9. Bardja S. Faktor risiko kejadian preeklampsia berat/eklampsia pada ibu hamil. *Embrio: Jurnal Kebidanan.* 2020; 12(1):18–30.
10. Daraz FG & Zulfadli Z. Preeklampsia Berat dan Infeksi HIV pada Primigravida Usia Kehamilan 37 Minggu: Sebuah Laporan Kasus. *Medical Profession Journal of Lampung.* 2024; 14(9):1839–1844.
11. Dharagita PG, Yuseran H, Hendriyono FX, Abimanyu B & Rosida A. Perbedaan Jumlah Trombosit Dan PLR Pada Preeklampsia Dan Preeklampsia Berat. *Homeostasis.* 2024; 7(1):165–172.

12. Diniyati D, Sari LA & Afriyanti AN. Preeklamsia berat pada ibu hamil di RSUD Raden Mattaher Jambi. *Jurnal Bahana Kesehatan Masyarakat (Bahana of Journal Public Health)*. 2021; 5(1):18–24.
13. Fachrozi MFA, Indriani MY, Mundijo T & Purwoko M. Hubungan Status Gravidia dan Kehamilan Multipel dengan Derajat Keparahan Preeklampsia. *FASKES: Jurnal Farmasi, Kesehatan, dan Sains*. 2023; 1(2):143–149
14. Fakhriantono HZ, Ariningtyas ND, Prahassanti K & Sucahyo EN. Hubungan Antara Obesitas Dengan Kejadian Preeklamsia Berat Pada Ibu Hamil Trimester 3 Di RS Fatimah Kabupaten Lamongan. *JurnalMU: Jurnal Medis Umum*, 2025, 2(3).
15. Femilia TP, Aladin A & Kurnia D. Karakteristik dan Outcome Pasien Preeklampsia Berat di RSUD Dr. M. Djamil Padang Tahun 2020. *Jurnal Ilmu Kesehatan Indonesia*. 2022; 3(2):150–157.
16. Handayani ED. Umur Dan Paritas Terhadap Kejadian Preeklamsi Berat Pada Ibu Hamil Di UGD Kebidanan: Age and Parity on the Incidence of Severe Preeclampsia in Pregnant Women in the Obstetric Emergency Room. *Jurnal Abdi Kesehatan dan Kedokteran*. 2022; 1(1):6–11.
17. Handayani S & Nurjanah S. Hubungan indeks massa tubuh dengan kejadian preeklamsia pada ibu hamil di rsud trikora salakan. *Jurnal Kebidanan*, 2021, 212–221.
18. Harahap N & Situmeang IF. Determinan kasus preeklampsia pada ibu bersalin. *Jurnal Ilmu Kesehatan Masyarakat*. 2022; 11(04):342–350.
19. Hidayah N, Rohmah S & Sumiati E. Penanganan Preeklampsia Berat di RSUD dr. Soekardjo Kota Tasikmalaya. *Journal of Midwifery and Public Health*. 2024; 6(1):19–26.
20. Hikmah S & Patimah S. Variabel yang berkontribusi pada kejadian preeklamsia berat pada ibu hamil. *Jurnal Ilmiah Citra Kebidanan*. 2025; 1(1):26–34.
21. Hinelio K, Sakung J, Gunarni G & Pramana C. Faktor Risiko Kejadian Preeklampsia Di Rumah Sakit Umum Daerah Kabupaten Banggai Tahun 2020. *Jurnal Ilmu Kedokteran Dan Kesehatan*. 2022; 8(4):448–456.
22. Khusnawati I & Hamranani SST. Studi Kasus Pada Pasien Post Partum Spontan Dengan Pre Eklampsia Berat (PEB) Di Bangsal Kana Rsud Wonosari. (*Jurnal tidak lengkap*), 2023.
23. Kundarto W & Faizah RNM. Evaluasi Terapi Antihipertensi Pada Pasien Preeklampsia Berat di Instalasi Rawat Inap RSUD Dr. Moewardi Periode Januari-Juni Tahun 2017. *JPSCR: Journal of Pharmaceutical Science and Clinical Research*. 2021; 6(2):228–237.
24. Legawati L & Utama NR. Analisis Faktor Risiko Kejadian Preeklampsia Berat Di Rsud Rujukan Kabupaten Dan Provinsi Kalimantan Tengah: Risk Factors Analysis of Severe Preeclampsia Events in the District and Province of Central Kalimantan. *Jurnal Surya Medika (JSM)*. 2017; 3(1):19–37.
25. Nabella RV. Faktor Yang Berhubungan Dengan Kejadian Pre Eklampsia Berat (Peb) Di Rumah Sakit. *Jurnal Ilmu Kesehatan Karya Bunda Husada*. 2021; 7(1):19–26.
26. Nurmainah N, Hadad FM & Andrie M. Profil Proteinuria dan Tekanan Darah pada Pasien Preeklampsia Berat yang menggunakan Antihipertensi. *Indonesian Journal of Clinical Pharmacy*. 2021; 10(2):79.
27. Primadevi I & Indriani R. Faktor-faktor yang Mempengaruhi Preeklampsia pada Kehamilan Primigravida. *Majalah Kesehatan Indonesia*. 2022; 3(1):19–26.
28. Purwanti AP, Saputri AY & Panjaitan EA. Asuhan Keperawatan Sectio Caesarea Dengan Indikasi Pre-Eklamsia Berat. *Jurnal Mitra Kesehatan*. 2021; 4(1):1–4.
29. Putri DN, Setyawati A, Saleha S & Situmorang TH. Faktor-faktor yang berhubungan dengan kejadian preeklampsia pada ibu hamil di puskesmas kemu kabupaten oku selatan tahun 2023. *Innovative: Journal of Social Science Research*. 2023; 3(6):979–990.
30. Rachmaini F, Juwita DA, Abdillah R & Rifqi MA. Pengaruh Penggunaan Obat Antihipertensi Terhadap Tekanan Darah Dan Proteinuria Pada Pasien Preeklampsia Berat Di RSUD Dr. M. Djamil. *Jurnal Sains Farmasi & Klinis*. 2022; 9:175–183.
31. Rumampuk TZ, Tendean HM & Wantania JJ. Hubungan antara Faktor Risiko dengan Kejadian Preeklampsia Berat. *e-CliniC*. 2025; 13(1):106–112.
32. Sari RDP. Multigravida Preterm dengan IUGR pada Preeklampsia Berat: Sebuah Laporan Kasus. *Medical Profession Journal of Lampung*. 2022; 12(2):312–315.
33. Setiyaningsih KN, Zakiah Z, Prihatanti NR & Hapisah H. Hubungan Preeklamsia Berat Pada Ibu Bersalin Dengan Kejadian BBLR Dan Asfiksia Neonatorum Di RSUD Dr. H Moch Ansari Saleh Banjarmasin Tahun 2023. *Jurnal Penelitian Multidisiplin Bangsa*. 2025; 1(8):1361–1369.
34. Sohimah S. Hubungan Faktor Paritas dan Obesitas dengan Kejadian Pre Eklampsia Berat pada Ibu Hamil di Kabupaten Cilacap Tahun 2023. *Indonesian Journal of Multidisciplinary Expertise*. 2025; 3(1):1–10.
35. Suleman DMR, Setiawati D, Gama AW, Nurdin A & Damis R. Analisis hubungan preeklampsia-eklampsia gravidarum dengan kejadian persalinan prematur pada ibu bersalin di RSUD Prof. Dr. H. Aloei Saboe periode Januari-September tahun 2020. *Jurnal Kedokteran*. 2021; 6(2):165–175.
36. Sumampouw CM, Tendean HM & Wagey FW. Gambaran preeklampsia berat dan eklampsia ditinjau dari faktor risiko di RSUD Prof. DR. RD Kandou Manado. *Jurnal Medik dan Rehabilitasi*, 2019, 1(3).
37. Surtika E, Zakiah Z, Yuniarti Y & Hipni R. Analisis Faktor Yang Berhubungan Dengan Kejadian Preeklampsia Berat di RSUD H. Damanhuri Barabai Tahun 2025. *Jurnal Penelitian Multidisiplin Bangsa*. 2025 2(3):652–659.
38. Utami T, Sukmaningtyas W & Safitri M. Hubungan usia ibu dengan kejadian asfiksia neonatorum pada ibu preeklampsia berat. *Menara Medika*, 2020, 3(1).
39. Widjaja CR, Suparman E & Wantania JJ. Hubungan Preeklamsia Berat dengan Kejadian Persalinan Preterm di RSUD Prof. Dr. RD Kandou Manado Periode 2021–2022. *Medical Scope Journal*. 2024; 6(2):269–275.
40. Zainovita E, Wahyuni W & Mufliah N. Manajemen Fisioterapi Post Sectio Caesarea atas indikasi Pre-eklampsia Berat (PEB). *Jurnal Penelitian Multidisiplin Bangsa*. 2025; 2(1):187–196.