

Analysis of Factors Causing Pre-Eclampsia-Related Events at Mokopido Hospital

Musdalifah

Institut Ilmu Kesehatan STRADA Indonesia

Email : musdalifah.amdkeb1@gmail.com

KEYWORDS

preeclampsia; causative factor; pregnancy

ABSTRACT

This study used a cross sectional study with secondary hospital data. Preeclampsia is a condition that becomes a fear during pregnancy because it will cause problems for the mother and child to lead to death in one of them or sequelae that will be suffered by the mother after giving birth. Research is needed to prevent causes from emerging that have an impact on increasing preeclampsia so that appropriate governance can be established according to the priority of the problems found. At Mokopido Hospital, there are still patients with preeclampsia although in 2021 there were 129 patients, to 2022 there were 109 patients, there was a decrease of 20 patients. This study aims to determine the factors associated with the incidence of preeclampsia at Mokopido Hospital. The results of simultaneous f and partial t tests found that age, educational status, body mass index and parity history were associated with the incidence of preeclampsia. Dominated by body mass index and age during pregnancy.

Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)



1. Introduction

One indicator to assess the level of health in a country, especially for pregnant women, childbirth and postpartum, is based on maternal mortality rates (Amiruddin et al., 2007). Based on the Overview of Maternal Health in ASEAN Countries in 2011 by WHO, it was reported that Indonesia was ranked third highest in the ASEAN region, for the number of maternal deaths after Laos and Cambodia (Organization, 2019). Maternal deaths can be caused by bleeding (25%), indirect causes (20%), infection (15%), unsafe abortion (13%), preeclampsia or eclampsia (12%), poor delivery (8%), and other direct causes (8%). Preeclampsia or eclampsia ranks second as the direct cause of death after hemorrhage, despite variations in data across countries (Widya, Zaki, & Bambang, 2017). Preeclampsia is a specific set of symptoms that only appear during pregnancy with more than 20 weeks of age here. Today edema is no longer the third component of the preeclampsia trilogy (Varney, 2007). Factors that cause preeclampsia are still being sought so that there are several theories explaining the cause of preeclampsia, namely swelling-proteinuria-high blood pressure, so this disorder is often known as the diseases of theory. The theories are the role of prostacyclin and thromboxane, the role of immunological factors, and the role of genetic factors (Lubis, 2013). While some risk factors for the incidence of preeclampsia are about 85% preeclampsia occurs in primigravida, grandemultidravida, large fetuses, excessive uterine stention (hydramnios, molar

multiple pregnancy, molahidatisoda) about 14% to 20%, diabetes mellitus, hypertension reaches 25% and maternal age over 35 years (Yogi, Hariyanto, & Sonbay, 2014).

Preeclampsia belongs to one of the triads of mortality, in addition to bleeding and infection (Roberts, Bodnar, Patrick, & Powers, 2011). It is also explained that in certain circumstances severe preeclampsia can progress to eclampsia, which is an emergency, which can increase maternal mortality (Padila, Febriawati, Andri, & Dori, 2019). The exact cause of preeclampsia (one of the triad of mortality) is still unknown, although there are several risk factors and theories put forward regarding preeclampsia. Prevention of pre-eclampsia / eclampsia is very important so that there is no danger to the mother and her fetus. Pregnant women should check the antenatal regularly and quality carefully, recognize the signs as early as possible (mild pre-eclampsia), provide adequate treatment so that the disease does not become more severe, must always be aware of the possibility of pre-eclampsia if there are preposing factors, provide information about the benefits of rest and sleep, tranquility, and the importance of regulating low salt, fat, and carbohydrate and high protein, Also keep excessive weight gain at bay (Padila et al., 2019).

The role of midwives in accordance with the Regulation of the Minister of Health of the Republic of Indonesia No. 28 of 2017 concerning the licensing and implementation of midwife practice in article 19 states that the role of midwives has authority in maternal health services, one of which is emergency management, followed by referral and counseling and counseling. Midwives also have a role in this problem, namely providing counseling about the danger signs of pregnancy and being able to do early detection of preeclampsia in pregnant women (Amelia, Tursina, Nikmah, & Sofyan, 2020). Antenatal care activities are one of the midwifery service standards by measuring blood pressure. In early management of hypertension in pregnancy, midwives find early any increase in blood pressure in pregnancy and recognize other signs and symptoms of preeclampsia, as well as take appropriate action and make referrals. Therefore, further research must be done on this matter to be able to provide adequate treatment of preeclampsia.

2. Materials and Methods

In this study, the cross-sectional analytical research design method was used. The data used in this study is retrospective secondary data based on patient registers in 2021 and 2022 with a history of occurrence rates each month so that sampling is taken as a whole at Mokopido Hospital. This study used data analysis through two steps, namely by using univariate analysis and bivariate analysis.

Univariate analysis is used to determine respondents based on characteristics (age, educational status, body mass index, history of other comorbidities) and data presented in tabular form. Bivariate analysis to determine the relationship between age status, educational status. economic status, body mass index, history of abortion Each of these variables was tested with preeclampsia incidence data using simultaneous F test and partial t test.

3. Result and Discussion

Univariate analysis serves to obtain data on age, educational status. economic status, body mass index, history of abortion.

Table 1 Distribution of patients with preeclampsia in 2021 and 2022 by age, educational status, body mass index and comorbidity history.

Characteristics of Respondents	2021		2022	
	Frequency	%	Frequency	%
Age				
18-22 Year	20	15,5	7	6,4
23 -35 Year	33	25,5	31	28,4
36 – 45 Year	76	59,0	71	65,2
TOTAL	129	100	109	100

Characteristics of Respondents	2021		2022	
	Frequency	%	Frequency	%
Education Status				
No School	31	24,0	27	24,7
Elementary School	45	34,8	40	36,6
Junior High School	25	19,3	22	20,1
Senior High School	25	19,3	19	17,5
PT	3	2,6	1	1,1
TOTAL	113	100	109	100
Body Mass Index				
That < 18,5	22	17,0	28	25,6
Normal 18,5 – 24,9	45	34,8	27	24,7
More > 24,9	62	48,2	54	49,7
TOTAL	129	100	109	100
Parity History				
Primigravida	71	55,5	64	58,7
Multigravida	58	45,5	45	41,3
TOTAL	129	100	109	100

Table 1 shows that the majority of respondents in 2021 based on age are dominated by the age of 36 to 45 years with a percentage of 59% of all respondents, in the characteristics of the respondents' education status is dominated by elementary school education with 34.8.2% of all respondents, in the characteristics of body mass index, an excess BMI of > 24.9 dominates the incidence of preeclampsia by 48.2%. In the history of parity, respondents with early pregnancies experienced more preeclampsia than subsequent pregnancies

in 2022 based on age dominated by 36 to 45 years old with a percentage of 65.2% of all respondents, in the characteristics of respondents' education status dominated by elementary education with 36.6% of the total respondents, in body mass index is still dominated by overweight respondents with 49.7%. In the history of parity, respondents with early pregnancy experienced more preeclampsia than subsequent parity

Bivariate Analysis

Bivariate Analysis is an analysis to determine the relationship between variables. The statistical tests used to determine the relationship between these variables are simultaneous F and partial t tests.

Table 2 Relationship of Preeclampsia Incidence in 2021 and 2022 to age, education status, body mass index, and parity history

Variable	Characteristic	P value
Preeclampsia Events 2021	Age	0,01
	Education Status	0,04
	Body Mass Index	0,00
	Parity History	0,01
Incidence of Preeclampsia 2022	Age	0,01
	Education Status	0,03
	Body Mass Index	0.00
	Parity History	0,01

In table 2, results related to the relationship between the incidence of preeclampsia and the characteristics of respondents found that age, educational status and history of parity have a relationship related to the incidence of preeclampsia both in 2021 and 2022 at Mokopido Hospital.

Table 3 Partial t-Test

Variable Dependencies	Independent Variables	B	P Value
Incidence of Preeclampsia 2021	Age	0,893	0,01
	Education Status	0,751	0,04
	Body Mass Index	0,931	0,00
	Parity History	0,883	0,01
	Constanta 1,923		
Incidence of Preeclampsia 2022	Age	0,877	0,01
	Education Status	0,799	0,03
	Body Mass Index	0,912	0,00
	Parity History	0,823	0,01
	Constanta 1,798		

In the partial t test, it was found that age, educational status, body mass index and parity history had a positive relationship with the incidence of preeclampsia both in 2021 and 2022. In 2021, body mass index contributed 93% to the incidence of preeclampsia, this is greater than other variables, as well as in 2022 that body mass index still dominates causes related to the incidence of preeclampsia at Mokopido Hospital.

Discussion

Based on the results of this study, it was found that there were several variables related to the incidence of preeclampsia at Mokopido Hospital in 2021 and 2022. In age characteristics, it was found that the age of 36 to 45 years contributed and dominated the emergence of preeclampsia. According to existing theories, preeclampsia is more often obtained in the early and late reproductive age, namely adolescence or over 35 years. Pregnant women <20 years are prone to an increase in blood pressure and more quickly cause seizures. While the age of more than 35 years as we get older is prone to an increase in blood pressure (Djannah & Arianti, 2010). 35 years is a high risk age for pregnancy and childbirth. Thus, it is known that the age of the mother at the time of childbirth also affects the morbidity and mortality of mothers and children born. Women aged > 35 years are at risk for chronic hypertension which will progress to superimposed preeclampsia while pregnant (Pratiwi, Yokouchi, Matsumoto, & Kondo, 2015).

Based on the variable of educational status, it was found that the level of primary school had a major influence on the cause of preeclampsia. Another study stated that the education level of pregnant women is a risk factor for preeclampsia, in addition, women with low education are 86% more at risk of preeclampsia than women with higher education, while women with secondary education are 72% more at risk of preeclampsia (RRa = 1.72; p = 0.007) than women with higher education (Ahmad & Nurdin, 2019). The low level of education of pregnant women will affect the receipt of information about preventing preeclampsia, it will be limited and have an impact on causing preeclampsia. The higher the education, the better the ability to obtain and absorb information, especially about preeclampsia.

Based on the variable body mass index, it was found that pregnant women who have excess weight dominate as a cause of preeclampsia. This is consistent with the literature that states that obesity and *overweight* are risk factors for preeclampsia. Another study found that the risk of preeclampsia in pregnant women with obesity was 3.3 times greater than those of normal weight (Arwan & Sriyanti, 2020). This is also supported by the results of a study in Pittsburgh that showed a 3-fold greater risk of preeclampsia in women with *overweight*. In overweight pregnant women, preeclampsia can occur through the mechanism of hyperleptinemia, metabolic syndrome, inflammatory reactions and increased oxidative stress which leads to endothelial damage and dysfunction.

Based on the variables of history of parity, it was found that women with primigravida tend to be at risk of preeclampsia. In theory, primigravida is more at risk for preeclampsia than

multigravida because preeclampsia usually occurs in women who are first exposed to the chorion villi. This happens because in these women there is a mechanical immunological formation of blocking antibodies carried out by HLA-G (Human Leucocyte Antigen G) against placental antigens has not been fully formed, so that the process of implantation of trophoblasts into the mother's decidual tissue becomes disrupted. Primigravida is also prone to stress in the face of childbirth which will stimulate the body to release cortisol. The effect of cortisol is to increase the sympathetic response, so cardiac output will also increase (Dielsa, 2020).

4. Conclusion

Based on the results of research conducted at Mokopido Hospital related to the incidence of preeclampsia in 2021 and 2022, several variables related to the causes of preeclampsia were obtained, including age, educational status, body mass index and parity history. In this case, the focus in reducing the incidence of preeclampsia is to conduct balanced nutrition education for pre-pregnancy diets that have an impact on body mass index, prepare fitness during pregnancy, and improve compliance with ANC numbers to prevent the emergence of preeclampsia.

5. References

- Ahmad, Zulfikar, & Nurdin, Siti Surya Indah. (2019). Faktor Risiko Kejadian Preeklamsia Di Rsia Siti Khadijah Gorontalo. *Akademika*, 8(2), 150–162.
- Amelia, Shinta, Tursina, Titin, Nikmah, Sibghatun, & Sofyan, Fuaddilah Ali. (2020). Sistematisasi A Penilaian Autentik Dalam Pembelajaran Daring Dirumah Lewat Televisi Saat Terjadinya Covid-19. *Wahana Didaktika: Jurnal Ilmu Kependidikan*, 18(2), 120–131.
- Amiruddin, R., Ayani, W., Chaerunnisa, A., Ambas, A. W., Afifah, A., & Esti, K. P. (2007). Current Issue Pre Dan Eklamsi Di Indonesia. *Bagian Epidemiologi Fkm Unhas Makassar*.
- Arwan, Berriandi, & Sriyanti, Roza. (2020). Relationship Between Gravida Status, Age, Bmi (Body Mass Index) And Preeclampsia. *Andalas Obstetrics And Gynecology Journal*, 4(1), 13–21.
- Dielsa, Maya Fernanda. (2020). Hubungan Usia Dan Status Gravida Ibu Dengan Kejadian Preeklampsia Di Rsi Ibnu Sina Simpang Ampek Pasaman Barat. *Jurnal Bidan Komunitas*, 3(2), 80–85.
- Djannah, Sitti Nur, & Arianti, Ika Sukma. (2010). Gambaran Epidemiologi Kejadian Preeklampsia/Eklampsia Di Rsu Pku Muhammadiyah Yogyakarta Tahun 2007-2009. *Buletin Penelitian Sistem Kesehatan*, 13(4), 378–385.
- Lubis, L. (2013). *Psikologi Kespro Wanita Dan Perkembangan Reproduksi Ditinjau Dari Aspek Fisik Dan Psikologi Cetakan I*. Kencana Prenada Media Grup. Jakarta.
- Organization, World Health. (2019). *Nutrition Landscape Information System (Nlis) Country Profile Indicators: Interpretation Guide*.
- Padila, Padila, Febriawati, Henni, Andri, Juli, & Dori, Rujung Ali. (2019). Perawatan Infeksi Saluran Pernafasan Akut (Ispa) Pada Balita. *Jurnal Kesmas Asclepius*, 1(1), 25–34.
- Pratiwi, Aulia Indah, Yokouchi, Takeyuki, Matsumoto, Michiaki, & Kondo, Kazuo. (2015). Extraction Of Succinic Acid By Aqueous Two-Phase System Using Alcohols/Salts And Ionic Liquids/Salts. *Separation And Purification Technology*, 155, 127–132.
- Roberts, James M., Bodnar, Lisa M., Patrick, Thelma E., & Powers, Robert W. (2011). The Role Of Obesity In Preeclampsia. *Pregnancy Hypertension: An International Journal Of Women's Cardiovascular Health*, 1(1), 6–16.
- Varney, Helen. (2007). *Asuhan Kebidanan*. Jakarta: Egc. *Asuhan Kebidanan*.
- Widya, Kusumadewi Areta, Zaki, Baridwan, & Bambang, Hariadi. (2017). Study On Auditor's Attitude In Using Information Technology For Auditing: Theory Of Planned Behavior And Social Cognitive Theory Modification. *Russian Journal Of Agricultural And Socio-Economic Sciences*, 66(6), 250–258.
- Yogi, Etika Desi, Hariyanto, Hariyanto, & Sonbay, Elfrida. (2014). Hubungan Antara Usia Dengan Preeklampsia Pada Ibu Hamil Di Poli KIA Rsd Kefamenan Kabupaten Timor Tengah Utara. *Jurnal Delima Harapan*, 1(1), 10–19.