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The Relationship Between Pregnant Women's Age and Eating Patterns with the Incidence of Preeclampsia at Bumi Panua Pohuwato General Hospital

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Abstract: *Preeclampsia is a pregnancy complication characterized by reduced organ perfusion due to vasospasm and endothelial dysfunction, typically occurring in the 3rd trimester, but it can occur earlier. This study aimed to examine the relationship between maternal age, diet, and the incidence of preeclampsia at NU Madinah Pujon Treat Clinics, Malang Regency. The total sampling method was used, with data analyzed using a descriptive statistical approach and multiple linear regression models. The t-value for maternal age (X1) was 2.547, which is greater than the t-table value of 2.048, indicating a significant relationship between maternal age and the incidence of preeclampsia. Similarly, the t-value for diet (X2) was 5.220, indicating a significant relationship between diet and preeclampsia. The F value of 16.621, which is greater than the critical F value of 3.35, confirms a significant simultaneous relationship between maternal age and diet with preeclampsia. The regression coefficient (R^2) of 0.552 means that 55.2% of the incidence of preeclampsia is explained by maternal age and diet, while 44.8% is influenced by other factors. The dietary variable (X2) had a more dominant influence on preeclampsia, as evidenced by the higher t-value of 5.220.*

Keywords: *Diet; Maternal Age; Preeclampsia; Pregnancy Complications; Vasospasm.*

1. INTRODUCTION

To recognize the importance of improving maternal health. There are two categories of maternal deaths: deaths caused directly during pregnancy and childbirth, and deaths caused indirectly by diseases other than pregnancy. The Maternal Mortality Rate (MMR) is one indicator of health problems in women. The high MMR in this era hurts society and its delivery.

One indicator for assessing health services in a country, especially for women during pregnancy, childbirth, and the postpartum period, is the maternal mortality rate. According to the 2011 Overview of Maternal Health in ASEAN Countries by the WHO, Indonesia ranked third in the ASEAN region for maternal deaths, after Laos and Cambodia. Maternal deaths can be caused by hemorrhage (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 a direct cause of death after hemorrhage, although data vary across countries. Preeclampsia is included in the triad of mortality, along with bleeding and infection.

According to the 2007 Village Health Research (Riskesdes), as cited by Djata and Afifah (2011), postpartum hemorrhage (30%), postpartum complications (18%), and preeclampsia and eclampsia (17%) are the main causes of maternal death. 2 Maternal mortality in Indonesia remains very high. 3 According to the Indonesian Demographic and Health Survey (2007-2008), the maternal mortality rate was 228 per 100,000 live births.

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The main cause of maternal death in Indonesia is bleeding, and preeclampsia and eclampsia are the leading causes of perinatal mortality. 13 Preeclampsia is a problem in obstetric care and is a major cause of maternal and fetal morbidity and mortality. The incidence of preeclampsia is approximately 7-10% of all pregnancies, with rates varying from country to country.

Preeclampsia is a multisystem disease involving the brain, liver, kidneys, and placenta. Maternal complications include eclampsia, stroke, liver and kidney failure, and coagulation (Ira Tri, 2010). Clinically, preeclampsia can be divided into mild and severe preeclampsia. The distinction between severe and severe preeclampsia does not necessarily imply two distinct diseases, as patients with mild preeclampsia often experience sudden seizures and fall into a coma.

Preeclampsia is a pregnancy-specific syndrome characterized by reduced organ perfusion due to vasospasm and endothelial activation. This disease typically occurs in the third trimester of pregnancy, but it can occur earlier. To diagnose preeclampsia, a systolic blood pressure increases of 30 mmHg or a systolic blood pressure greater than or equal to 140 mmHg or higher is required. Diastolic blood pressure must also increase by 15 mmHg or a diastolic blood pressure greater than or equal to 90 mmHg, and proteinuria is present.

One of the causes of preeclampsia in pregnant women is diet. According to Heaper (1986) in Nadeak (2011), dietary patterns are the way an individual, group, or family chooses the type and amount of food consumed daily, and are characteristic of a particular group. Pregnant women with unhealthy eating habits or patterns can cause various problems for both themselves and their fetuses. One such problem is preeclampsia. Besides a poor diet, another cause of preeclampsia in pregnant women is age.

Age significantly influences the duration of pregnancy and childbirth. Women under 20 and over 35 are not recommended to become pregnant or give birth. This is because these ages carry a high risk of miscarriage and even death for both mother and baby. Of 2,601 pregnant women, 58.1% experienced preeclampsia at age <35.

Based on a preliminary study I conducted at Bumi Panua Pohuwato General Hospital (in the delivery room) over the past three months, from August to September, 22 women experienced preeclampsia during labor. Interviews with midwives in the delivery room revealed that four of the women experienced preeclampsia due to their diet (consuming foods containing coconut milk and fast food), three of them experienced preeclampsia because they were over 35 years old, and four of them experienced preeclampsia because they were under 20 years old.

Based on the above background, the author is interested in conducting a study entitled "The Relationship Between Pregnant Women's Age and Diet with the Incidence of Preeclampsia at Bumi Panua Pohuwato General Hospital."

2. RESEARCH METHOD

The research design used was a quantitative cross-sectional approach. This design emphasizes the time of data measurement and the experience of both variables, according to Riyanto (2011). This study aims to determine the prevalence or effect of a phenomenon (dependent variable) linked to its cause (independent variable).

This study examined the "Relationship between Pregnant Women's Age and Dietary Patterns with the Incidence of Preeclampsia at Bumi Panua Pohuwato General Hospital." The population was 30, and the sample used was the entire population using a total sampling technique of 30 individuals. Data processing was carried out through editing, coding, data processing, scoring, cleaning, and tabulation, including univariate and bivariate tests with multiple linear regression analysis.

3. RESULTS AND DISCUSSION

Respondent Age Level

The following table shows the characteristics of the respondents based on age, as can be seen from the 30 respondents. To determine the respondents' ages, see the following table:

Table 1. Respondent Characteristics Based on Age.

No	Age (Years)	Frequency(F)	Percentage (%)
1	> 35	13	43.3
2	< 20	11	36.7
3	20-35	6	20.0
Total		30	100

Based on Table 1, it can be seen that of the 30 respondents, 6 (20.0%) were aged 20-35, 13 (43.3%) were aged >35, and 11 (36.7%) were aged <20.

Respondent Occupation

The following table presents the characteristics of respondents based on their occupation. The following table provides information about respondents' occupations:

Table 2. Respondent Characteristics Based on Occupation.

No	occupation	Frequency(F)	Percentage (%)
1	Student	2	6.7
2	self-employed	2	6.7
3	IRT	26	86.6
	Total	30	100

Based on Table 2, it can be seen that of the 30 respondents, 26 (86.6%) were housewives, 2 (6.7%) were self-employed, and 2 (6.7%) were students.

The data analysis for this study, which measures the "Relationship between Pregnant Women's Age and Dietary Patterns with the Incidence of Preeclampsia at Bumi Panua Pohuwato General Hospital," is presented in the following tables:

Mean Values and Regression Analysis

Table 3. Mean values for pregnant women's age (X1), dietary patterns (X2), and the incidence of preeclampsia (Y).

Variables	N	Lowest	The highest score	averages
Age of Pregnant Mother(X1)	30	1	3	1,77
Dietary habit(X2)	30	4	12	6,73
Preeclampsia Incident (Y)	30	4	12	8,70

Based on Table 3, the lowest value for the maternal age variable (X1) is 1, and the highest value is 3, with an average of 1.77. In this study, the maternal age of pregnant women in preeclampsia cases at Bumi Panua General Hospital, Pohuwato, is categorized as adequate because it is close to the highest.

Based on Table 3, the lowest value for the dietary pattern variable (X2) is 4, and the highest value is 12, with an average of 6.73. In this study, the dietary patterns of women experiencing preeclampsia at Bumi Panua General Hospital, Pohuwato, are categorized as adequate because they are close to the highest.

The lowest value for the preeclampsia incidence variable (Y) is 4, and the highest value is 12, with an average of 8.70. In this study, the status of pregnant women experiencing preeclampsia at Bumi Panua General Hospital, Pohuwato, is categorized as adequate because it is close to the highest.

4. DISCUSSION

The following table describes the analysis of variance in the regression analysis of the relationship between maternal age (X1) and dietary patterns (X2) and the incidence of preeclampsia (Y) at Bumi Panua General Hospital, Pohuwato.

Table 4. Analysis of Variance in the Relationship between Maternal Age (X1) and Dietary Patterns (X2) and the Incidence of Preeclampsia (Y) at Bumi Panua General Hospital, Pohuwato.

Source of Variation	Degrees of Freedom	ΣQuadrant	Middle quadrant number	F count	F0,05
Regression	53,139	2	26,621	16,621	3,35
Error	43,161	27	1,599		
Total	96,300	29			

Based on Table 4, the regression analysis of variance obtained a calculated F value of 16.621 > the F value of 0.05 (3.35), indicating a significant simultaneous relationship between the variables of Pregnant Mother's Age (X1) and Diet (X2) with the Incidence of Preeclampsia (Y).

Table 5. Regression Coefficient Analysis of the Relationship between Pregnant Mother's Age (X1) and Diet (X2) with the Incidence of Preeclampsia (Y) at Bumi Panua General Hospital, Pohuwato.

Variables	**Regression Coefficient (R-squared)**	**Standard Error**	**t count**	**t0,05**
Variables (X1) and (X2) against (Y)		1,264	2,547	
Variable X1 against (Y)	0,552			2,048
Variable X2 against (Y)			5,220	

Based on Table 5 above, it can be seen that there is a significant relationship between the independent variables as determined by the calculated t-value of each variable. The calculated t-value for the variable of maternal age (X1) is 2.547> t-table 2.048, indicating a significant relationship between maternal age (X1) and the incidence of preeclampsia (Y). The calculated t-value for the variable of dietary patterns (X2) is 5.220> t-table 2.048, indicating a significant relationship between dietary patterns (X2) and the incidence of preeclampsia (Y).

The regression coefficient (R-square) value of 0.552 indicates a 55.2% relationship between the independent variables and the incidence of preeclampsia, while the remaining 44.8% is influenced by other factors not examined. Judging from the relationship between the two independent variables (X) and the dependent variable (Y), it can be concluded that dietary patterns (X2) are more dominant in the incidence of preeclampsia (Y), as evidenced by the calculated t-value of 5.220 > t-table 2.048.

The multiple linear regression analysis of the relationship between maternal age and dietary patterns and the incidence of preeclampsia at Bumi Panua General Hospital, Pohuwato, is as follows: $Y = \beta0 + \beta1X1 + \beta2X2 + e$

$$Y = 3.275 + 0.773 + 0.603$$

This equation yields a positive constant value and a positive regression coefficient. The better the maternal age and dietary patterns, the better the prevention of preeclampsia. In this case, each increase in variable X1 will affect variable Y by 0.773, and each increase in variable X2 will affect variable Y by 0.603, with a constant value of 3.275.

Based on the analysis results, the calculated t-values were obtained for each variable. The calculated t-value for the variable Pregnant Mother's Age (X1) was 2.547, exceeding the t-table value of 2.048, indicating a significant relationship between Pregnant Mother's Age (X1) and the incidence of preeclampsia (Y).

The calculated t-value for the variable Dietary Pattern (X2) was 5.220, exceeding the t-table value of 2.048, indicating a significant relationship between Dietary Pattern (X2) and the incidence of preeclampsia (Y).

The calculated F-value was 16.621, exceeding the F-table value of 0.05 (3.35), indicating a significant simultaneous relationship between the variables of pregnant mother's age (X1) and diet (X2) and the incidence of preeclampsia (Y). The regression coefficient (R-square) value of 0.552 means that the relationship between the independent variable and the incidence of preeclampsia is ((0.552 x 100) x 100%) 55.2%, while the other 44.8% is influenced by other factors not examined. Judging from the relationship between the two independent variables (X) and the dependent variable (Y), it can be concluded that the dietary pattern variable (X2) is more dominant in the incidence of preeclampsia (Y), as evidenced by the calculated t value of 5.220> t table (0.05) 2.048.

This means that there is suspected to be a significant relationship between the Age of Pregnant Women and Dietary Patterns with the Incidence of Preeclampsia at Bumi Panua Pohuwato General Hospital.

5. CONCLUSION

The calculated t-value for the variable Age of Pregnant Women (X1) is 2.547, > t-table 2.048, indicating a significant relationship between age of pregnant women (X1) and the incidence of preeclampsia (Y) at Bumi Panua General Hospital, Pohuwato. The calculated t-value for the variable Dietary Pattern (X2) is 5.220, > t-table 2.048, indicating a significant

relationship between Dietary Pattern (X2) and the incidence of preeclampsia (Y) at Bumi Panua General Hospital, Pohuwato.

The calculated F-value is 16.621, > 0.05 (3.35), indicating a significant simultaneous relationship between the variables Age of Pregnant Women (X1) and Dietary Pattern (X2) and the incidence of preeclampsia (Y) at Bumi Panua General Hospital, Pohuwato. The regression coefficient (R-square) is 0.552, indicating a relationship between the independent variables and the incidence of preeclampsia ((0.552 x (100) x 100%) 55.2%, while the remaining 44.8% was influenced by other factors not examined. Judging from the relationship between the two independent variables (X) and the dependent variable (Y), it can be concluded that dietary patterns (X2) are more dominant in the incidence of preeclampsia (Y), as evidenced by the calculated t-value of 5.220 > t-table 2.048.

Suggestions

This study can contribute ideas and provide literature for the Midwifery Study Program regarding the relationship between maternal age and dietary patterns with the incidence of preeclampsia. Hopefully, this study can be used as information or reference material and additional literature for future researchers to conduct comprehensive and systematic research. This study can be more useful in providing information on the relationship between maternal age and dietary patterns with the incidence of preeclampsia. Therefore, if early symptoms occur, pregnant women can be detected and treated early.

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