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THE 4th INTERNATIONAL CONFERENCE ON HEALTH SCIENCE 2017

“The Optimalization of Adolescent Health in The Era of SDGs”

INNA GARUDA HOTEL YOGYAKARTA,
INDONESIA
November 5th, 2017



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RELATIONSHIP OF OBESITY EARLY PREGNANCY WITH PREECLAMPSIA IN RSUD SLEMAN 2016

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ABSTRACT

Preeclampsia is one of the causes of maternal and fetal mortality and morbidity. Obesity is included in the top five causes of global death and is thought to be a risk factor for preeclampsia and for the last 2 years, Sleman has been the highest contributor to maternal mortality due to Preeclampsia. This study aims to determine the relationship of obesity early pregnancy with preeclampsia in RSUD Sleman 2016. The methods of this research is analytic observational with case control design, using consecutive random sampling technique that the subjects used in the case 89 mothers with preeclampsia who performed ANC in RSUD Sleman and control 89 maternity women not preeclampsia who performed ANC in RSUD Sleman. This data is obtained from maternity registers, univariate and bivariate analyzed using chi-square. In the results of the study, there is a significant association of obesity early pregnancy with preeclampsia, p-value 0.002 <0.05 and OR 2.8 (95% CI 1.440 - 5.470). This study can be concluded that there is a relationship of obesity early pregnancy with preeclampsia.

Keywords: *Obesity Early Pregnancy, Preeclampsia*

INTRODUCTION

Maternal Mortality Rate (MMR) is one of the indicators in describing the welfare of people in a country. The mortality rate maternal in Indonesia recorded a significant increase of about 359/ 100,000 live births¹. MDG's targets in 2015 for the national maternal mortality rate is 102/ 100,000 live births. Maternal mortality in Indonesia is still dominated by the three main causes, namely, hemorrhage, hypertension (preeclampsia/eclampsia), and infection. But this time the proportion has changed, as bleeding and infection tended to decrease while hypertension (preeclampsia/eclampsia) the proportion is increasing. More than 25% of maternal deaths in Indonesia in 2013 caused by hypertension (preeclampsia/eclampsia)^{2,3,18}.

Preeclampsia increasing every year, has been influenced by various factors, including the age group, the effect of the period (a history of preeclampsia)⁴, changes in diagnostic criteria, and early identification of symptoms during pregnancy⁴. There are many risk factors for preeclampsia are primigravidae, distansion uterus excess, hiperplasentosis (molar pregnancy, hidramnion, pregnancy multiple, large babies), a disease that accompany pregnancy (diabetes mellitus), maternal age >35 years, family history never pre-eclampsia or eclampsia, and Obesitas⁵.

Among many of these factors, the increase in obesity among women age of reproductive is thought to be one of the strongest risk factors underlying increased the prevalence of preeclampsia. The data obtained from the Department of Health DIY states that in 2013 and 2014 Sleman become the highest contributor to deaths due to preeclampsia⁶. In 2013, the prevalence of obese women (>18 years) of 32.9%, up 18.1% from 2007 (13.9%) and 17.5% from 2010 (15.5%)⁷.

In addition, obesity is a serious concern because of the number of sufferers is increasing including the women in reproductive age and the number of obese people in

pregnant women also increased by approximately 18.5% to 38.3%⁸. The purpose of this study to determine the relationship of obesity early in pregnancy with preeclampsia.

METHOD

This study uses observational with case-control design. The population in this study were women giving birth in hospitals Sleman 2016. The sampling technique is consecutive random sampling. Sample cases in this study is the maternal preeclampsia totaling 89 subjects and a control sample that is on mothers who did not develop preeclampsia totaling 89 subjects. This study used univariate analysis that generates a frequency distribution and percentage of each variable and bivariate analyzes were conducted on two variables that were related the use of Chi-square analysis at 95% confidence interval ($\alpha < 0.05$).

RESULTS

Table 1 shows that the average age of the subjects who experienced preeclampsia is 31.4 years and who did not develop preeclampsia is 29.0 years. Based on these results indicate that the average age of the significant difference with p-value 0.000 < 0.05. For parity characteristics, subjects who develop preeclampsia there were 70 (78.6%) had a second parity, the sum is greater than the subjects who had parity 3 16 subject (18%) and parity 4 3 subjects (3.4%). Where as in subjects who did not develop preeclampsia by 74 (83.1%) had parity 2, 15 subjects (16.9%) had parity 3 and 0 subjects (0%) had parity 4. The analysis showed that the difference was not significant with a p-value 0.208 > 0.05. Based on Table 1 it can be concluded that both groups are homogeneous in parity, but are not homogeneous in age.

Table 1. Distribution and frequency homogeneity of subjects in Sleman District Hospital in 2016

Characteristic of Subject	Preeclampsia				p
	Yes		No		
		%		%	
Age (20-35 tahun)	31,4	-	29,0	-	0,000
Parity					
- 2	70	78,6	74	83,1	0,208
- 3	16	18,0	15	16,9	
- 4	3	3,4	0	0	

Table 2 shows that 89 subjects who develop preeclampsia, a total of 71 subjects (79.8%) are obese early pregnancy, and the rest were not obese early pregnancy, Meanwhile, the 89 subjects who did not develop preeclampsia, a total of 52 subjects (58.4%) are obese early pregnancy, and the rest were not obese early pregnancy. The results of chi-square test and p-value 9.547 0.002 < 0.05, which means there is a relationship of obesity early in pregnancy with preeclampsia.

Table 2. Relationship of Obesity Early Pregnancy with Preeclampsia in Hospital Sleman 2016

Obesity Early Pregnancy	Preeclampsia				χ^2	<i>p</i>	OR	CI 95%
	Yes		No					
	n	%	n	%				
- Obesity (IMT $\geq 25,0$ kg/m ²)	71	79,8	52	58,4	9,547	0,002	2,8	1,440 - 5,470
- Not Obesity (IMT $< 25,0$ kg/m ²)	18	20,2	37	41,6				
Total	89	100	89	100				

DISCUSSION

The results of this study indicate that there is a relationship between obesity and early pregnancy by preeclampsia with a p-value of 0.002. The results of the table analysis cross table that 79.8% of women with early in pregnancy preeclampsia obesity.

Obesity early in pregnancy in this study is to calculate the body mass index (BMI) of mothers $\geq 25,0$ said to be obese if BMI kg/m².^{15,16} This is consistent with research Anneke Dwi (2015) which states that the obesity that BMI is calculated from the beginning of pregnancy are factors that significantly influence the incidence preeclampsia.⁹

The results of this study are also consistent with studies M. Wahba (2007) which states that the main cause of hypertension to preeclampsia in women with obesity due to the increase into Vascular and renal salt and water. The underlying mechanism including hiperleptinemia, increased acids free fatty (FFA), hyperinsulinemia, and insulin resistance, this will cause the stimulation of the sympathetic nerve, increased vascular tone, endothelial dysfunction, and retention of sodium renal¹⁰. Pregnant women with obesity showed a significant increase in levels of interleukin-6 and C-reactive protein in serum as well as signs of endothelial disorder. Pregnant women with obesity showed a significant increase in triglycerides, very low density lipoprotein cholesterol, insulin, and leptin as compared with pregnant women of normal weight.

Resistance and hypertriglyceridemia is a risk factor for preeclampsia and also an important factor in the development of endothelial dysfunction. Chronic hypertension, insulin resistance and hypertriglyceridemia that may be present or prior to conception in women with obesity¹⁷. Resistance and hypertriglyceridemia is a risk factor for preeclampsia and also an important factor in the development of endothelial dysfunction. Since endothelial dysfunction is hypothesized to play a central role in the pathogenesis of preeclampsia, it makes sense that the presence of dysfunction endothelial before pregnancy by insulin resistance and or hypertriglyceridemia may be associated with a high incidence of preeclampsia in pregnant women with obesity. Endothelial cell dysfunction caused by circumstances hyperactivation leukocytes in circulation. The maternal, cytokines in endothelial function as tumor necrosis factor- α (TNF- α) and interleukin (IL) may play a role in the onset of oxidative stress associated with preeclampsia¹⁹.

Another consequence of oxidative stress include production of macrophage foam cells full of lipids appears on atherosclerosis. Microvascular coagulation activation manifesting as thrombocytopenia and increased capillary permeability, which is characterized by edema and proteinuria^{11,12}. There is a 58.4% obese women with early pregnancy does not develop preeclampsia. It can be caused due to obesity early pregnancy not absolute cause of preeclampsia, according to the theory, which states that the factors risk are factors or circumstances affecting the development of a particular disease or health status. These risk factors may be a new level of expectations, estimates or the fact is already proven¹³.

Mothers who are not obese early pregnancy preeclampsia was 20.2%. It can be caused due to several factors not examined to allow the influential factors such as genetic or history family of preeclampsia. Risk factors for preeclampsia are primigravidae, excessive uterine distension, hiperplacentosis (molar pregnancy, hidramnion, multiple pregnancy, big baby), diseases that accompany pregnancy (diabetes mellitus), maternal age >35 years, never a family history of preeclampsia, and Obesitas⁵.

The results of this study showed that obesity early in pregnancy associated with preeclampsia. In this study, the odds ratio (OR) is 2.8, which means women with early pregnancy obesity 2.8 times more likely to develop preeclampsia than women who are not obese. This means also supports research conducted Chintya (2014) which states that pregnant women who are obese are at increased risk was 2.6 times of preeclampsia to occur compared with a pregnant woman who did not experience obesitas¹⁴.

CONCLUSION

The proportion of obese women with early pregnancy preeclampsia 79.8%. The proportion of obese women with early pregnancy preeclampsia amounted to 58.4%. There was a significant association between obesity early in pregnancy with preeclampsia. Odd Ratio (OR) early pregnancy obesity on the incidence of preeclampsia was 2.8, which means women with early obesity pregnancy 2.8 times more likely to develop preeclampsia than women who are not obese.

SUGGESTIONS

Researchers then expected to further investigate other factors such as maternal age (>30 years), genetic factors or a family history of preeclampsia and its relationship with preeclampsia and midwives are expected to increase vigilance against mothers with obesity to the monitor increase in weight and midwives also expected to always give motivation to the mother in order to control weight gain during pregnancy.

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