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by Elly Sjattar

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Nutritional Status with Preeclampsia within Primigravida Mothers

¹Yudit Patiku, ²Rosdiana Natzir ³Syahrul Rauf, ⁴Mochammad Hatta ⁵Nasrum Massi
⁶Ilham Jaya Pattelongi, ⁷Ariyanti Saleh, ⁸Elly Lilianty Sjattar, ⁹Yusminah Hala

¹Nursing Department, STIK FAMIKA Makassar
Indonesia,

²Department of Biochemistry, Faculty of Medicine, ³Department of Obstetrician Gynecology, ⁴Molecular Biology and Immunology Laboratory, ⁶Department of Physiology, Faculty of Medicine, Hasanuddin University, ⁷Nursing Department Faculty of Nursing,

⁸Nursing Department Faculty of Nursing, Hasanuddin University, Indonesia, ⁹Department of Biology, Faculty of Mathematic and Science, Makassar State University, Indonesia,

Abstract:- Preeclampsia is a complication of pregnancy characterized by hypertension, proteinuria and edema. Hypertension occurs after week 20 in women who previously had normal blood pressure. Hypertensive disease in pregnancy plays a major role in maternal and perinatal morbidity and mortality. The purpose of this study to determine the nutritional status at risk to preeclampsia in primigravida mother in Bajeng Gowa District.

The research design was analytic with cross sectional approach to determine nutritional status at risk to preeclampsia in primigravida mother in Bajeng, Gowa Regency. The study was conducted from February 2014 to June 2014 in Gowa District. For this study, the sample was obtained by purposive sampling technique from patients, mothers with Primigravida, (n = 20) and control (n = 20). Statistical test result using Odd test Ratio: 0,658 (IC 95%: 0,184 - 2,350) with p = 0,519. Nutritional status is less, has a risk of 0.658 times to experience preeclampsia compared with mothers with good nutritional status in primigravida mothers.

Keywords:- Preeclampsia, Primigravida, nutritional status.

I. BACKGROUND

In ASEAN countries, Indonesia has the highest mortality rate of 330/100,000 and perinatal mortality rate of 420/100,000 live births. Maternal mortality varies in different regions with a range of 330 to 700/100,000. Perinatal mortality rates can be felt rapidly, but maternal mortality has not decreased much. Maternal mortality is caused by preeclampsia and eclampsia or complications of surgery including anesthesia ¹.

Causes of maternal and perinatal death: immediate causes of complications of pregnancy and childbirth such as bleeding 60-70%, preeclampsia and eclampsia 10 - 20%, infection 10 - 20% including abandoned partus, others: amniotic fluid embolism and anesthesia. Underlying causes of

indirect mortality such as lack of nutritional status, delay of providing adequate help ^{1 2 3}.

Hypertensive disease in pregnancy plays a major role in maternal and perinatal morbidity and mortality. Hypertension is estimated to be a complication of about 7% to 10% of all pregnancies. Of all mothers who developed hypertension during pregnancy, half to two-thirds were diagnosed with preeclampsia or eclampsia. Preeclampsia plays a role in intrauterine death and perinatal mortality. The main cause of neonatal death due to preeclampsia is placental insufficiency and placental abruption. Retardation of growth in the womb is also common in infants whose mothers suffer from preeclampsia. Human epidemiological data suggest that children born to mothers of preeclampsia are at risk for long-term development of the nerves.

The nutritional status of pregnant women greatly influences the growth of the fetus in the womb. The fetus relies heavily on its mother, for breathing, growth and to protect it from a disease. If the nutritional status of the mother is bad, both before pregnancy and during pregnancy will cause low birth weight, in addition to resulting in fetal brain growth inhibited ³.

Assessment of nutritional status is directly divided into four assessments: anthropometry, clinical, biochemical and biophysical ³. Assessment of nutritional status is directly divided into four assessments: anthropometry, clinical, biochemistry and biophysics ³.

So far the cause of preeclampsia is still dark. According to experts, preeclampsia is also known as pregnancy with high blood, swelling, proteinuria is more common in developing countries such as Asia, where most residents consume rice. What the relationship of this disease with rice remains unclear. There are allegations because the emphasis on rice, the mother is less attention to other nutrients such as milk, eggs, fish, meat, vegetables, and fruits. Cross-sectional associations (2.78: 1.48-5.33, P = 002) have a significant association between vitamin D deficiency and an increased risk of preeclampsia. Women with vitamin D deficiency with 25

(OH) D, 50 nmol / l at 24-26 weeks gestation had an increased risk of preeclampsia (OR ratio: 3.24, 95% IC 1.37-7.69) compared with mother 25 (OH) D at 12-18 weeks gestation, statistically insignificant.^{5,6}

The rate of growth during pregnancy is an important indicator of weight gain itself. During the first trimester, the weight gain range should be 1 - 2 kg (350 -400 g / mg), while the second and third trimesters are about 0.34 to 0.50 kg per week. An excessive increase after 20 weeks implies water retention and is also associated with large fetuses and the risk of complications of pelvic head disproportion. Excessive retention is also an early sign of preeclampsia. Conversely, weight gain of <1kg during the second trimester, especially trimester III is clearly not enough and can increase the risk of low birth weight, retardation of growth in the uterus and perinatal death. There is a significant correlation between the increase of body weight of trimester pregnant woman III with the incidence of preeclampsia.⁷

From preliminary data, October and December 2013 in BKIA Bajeng Gowa Regency as many as 35 people with preeclampsia.

This study aims to determine the nutritional status in preeclampsia primigravida mother and normal pregnant women.

II. MATERIALS AND METHODS

This research was conducted at Puskesmas Bajeng Gowa regency South Sulawesi from February to June 2014. Population in this research is all pregnant women who come to check the pregnancy at Puskesmas Bajeng Gowa Regency. Samples of urine mother suffering from preeclampsia in Bajeng Gowa Regency. Nutrition status was measured by upper arm circumference (LLA) and / when edema was measured by a ruler, meeting the inclusion criteria of primigravida mother and gestational age more than 20 weeks. The sampling technique was purposive sampling consisting of 20 samples of patients with two groups: 20 samples of pregnant women preeclampsia and 20 samples of normal pregnant women. In this study conducted interviews to obtain information about the characteristics and general circumstances of the subject such as name, age, number of children, previous medical history and health care history (ANC) by looking at KIA book / midwife notebook, preeclampsia with blood pressure criteria $\geq 140 / 90$ mmHg as case and blood pressure less than 140/90 mmHg as control. Urine sampling for proteinuria examination. Examination of edema in the sacrum area above the tibia, wrist, and leg. Furthermore, a sampling of urine taken for the examination of proteinuria urine specimen and measurement of upper arm circumference research subjects taken when the mother visited the ANC Puskesmas Bajeng Gowa District. Examination of urine in Biomedical laboratory STIK Famika Makassar using

Sulfosalicylic test. Data analysis with Odd Ratio test using SPSS version 16, 00 statistical program.

III. RESULTS

The result of this study from 40 respondents has obtained the highest age group of respondents aged 25 to 27 rounding to 10 respondents (25%) Respondents (Table1) The results of this study from 40 respondents obtained the highest gestational age 30-32 as many as 12 (30%) respondents. The result of this research from 40 respondents showed 16 respondents had less nutrition.

Characteristic	n	(%)
Mothers' Age		
16 – 18	4	10
19 – 21	6	15
22-24	8	20
25-27	10	25
28-30	8	20
31-33	4	10
Pregnancy Age		
20-23	6	15
24-26	10	25
27-29	8	20
30-32	12	30
33-35	3	7,5
>36	1	2,5

Blood Pressure, edema, proteinuria
Table 1. Distribution of respondents' by age and age of pregnancy in Puskesmas Bajeng Kabupaten Gowa July 2014

Characteristic	n	%
Blood Pressure (mmHg)		
140/90	12	60
140/100	3	15
150/90	1	5
160/90	3	15
180/100	1	5
Edema (Degree)		
I	14	70
II	3	15
III	3	15
Proteinuria (degree of turbidity)		
2+	14	70
3+	5	25
4+	1	5

Table 2. Distribution of respondents by Blood Pressure, edema with Preeclampsia at Bajeng Community Health Center, Gowa District, July 2014

The result of research from 40 respondents obtained by Upper Arm Circumference (UAC) mostly aged 21-24 with as many as 18 respondents. Test results from 40 obtained preeclampsia 20 (50%) and not preeclampsia 20 (50%).

Characteristics	n	(%)
Upper Arm Circumference		
21 – 24	18	45,0
25 – 28	17	42,5
>28	5	12,5
Nutritional Status		
Poorly	16	40
Good	24	60
Preeclampsia	20	50
Normal Pregnancy	20	50

Table 3. Distribution of respondents based on Upper Arm Circumference (UAC) and nutritional status in Puskesmas Bajeng Kabupaten Gowa July 2014

Nutritional Status	Preeclampsia		Normal Pregnancy		N	%
	F	%	F	%		
Poorly	7	17,5	9	22,5	16	40
Good	13	32,5	11	27,5	24	60
Total (N)	20	50	20	50	40	100

Table 4. Analysis of nutritional status with preeclampsia in Primigravida mothers at Puskesmas Bajeng Gowa District July 2014

Table 4. The result of statistic test using Odd test Ratio: 0,658 (IC 95%: 0,184 - 2,350) with p = 0,519. Nutritional status less have 0,658 times to experience preeclampsia compared with mother with good nutritional status.

IV. DISCUSSION

In this study, the statistical test was obtained by using Odds test Ratio: 0.658 (IC 95%: 0.184 - 2,350) with p = 0,519 and not statistically (> 0,05). This means that less nutritional status has a risk of 0.658 times for preeclampsia compared with mothers with good nutritional status.

As has been explained in the theoretical basis that the cause of preeclampsia is not known for certain, to date has

been used because of uterine ischemia placenta, but this has not been able to explain all the things related to preeclampsia. Nutritional status is not a direct cause, so it is likely to be influenced by other risk factors.

Free fatty acids will cause tissue inflammation in the placenta. Further placental vasospasm will occur, as a result of the local production of mitochondria and neutrophils from the placenta. Increased TNF -α and Interleukin 6 by the placenta will decrease lipoprotein lipase activity. 8. Fat rich in polyunsaturated fatty acids (n-6) increase the production of interleukin 1. Monounsaturated fat soluble reduces tissue response to cytokines and interleukins 6 9.

Nutrition or micronutrients may modify the inflammatory response. Vitamin E and other antioxidants decrease TNF-α production. The status of iron affects the production of cytokines. Iron deficiency suppresses interleukin production 1. and decreases in preeclampsia 10.

Copper as a transition metal can catalyze the formation of free radicals 11. Free radicals cause endothelial cell dysfunction, blocking the production of endothelial cell nitric oxide and inhibiting the synthesis of nitric oxide in macrophages. Lipid peroxide alters the capillary permeability of proteins that are responsible for edema and proteinuria. 10. Pregnant women with preeclampsia have lower energy, protein and fat intake than normal pregnant women. 12. Higher carbohydrate and sodium intake increase the risk of preeclampsia 13. Weight gain during pregnancy, gestational age, and fetal birth weight was found to be significantly lower in preeclampsia pregnant women than in healthy pregnant women. Average daily energy of carbohydrate, fiber, vitamin B6 intake differed significantly between preeclampsia and healthy pregnant women 14.

V. CONCLUSION

The nutritional status scored low, having a risk of 0.658 times to experience preeclampsia compared with mothers with good nutritional status within primigravida mothers at Bajeng Puskesmas Gowa District.

Conflict of Interest

No obstacles were found in urine sampling and upper arm circumference measurements in both preeclampsia and normotensive patients at the Puskesmas.

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