

FACTORS AFFECTING THE INCIDENCE OF MATERNAL PREECLAMPSIA

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ABSTRAK FAKTOR-FAKTOR YANG MEMPENGARUHI KEJADIAN PREEKLAMPSIA IBU

Preeklampsia merupakan salah satu penyebab mortalitas dan morbiditas ibu dan janin. Faktor-faktor yang mempengaruhi terjadinya preeklampsia adalah usia, paritas, riwayat hipertensi, diabetes mellitus, obesitas, molahidatidosa dan kehamilan ganda. Hasil presurvey didapat data pada tahun 2018 angka kejadian preeklampsia ibu bersalin di RSUD HM Ryacudu Kotabumi sebanyak 68 orang. Tujuan penelitian diketahui faktor-faktor yang mempengaruhi kejadian preeklampsia ibu bersalin di RSUD HM Ryacudu Kotabumi.

Jenis penelitian ini adalah *kuantitatif* dengan pendekatan *cross sectional*. Menggunakan data sekunder. Populasi dalam penelitian ini semua ibu bersalin dengan diagnosa preeklampsia yang di rawat di ruang kebidanan dalam masa rentang waktu Januari 2020 – Desember 2022 sebanyak 86 orang ibu bersalin. Sampel yang digunakan adalah *total population* sebanyak 86 orang ibu bersalin. Analisis data univariat dengan menggunakan distribusi frekuensi dan bivariat dengan menggunakan (*chi-square*).

Hasil penelitian didapatkan hasil Usia ibu bersalin yang beresiko usia <20 atau >35 tahun sebesar 45 responden (52,3%), riwayat hipertensi ibu yang beresiko sebesar 46 responden (53,5%), paritas ibu yang mengalami resiko 44 responden (51,2%).

Kesimpulan Ada hubungan usia dengan kejadian preeklampsia dengan *p-value* sebesar 0,010 dan OR 3.717, ada hubungan riwayat hipertensi dengan kejadian preeklampsia dengan *p-value* sebesar 0,001 dan OR 5.612, dan ada hubungan paritas dengan kejadian preeklampsia dengan *p-value* sebesar 0,006 dan OR 4.016.

Peneliti menyarankan ibu untuk meningkatkan kunjungan ANC lebih awal, dan mengajak ibu untuk sering mengontrol kehamilannya agar tidak mengalami resiko pada kehamilan yaitu salah satunya adalah preeklampsia.

Kata kunci : Usia, Riwayat hipertensi, Paritas, Preeklampsia

ABSTRACT

Preeclampsia is one of the causes of maternal and fetal mortality and morbidity. Factors that influence the occurrence of preeclampsia include age, parity, history of hypertension, diabetes mellitus, obesity, hydatidiform mole, and multiple pregnancies. Pre-survey data from 2018 revealed that there were 68 cases of preeclampsia among delivering mothers at HM Ryacudu General Hospital, Kotabumi, North Lampung. The research objective was to identify the factors affecting the occurrence of preeclampsia among delivering mothers at HM Ryacudu General Hospital of Kotabumi.

This study was a quantitative research with a cross-sectional approach, using secondary data. The population of this study consists of all delivering mothers diagnosed with preeclampsia who were treated in the obstetrics ward from January 2020 to December 2022, totaling 86 delivering mothers. The sample used is the entire population of 86 delivering mothers. Data analysis included univariate analysis using frequency distribution and bivariate analysis using the chi-square test.

The results showed that among the delivering mothers, 45 respondents (52.3%) were at risk due to their age being <20 or >35 years, 46 respondents (53.5%) had a history of hypertension which put them at risk, and 44 respondents (51.2%) who experienced risk had parity.

In conclusion, there is a relationship between age and the occurrence of preeclampsia with a *p-value* of 0.010 and an odds ratio (OR) of 3.717. There is a relationship between a history of hypertension and the occurrence of preeclampsia with a *p-value* of 0.001 and an OR of 5.612. There is also a relationship between parity and the occurrence of preeclampsia with a *p-value* of 0.006 and an OR of 4.016.

Researchers recommend that mothers increase their early Antenatal Care (ANC) visits and encourage them to frequently monitor their pregnancies to avoid risks, one of which is preeclampsia.

Keyword : age, hypertensive history, parity, preeclampsia

INTRODUCTION

Preeclampsia is a condition characterized by distinct signs of high blood pressure (hypertension), tissue swelling (edema), and the presence of protein in the urine (proteinuria), which arises during pregnancy. This condition typically occurs in the third trimester of pregnancy, but it can also manifest in the second trimester. Preeclampsia presents a significant health concern as it can lead to specific pregnancy-related syndromes involving diminished organ perfusion due to vasospasm and endothelial activation. Among all pregnancies, preeclampsia is found in 3.7% of cases resulting in live births and maternal deaths due to these complications (Ministry of Health of Indonesia, 2013; Mose and Irianti, 2018).

Preeclampsia is the development of high blood pressure accompanied by proteinuria and edema as a result of pregnancy after the 20th week of gestation or immediately after childbirth. Preeclampsia is a disorder with symptoms of hypertension, edema, and proteinuria (Prawirohardjo, 2018). Previously, preeclampsia was always defined by the presence of new onset hypertension and proteinuria during pregnancy. Although these criteria remain classical definitions of preeclampsia, some women exhibit hypertension along with other multisystem disturbances indicative of severe preeclampsia, even without proteinuria. Edema is no longer used as a diagnostic criterion as it is frequently found in women with normal pregnancies.

The occurrence of an increase in systolic blood pressure of at least 30 mmHg or an increase in diastolic blood pressure of at least 15 mmHg, or a systolic blood pressure of at least 140 mmHg or a diastolic blood pressure of at least 90 mmHg or higher, accompanied by an increase of 20 mmHg or more, can be diagnosed as preeclampsia.

The incidence of preeclampsia and eclampsia varies from one country to another and within different regions. Various factors contribute to this variation, including the number of primigravida cases, especially young primigravida, excessive uterine distension such as hydramnios and twin pregnancies, obesity, maternal age exceeding 35 years, and the incidence of preeclampsia ranges between 3% to 5% of managed pregnancies. The worldwide prevalence of preeclampsia ranges from 0.51% to 38.4%. In developed countries, the prevalence of preeclampsia ranges from 6% to 7%. In Indonesia, the prevalence is approximately between 3.8% and 8.5%. Preeclampsia contributes to maternal mortality, and according to the World Health Organization (WHO, 2022), maternal death is partially attributed to this condition.

Based on the Indonesian Health Profile data for the year 2019, the causes of maternal death in Indonesia are hemorrhage (50.14%, 1280 cases), hypertension during pregnancy, including preeclampsia (41.75%, 1066 cases), and infections (8.11%, 207 cases). The impact of preeclampsia can lead to maternal mortality, preterm birth, Intrauterine Growth Restriction (IUGR), and stillbirth due to placental calcification, resulting in reduced food and oxygen supply to the fetus.

The exact cause of preeclampsia remains unknown, and thus researchers have conducted investigations to identify the most significant factors for pregnant women. In this study, we will identify the factors of maternal age, history of hypertension during pregnancy, and parity that are related to the occurrence of preeclampsia.

Although the exact cause of preeclampsia remains uncertain, clinical manifestations become apparent early in pregnancy, with accumulating subtle pathophysiological changes that become clinically evident over time. Preeclampsia is a multisystem disorder with a complex etiology specific to pregnancy. According to the course of the theory, there are two stages of preeclampsia depending on the emerging symptoms. The first stage is asymptomatic and characterized by the abnormal development of the placenta during the first trimester. Abnormal placental development, particularly angiogenesis, leads to placental insufficiency and the release of placental material into the maternal circulation. The release of placental material results in clinical manifestations in the second stage of preeclampsia, which is symptomatic. Symptoms in this stage include hypertension, renal impairment, proteinuria, and the potential for HELLP syndrome, eclampsia, and damage to other end organs (Hacker & Moore's et al., 2016).

Epidemiological data on preeclampsia in Indonesia are also well-known through research conducted at major hospitals across the country. A retrospective cohort study in 2016 at seven referral hospitals in Medan, Bandung, Semarang, Solo, Surabaya, Bali, and Manado identified 1,232 cases of preeclampsia in a year. Among all cases, several risk factors were found, including anemia (26%), obesity (10%), and chronic hypertension (8%). Maternal death was reported in 2.2% of cases, while perinatal mortality reached 12% (Ministry of Health of Indonesia, 2019).

The mortality rate indicates that preeclampsia occurs in 2-8% of pregnancies worldwide. Preeclampsia is a major cause of maternal and perinatal mortality. The incidence of preeclampsia is higher in multiparous women than in nulliparous

women. Hypertensive disorders during pregnancy occur in 10% of pregnant women globally. This condition encompasses preeclampsia, eclampsia, gestational hypertension, and chronic hypertension (ACOG, 2020).

Health Profile of North Lampung Regency due to several factors including hypertension at 38%, bleeding at 38% during pregnancy, and other contributing factors at 23%. In several Hospitals in North Lampung Regency, the high incidence of maternal preeclampsia cases at HM Ryacudu General Hospital reached 68 cases. The high maternal mortality rate in North Lampung Regency is attributed to inadequate health service facilities and geographical location leading to delays in delivery assistance (Department of Health of North Lampung, 2018).

Efforts to prevent and diagnose diseases as early as possible and provide treatment as soon as possible by identifying the characteristics of preeclampsia patients at HM Ryacudu General Hospital can help take protective measures

(Department of Health of North Lampung Regency, 2018). The purpose of this study is to determine the factors influencing the occurrence of maternal preeclampsia based on data from HM Ryacudu General Hospital Kotabumi in North Lampung.

RESEARCH METHODS

This research used an analytic survey method with a cross-sectional approach. The study was conducted at HM Ryacudu General Hospital Kotabumi in North Lampung Province, Lampung, from March 20th to May 20th, 2023, using secondary data sourced from medical records. The population in this study consisted of all mothers with preeclampsia from January 2020 to December 2022, totaling 86 individuals. Using the total population, all individuals were included as samples. Data collection was performed by observing medical records using checklist sheets to examine factors related to the occurrence of preeclampsia. Data analysis was conducted using the chi-square test.

Univariate Analysis

Table 1
Frequency Distribution of Maternal Age, History of hypertension, Parity and Preeclampsia

Variable	Category	Frequency	Percentage
Age	At risk	45	52,3%
	Not at Risk	51	47,7%
History of Hypertension	Yes	46	53,5%
	No	40	46,5%
Parity	At risk	44	51,2%
	Not at Risk	42	48,8%
Preeclampsia	Severe PE	32	37,2%
	Mild PE	54	62,8%

Source: secondary data 2023

Bivariate Analysis

Table 2
Relationship between age, history of hypertension, and parity with the incidence of preeclampsia

Independent variable		Dependent variable						P value	OR (CI)
		Preeclampsia				Total			
		Severe		Mild		N	%		
Age	At Risk	23	51,1	22	48,9	45	100	0,010	3,717 (1,448 – 9,541)
	Not at Risk	9	22,0	32	78	41	100		
History of HT	Yes	25	54,3	21	45,7	46	100	0,001	5,612 (2,063 – 15,269)
	No	7	17,5	33	82,5	40	100		
Parity	At Risk	23	52,3	21	47,7	44	100	0,006	4,016 (1,561 – 10,333)
	Not at Risk	9	37,2	33	78,6	42	100		

Source: data analysis

DISCUSSION

Numerous factors influence the occurrence of preeclampsia, such as maternal age, parity, obesity, history of hypertension, diabetes mellitus, multiple pregnancies, and hydatidiform mole. Therefore, it is strongly recommended that healthcare providers improve the quality of Antenatal Care (ANC) services by providing early education or counseling on various pregnancy-related abnormalities. This will help mothers understand the high-risk nature of their pregnancies.

This is in line with the theory that women with ages <20 or >35 years have less awareness of their health. Mothers below the age of 20 are considered adolescents, and they may lack information from their environment and healthcare providers. They tend to rely more on information from peers with similar experiences, without guidance from healthcare professionals. On the other hand, older women may be preoccupied and less concerned about reproductive health due to their perception of having sufficient experience, especially regarding their own reproductive health.

Statistically, the obtained odds ratio (OR) is 5.612, indicating that mothers with a history of hypertension are 5.612 times more likely to experience severe preeclampsia compared to respondents without a history of hypertension.

One predisposing factor for the occurrence of preeclampsia or eclampsia is chronic hypertension or previous vascular hypertension, and chronic diseases like chronic hypertension can develop into severe preeclampsia. This is especially true for mothers with a history of chronic hypertension exceeding 4 years. Chappel also concluded that there are 7 risk factors that can be assessed early as predictors of the occurrence of superimposed preeclampsia in pregnant women with chronic hypertension. Hypertension leads to disturbances in vital organs. Therefore, in pregnant women with a history of hypertension, previously affected organs become more severely impaired.

Women with chronic hypertension experience a decrease in blood pressure during early pregnancy followed by an increase in the third trimester. Research results show that preeclampsia increases by 25% in women who have suffered from chronic hypertension for more than 4 years.

Statistically, the obtained OR is 4.016, indicating that mothers with parity risk (mothers with <2 pregnancies) have a 4.016 times greater risk of severe preeclampsia compared to respondents without parity risk (mothers with 2-3 pregnancies).

The results of this study suggest that parity is safe if the number of live-born children is less than 3.

However, if there are more than 3 live births, the maternal mortality rate increases. Preeclampsia is more common in young primiparas than in multiparas. However, women with closely spaced births are at risk of preeclampsia. Parity impacts preeclampsia because the high blood flow to the placenta leads to a reduced oxygen supply, resulting in impaired fetal growth.

CONCLUSION

There is a correlation between maternal age and the occurrence of preeclampsia (p value 0.010; OR = 3.717), a relationship between the mother's history of hypertension and preeclampsia (p value 0.001; OR = 5.612), and a connection between parity and the occurrence of preeclampsia (p value 0.006; OR = 4.016). Based on these findings.

SUGGESTION

It is recommended to provide comprehensive information to couples of childbearing age during pre-conception to pay attention to these factors. Additionally, high-quality pregnancy examinations supported by early detection of preeclampsia risk factors can serve as alternative preventive and early treatment measures by healthcare professionals.

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