JMU
Jurnal Medika Udayana
ISSN: 2597-8012 JURNAL MEDIKA UDAYANA, VOL. 13 NO.10, OKTOBER, 2024
DOAJ DIRECTORY OF OPEN ACCESS JOURNALS
Accredited SINTA 3
Received: 2023-12-14 Revision: 2024-06-05 Accepted: 12-09-2024

CHARACTERISTICS AND MATERNAL-PERINATAL OUTCOMES IN WOMEN WITH SEVERE PREECLAMPSIA AT SUMBER WARAS HOSPITAL

Nina Edhita Odilia[1], Fadil Hidayat[2,*], Mediana Sutopo Liedapraja[3]
[1] Undergraduate Medical Study Program, Faculty of Medicine, Tarumanagara University, Jakarta, Indonesia
[2] Department of Obstetrics and Gynaecology, Faculty of Medicine, Tarumanagara University, Jakarta, Indonesia
[3] Department of Obstetrics and Gynaecology, Sumber Waras Hospital, Jakarta, Indonesia
*Corresponding author: fadilhidayat@fk.untar.ac.id

ABSTRACT

Preeclampsia is a cause of high maternal and fetal morbidity and mortality in developing countries. According to the Indonesian Health Profile, in 2021, hypertension in pregnancy is the second most common cause of maternal death in Jakarta with 22 cases out of 152 deaths. This study aims to determine the characteristics and maternal and perinatal outcomes of severe preeclampsia patients at Sumber Waras Hospital. This study was conducted in a descriptive qualitative observational manner with a cross-sectional approach using secondary data from medical records of patients with severe preeclampsia. The number of samples in this study was 85 pregnant women using a total sampling method on all pregnant women with severe preeclampsia who gave birth at Sumber Waras Hospital in the period January 2022 - December 2023. In this study, it was found that the majority of mothers with severe preeclampsia were aged 18-35 years. (63.5%), BMI in the second-degree obesity category (43.5%), multiparous parity status (64.7%), and term gestational age (76.5%). Maternal outcomes that occurred included eclampsia (14.1%), HELLP syndrome (2.4%), visual impairment (10.6%), and pulmonary edema (1.2%). The majority of perinatal outcomes had live babies (98.8%), no asphyxia (88.2%), and babies with normal weight (78.8%). Severe preeclampsia at Sumber Waras Hospital occurs more often in pregnant women aged 18-35 years, with a second-degree obesity BMI, multiparous, and term. Meanwhile, the outcomes that occurred were eclampsia, HELLP syndrome, visual disturbances, pulmonary edema, live babies, babies without asphyxia, and normal-weight babies.

Keywords: Severe Preeclampsia., Characteristics., Outcomes

INTRODUCTION

Preeclampsia is a form of hypertension that occurs at a gestational age of more than 20 weeks with the presence of maternal organ dysfunction, uteroplacental, or proteinuria.[1] Preeclampsia is characterized by high systolic and diastolic blood pressure of more than 140/90 mmHg in pregnant women with a history of normal blood pressure and experiencing proteinuria of more than 300 mg per 24 hours after 20 weeks of pregnancy. Meanwhile, severe preeclampsia is characterized if blood pressure is ≥160 systolic and ≥110 diastolic on two examinations with a span of 15 minutes, using the same arm.[2] WHO states that preeclampsia occurs seven times more in developing countries than in developed countries. The number of preeclampsia occurs between 1.3% to 6% in developed countries, in contrast 1.8% to 18% in developing countries where it is a diagnosis that causes high maternal and fetal morbidity and mortality. The incidence of preeclampsia in Indonesia itself reaches 128,273 per year or around 5.3%.[3] Preeclampsia is a multisystemic disorder with complex and diverse conditions with several potential pathways leading to the development of the disease. The complex process of preeclampsia development is facilitated by placental abnormalities and ischemia which ultimately causes endothelial dysfunction leading to clinical syndromes that can be seen in patients with preeclampsia, both mother and fetus.[4] The importance of knowledge of triggering factors so that preeclampsia can be prevented and does not cause unwanted complications. According to the Indonesian Health Profile, in 2021, hypertension in pregnancy was the cause of maternal death with 1077 cases. It was the second leading cause of maternal death in Jakarta with 22 cases out of 152 deaths.[5] Therefore, the purpose of the researcher in conducting this study was to determine the characteristics and maternal and perinatal outcomes in pregnant women with severe preeclampsia at Sumber Waras Hospital.

MATERIALS AND METHODS

This study was conducted using a descriptive qualitative observational method with a cross-sectional approach using medical records of patients with severe preeclampsia at Sumber

Waras Hospital. The sample taken included 85 patients who gave birth with severe preeclampsia. The study was conducted using a total sampling technique in the form of collecting secondary data from the medical records of pregnant women who experienced severe preeclampsia at Sumber Waras Hospital from January 1st, 2022 - December 31st, 2023. The procedure begins with applying research permits to the Ethics Commission of the Faculty of Medicine Tarumanagara University and Sumber Waras Hospital, then collecting the necessary data from medical records that are included in the inclusion and exclusion criteria. After that, the appropriate data will be analyzed. The inclusion criteria for this study sample include pregnant women who give birth at Sumber Waras Hospital and pregnant women who diagnosed with severe preeclampsia, while the exclusion criteria include pregnant women who are not fully recorded in the medical records. Data analysis in this study used the univariate analysis method by describing and summarizing the data that has been obtained into a table.

RESULTS

Table 1. Distribution of severe preeclampsia characteristics at Sumber Waras Hospital

No	Patient Characteristics	Frequency (n=85)	Percentage (%)
1	**Age**		
	18-35 years old	54	63,5
	>35 years old	31	36,5
2	**Body Mass Index (BMI)**		
	Normal	5	5,9
	Overweight	7	8,2
	Obesity class 1	36	42,4
	Obesity class 2	37	43,5
3	**Parity Status**		
	Nullipara	1	1,2
	Primipara	23	27,1
	Multipara	55	64,7
	Grande multipara	6	7,1
4	**Gestational Age**		
	Preterm	20	23,5
	Aterm	65	76,5

Based on the table above, shows that most of the age of patients who experienced severe preeclampsia were mothers aged 18-35 years as many as 54 patients or 63.5%. The BMI of patients who experienced severe preeclampsia were mostly mothers with a BMI category of obesity class two as many as 37 patients or 43.5%. Most of the parity-status of patients who experienced severe preeclampsia were mothers with multiparous parity status as many as 55 patients or 64.7%. The gestational age of patients who experienced severe preeclampsia were mostly mothers with a term gestational age as many as 65 patients or 76.5%.

Table 2. Distribution of severe preeclampsia outcomes at Sumber Waras Hospital

No	Patient Characteristics	Frequency (n=85)	Percentage (%)
Maternal Outcomes			
1	**Eclampsia**		
	Yes	12	14,1
	No	73	85,9
2	**HELLP Syndrome**		
	Partial HELLP syndrome	2	2,4
	No	83	97,6
3	**Visual Disturbance**		
	Yes	9	10,6
	No	76	89,4
4	**Pulmonary Edema**		
	Yes	1	1,2
	No	84	98,8
Perinatal Outcomes			
1	**Perinatal Death**		
	Live infant	84	98,8
	Infant death	1	1,2
2	**Apgar *Score***		
	Non asphyxia	75	88,2
	Mild-moderate asphyxia	7	8,2
	Severe asphyxia	2	2,4
3	**Birth Weight**		
	Normal	67	78,8
	Low	17	20,0

Based on the table above, shows that most patients are mothers who do not experience eclampsia, as many as 73 patients or 85.9%. Mothers who do not experience HELLP syndrome are the most, namely 83 patients or 97.6%. Mothers who do not experience visual impairment are 76 patients or 89.4%. Most patients do not experience pulmonary edema, as many as 84 patients or 98.8%. Based on the table above, shows that most patients who experience severe preeclampsia have babies who live, as many as 84 patients or 98.8%. Patients who experienced severe preeclampsia mostly had babies who did not experience asphyxia as many as 75 patients or 88.2%. Most patients who experienced severe preeclampsia had babies with normal weight as many as 67 patients or 78.8%. The total percentage results of the Apgar score and baby weight could not reach 100% because one baby died.

DISCUSSION

In this study, the highest maternal age in severe preeclampsia was 18-35 years old. This result is not in accordance with the POGI (*Perkumpulan Obstetri dan Ginekologi Indonesia*)'s[3] theory which states that mothers aged 40 years or older have a risk of experiencing preeclampsia twice as high as young mothers. Advanced maternal age tends to experience the process of blood vessel aging, changes in hemodynamic adaptation, lower egg cell quality, and comorbid diseases that trigger preeclampsia, while mothers who are under reproductive age tend to have immaturity of reproductive organs that are complicated by preeclampsia.[2] This study is in accordance with the results of research by Aladin, Femilia TP, and Kurnia D[6] which showed that the majority of mothers giving birth with severe preeclampsia were aged 20-35 years as many as 39 people (65%). The possibility that can cause the difference in these results with the theory is due to the patient's unhealthy lifestyle. Bad living habits in urban communities can increase the risk of developing diseases, such as hypertension, thus contributing to increasing the risk of preeclampsia.

Body Mass Index (BMI) can indicate the nutritional status of the mother, whether underweight, normal, overweight, or obese. The nutritional status of the mother is important to see during the pregnancy process until delivery because it can cause problems for the mother and child if disturbed. The ideal weight gain for the mother during pregnancy is 12-16 kg, if it is excessive, it can increase the risk of obesity which is one of the factors in the emergence of preeclampsia.[7] In this study, the highest BMI was found in the category of class two obesity. This is in line with research conducted by Aisyah S, Sembiring J, and Sikumbang SR[8] which stated that pregnant women with obesity experience more preeclampsia, amounting to 49 people (62%). Obesity can disrupt endothelial function by causing resistance in the blood vessels so that the normal physiological modulation of blood vessel tone is disrupted and triggers an excessive systemic inflammatory response in the mother, resulting in hypertension. Parity status has been identified as a risk factor for preeclampsia. The results of this study found that the majority of the parity status of patients who experienced severe preeclampsia were

multiparous. This is not in line with the theory of Gestational Hypertension and Preeclampsia: ACOG Practice Bulletin[2] which states that most cases of preeclampsia occur in healthy nulliparous mothers without clear risk factors. However, the results of this study are in line with research conducted by Annafi MI, Budyono C, and Jumsa MR[9] with multigravida parity subjects reaching 44 people (50.6%). This can occur because the uterus in multiparous mothers is stretched due to continuous labor so that it becomes weak. This reduced uterine muscle function can manifest in clinical symptoms that trigger preeclampsia. The results of this study found that the most gestational age in pregnant women who experienced severe preeclampsia was term mothers (≥ 37 weeks). These results are in line with research by Ahityadeva NT and Julian D[10] which reported that 60 people (69%) experienced preeclampsia with a gestational age of 37-42 weeks. This is in accordance with the theory that preeclampsia appears in the late period of pregnancy up to 37 weeks of gestation. As the gestational age increases, the mother can experience preeclampsia due to microvascular damage.[4] Eclampsia is a worsening condition of uncontrolled preeclampsia. Eclampsia seizures can be caused by ischemia, vasospasm, and cerebral edema. Post-seizures from eclampsia itself can cause pulmonary edema, retinal detachment, kidney damage, and cerebral hemorrhage.[11] The results of this study found that the number of severe preeclampsia patients with eclampsia was 12 people (14.1%). Research by Abimanyu B, Andayani P, and Putra YAPS[12] stated that there were 30 cases of eclampsia (2.38%) of all 1,259 deliveries. The importance of strict management during pregnancy before delivery occurs so that eclampsia can be treated as quickly as possible in preeclampsia patients. Eclampsia management must also be carried out carefully to avoid further complications of eclampsia.[11]

This study showed the incidence of HELLP syndrome (Hemolysis, Elevated Liver enzymes, and Low Platelets) of 2 cases (2.4%) of partial HELLP syndrome. The results of the study by Ahityadeva NT and Julian D[10] reported 76 cases of HELLP syndrome with 34 cases of partial HELLP syndrome in the period from January 2013 to April 2016. HELLP syndrome is associated with the presence of inflammatory cytokine responses in the placenta that cause liver dysfunction. Management of HELLP syndrome needs to be considered in improving its clinical symptoms. The results of the HELLP syndrome outcomes obtained in this study are considered not to be a benchmark because of the small percentage. The cause of this inequality in prevalence can be caused by differences in factors that affect the mother, from the management during pregnancy to the handling of childbirth which may be different in mothers with severe preeclampsia at Sumber Waras Hospital compared to other places. The availability of more adequate facilities in urban areas can help in handling complications more quickly and appropriately in patients.

Mothers with severe preeclampsia may experience decreased retinal function, such as blurred vision, scotoma, or diplopia.[13] The results of this study found that 9 patients with visual impairment (10.6%) were the most frequently reported. Research by Akip SD, Wijayahadi N, Wiyati PS[14] stated that 25 pregnant women (42.4%) experienced visual impairment. Ocular manifestations in preeclampsia occur due to increased systemic blood pressure due to vasoconstriction of the retinal blood vessels and serous extravasation in the retina due to increased vascular permeability. [15] This study found 1 case of pulmonary edema (1.2%). The results obtained in this study are reinforced by research conducted by Pangesti WD and Wulandari W[16] which obtained 7 cases (3.76%). Pulmonary edema is a serious complication of severe preeclampsia. Severe preeclampsia can affect the permeability of pulmonary capillary blood vessels, heart failure, and decreased diuresis which manifests as pulmonary edema.[11] The results of pulmonary edema outcomes obtained in this study are considered not to be a reference due to the lack of cases obtained. The factors that could be the reason for the small number of cases in this study are possibly due to efforts to prevent pulmonary edema during pregnancy, routine monitoring, and postpartum care that are different in mothers with severe preeclampsia at Sumber Waras Hospital compared to other places. Severe preeclampsia needs to be treated carefully to achieve a better prognosis. Severe preeclampsia has a significant adverse effect on the fetus by affecting blood flow to the fetus so that there is a decrease in circulation in the uteroplacental. Perinatal death is an indirect impact due to the multifactorial influence of preeclampsia manifestations.[11] The results of this study found 1 case (1.2%) of infant death. On the other hand, research obtained by Kalam C, Mongan SP, Wagey FW[17] obtained data on the distribution of perinatal mortality of 3 cases (4.6%). The perinatal mortality outcomes in this study cannot be used as a reference figure for the prevalence of perinatal mortality. This condition may occur due to differences in handling during pregnancy, management of complications that occur, and different management of infant delivery in mothers with severe preeclampsia at Sumber Waras Hospital compared to other places which can increase the risk of infant mortality. Good management of severe preeclampsia can reduce the incidence of more severe complications in both mothers and babies.

The results of this study showed that the majority of Apgar scores in perinatal outcomes were 7-10 (non-asphyxia) as many as 75 cases (88.2%). This is in line with research conducted Kartikasari RF, Maryati, and Sinabutar NA [18] which found 58 cases of non-asphyxia (70.7%). Asphyxia can occur in neonates due to failure of oxygen exchange with carbon dioxide which is not immediately addressed, causing hypoxemia, hypercarbia, and acidosis.[11] Service facilities at health facilities have an important influence so that asphyxia can be diagnosed and handled properly.Neonatal birth weight greatly affects the degree of infant mortality and morbidity. The severity of low birth weight (LBW) babies can affect the level of physiological stress and inflammation they suffer.[19] In this study, the number of normal baby weights was higher than LBW babies, amounting to 67 (78.8%). The results obtained in this study are in line with research by Sari AI[20] which stated that the frequency of occurrence of normal baby weight in preeclampsia was higher, amounting to 679 cases (18.9%) from a total of 3594 deliveries. LBW babies need to be treated appropriately in an effort to reduce the incidence. The management efforts themselves must start

from pregnancy, especially in meeting adequate nutrition for the mother.

CONCLUSIONS AND SUGGESTIONS

Based on this study, it can be concluded that the majority of severe preeclampsia patients at Sumber Waras Hospital are pregnant women aged 18-35 years (63.5%), have a BMI category of obesity class two (43.5%), are multiparous (64.7%), and are aterm (76.5%). Maternal outcomes of severe preeclampsia were eclampsia (14.1%), HELLP syndrome (2.4%), visual impairment (10.6%), and pulmonary edema (1.2%). Most of the babies born were alive (98.8%), non-asphyxia (88.2%), and had normal weight (78.8%).

The researcher suggests that further research can conduct research with a larger sample size and variables. Counseling activities can be carried out for health workers to pregnant women by providing knowledge about preeclampsia so that it can be prevented as early as possible and given proper management.

FUNDING

The source of funding for this research was fully borne by the researcher personally.

CONFLICT OF INTEREST

There is no conflict of interest from certain individuals or organizations in this research.

ETHICAL ASPECTS

This research has previously obtained research permits from the Ethics Commission of the Faculty of Medicine, Tarumanagara University and Sumber Waras Hospital, West Jakarta.

BIBLIOGRAPHY

1. Nirupama R, Divyashree S, Janhavi P, Muthukumar SP, Ravindra PV. Preeclampsia: Pathophysiology and management. J Gynecol Obstet Hum Reprod. 2021 Feb;50(2):101975.
2. Gestational Hypertension and Preeclampsia: ACOG Practice Bulletin, Number 222. Obstet Gynecol. 2020 Jun;135(6):e237-e260.
3. POGI. Pedoman Nasional Pelayanan Kedokteran Diagnosis dan Tatalaksana Preeklampsia. Perkumpulan Obstetri dan Ginekologi Indonesia. 2016.
4. Karrar SA, Martingano DJ, Hong PL. Preeclampsia [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. [Updated 2024 Feb 25; cited 2024 Jan 19]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK570611/
5. Kementerian Kesehatan RI. Profil Kesehatan Indonesia Tahun 2021. Jakarta: Kementerian Kesehatan RI; 2022. Available from: https://repository.kemkes.go.id/book/828
6. Femilia TP, Aladin, Kurnia. Karakteristik dan Outcome Pasien Preeklampsia Berat di RSUP Dr. M. Djamil Padang Tahun 2020. JIKESI. 2022 Nov 17;3(2).
7. Supatmi, Sary YNE, Natalia MS. Hubungan Obesitas dengan Preeklamsia pada Ibu Hamil di Wilayah Kerja Puskesmas Ajung Kab. Jember. Jurnal Ilmu Kebidanan dan Kesehatan. 2024 Jan 31;15(1):53-60.
8. Aisyah S, Sembiring J, Sikumbang SR. Faktor yang Berhubungan dengan Kejadian Preeklampsia pada Ibu Hamil di RSU Sundari Medan. Jurnal Ilmiah Kesehatan Ibu Dan Anak. 2022;2(1):1–11.
9. 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. LMJ. 2022 Jan 19;1(1):17–22.
10. Ahityadeva NT, Julian D. Perbedaan Luaran Maternal dan Perinatal antara Preeklampsia Berat dengan Sindrom Hellp dan Sindrom Hellp Parsial. Jurnal Kedokteran Diponegoro. 2017;6(1):12-19.
11. Prawirohardjo S. Ilmu Kebidanan. Jakarta: PT Bina Pustaka Sarwono Prawirohardjo; 2016. 54, 531-559, 954 p.
12. Putra YAPS, Abimanyu B, Andayani P. Preeklampsia Berat, Sindrom HELLP, dan Eklampsia Terhadap Luaran Janin (Fetal Outcome) di RSUD Ulin Banjarmasin. Indonesian Journal of Obstetrics & Gynecology Science. 2019 Sep;2(2).
13. Cunningham FG, Leveno K, Dashe JS, Hoffman BL, Spong CY, Casey BM. William Obstetrics 26th Edition. New York: McGraw Hill;2022. 701 p.
14. Akip SD, Wiyati PS, Wijayahadi N. Luaran Maternal dan Perinatal pada Ibu Hamil dengan Preeklampsia Berat. Jurnal Kedokteran Diponegoro. 2015;4(4).
15. Anggraini MA, Iqra ZHP, Andari MY, Danianto A. Manifestasi Okular pada Preeklampsia. Cermin Dunia Kedokteran. 2023;50(1):36–39.
16. Wulandari W, Pangesti WD. Prevalensi Preeklamsi dengan Komplikasi di Rumah Sakit Rujukan Kabupaten Banyumas Tahun 2017-2020. JURBIDHIP. 2022 Feb 18;9(1):1–15.
17. Kalam C, Wagey FW, Mongan SP. Luaran Ibu dan Perinatal pada Kehamilan dengan Preeklampsia Berat di RSUP Prof. Dr. R. D. Kandou Manado Periode 1 Januari - 31 Desember 2016. eCl. 2017;5(2).
18. Sinabutar NA, Kartikasari RF, Maryati. Hubungan Preeklamsia Dengan Kejadian Asfiksia Neonatorum di Rumah Sakit Ibu Dan Anak Cinta Kasih. Jurnal Kesehatan STIKes IMC Bintaro. 2023;6(1).

19. Kepmenkes. Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/MENKES/295/2018 tentang Pedoman Nasional Pelayanan Kedokteran Tata Laksana Tindakan Resusitasi, Stabilisasi, dan Transpor Bayi Berat Lahir Rendah. Menteri Kesehatan. Jakarta: Menteri Kesehatan Republik Indonesia;2018

20. Sari AI. Hubungan Ibu Preeklamsia dengan Kejadian BBLR di RSD Balung Kabupaten Jember. Ovary Midwifery Journal. 2021;2(2).