Article

Risk Factors For The Occurrence of Low Birth Weight Based on Nutritional Status of Pregnant Women With Upper Arm Circumference

Suci Saftari Apriani[1]*, Ranti Lestari[2], Elizabeth Widayati[3], Yani Suryani[4], KarlinaAngga P[5]

1,2,3,4,5 Cianjur Midwifery Academy, Jl. Pangeran Hidayatullah No. 105 Cianjur, 43211, Indonesia

CORRESPONDENCE

Phone: 087869711919

E-mail: sucishyddiq@gmail.com

A B S T R A C T

The nutritional status of pregnant women before and during pregnancy can affect the growth of the fetus in the womb. The purpose of this study was to look at the risk factors of LBW events based on nutritional status based on the MUAC size of pregnant women. This research is analytical with cross sectional study design by sampling using the total sampling technique of 98 pregnant women in Kubang Village, Sukaresmi District, Cianjur Regency. Analyze data using Chi Square. Univariate analysis results from 98 respondents have good nutritional status (MUAC≥23.5 cm) which is as much as 78 (80%) and normal birth weight 64 (65.3%) pregnant women. The results of bivariate analysis there is a meaningful relationship between the nutritional status of pregnant women based on LBW and the incidence of LBW value P value = 0.006 (P value<0.05). In conclusion there is a meaningful relationship between the nutritional status of pregnant women based on MUAC and the incidence of LBW value P value = 0.006 (P value<0.05) value (OR=3.345, CI 2.234-8.562), respondents who have a history of malnutrition status while pregnant have a risk of 3,354 times giving birth to babies with LBW.

I. INTRODUCTION

Pregnant women need a good nutritional intake for the growth of the fetus conceived until the baby is born because the nutritional status in the mother is one of the indicators in determining the birth weight of the baby. Poor nutritional intake can lead to babies being born with low weight who can be at risk of having growth disorders. The size of the circumference of the upper arm (MUAC) can be one of the benchmarks of the nutritional status of the mother, mothers with a small MUAC less than 23.5 cm can cause chronic lack of energy (KEK) so it is important for pregnant women to pay attention to their nutritional intake.

Insufficient intake of pregnant women's needs can be bad for the mother and the fetus she contains. Fetuses may experience low birth weight (LBW), anemia in infants

pmt and LBW incidence rate reached 30.1% of all births. (Profil Department of HealthCianjur, 2019)

Nutritional status in pregnancy can be caused by several factors such as: income, education, poor environment, poor eating habits, and poor health conditions affect the nutritional status and growth and development of the fetus (Boyne in Bobak, 2004).

The results of Kusuma's research (2019) in Madiun showed that most mothers give birth at an unsafe age (<20/>35 years), mothers give birth at the risk of KEK (<23.5 cm) with BBLR. In contrast to the results of Rahmi's research ((Riyanto, 2017)2019) in Yogyakarta, the lila size of pregnant women is at least 20 cm. There is a meaningful correlation between the MUAC variable of pregnant women and the weight of newborns with a value of p= 0.005 with a value of 0.254 (the correlation strength is weak).

The nutritional status of pregnant women before and during pregnancy can affect the growth of the fetus in the womb. If the nutritional status of the mother is normal in the period before and during pregnancy, it is most likely to give birth to a healthy baby, enough months with a normal weight which means the quality of the baby born depends largely on the nutritional state of the mother before and during pregnancy (Adriani, 2016). Similarly, to assess the quality of the baby is to measure the weight of the baby at birth, mothers with malnutrition status such as KEK by having a small MUAC less than 23.5 cm are likely to risk giving birth to a baby with LBW.

Based on the background above researchers are interested to know the risk factors of LBW events based on nutritional status and size of MUAC pregnant women.

II. METHODS

This research is an analytical research with cross sectional study design. The population in this study was sampled by all pregnant women numbering 98 people and maternity in March to May 2020 with total sampling technique (Riyanto, 2017). The samples taken were pregnant women who met the inclusion criteria in the form of pregnant women who will give birth at 37-40 weeks gestational age and have an estimated delivery in the near future, babies born alive, childbirth pervaginam / SC. Exclusion criteria are mothers with multiple pregnancies and mothers with chronic diseases. Samples were taken using total sampling techniques with. The data source comes from primary data using questionnaires to see the identity and pregnancy history of the mother, measurement of upper arm circumference using measuring tape and the results of weighing the baby's birth weight.

III. RESULT

Table 1. Distribution Characteristics of Pregnant Women's History

Characteristics	Frequency (n)	Persentage(%)
Age		
1.Risk (< 20, >35th)	33	33.7
2.Low risk (20–35th)	65	66.3
Total	98	100
Parity		
1. Primipara	62	63.3
2. Multipara	36	36.7
Total	98	100
Socioeconomic		
1. Low (≤UMR)	55	56.1
2. High (>UMR)	43	43.9
Total	98	100

Based on the table above shows that of the 98 respondents studied, the majority of respondents had a low risk age category (20–35th) of 65 pregnant women (66.3%), the most parity at primipara 62 (63.3%) and socioeconomic status is at a low level (≤UMR) of 55 (56.1%).

Table 2. Distribution of Maternal Nutrition Status based on MUAC

Nutritional status	Frequency(n)	Persentage (%)
Malnutrition (MUAC<23,5 cm)	20	20
Good Nutrition (MUAC≥23,5 cm)	78	80
Total	98	100

Based on the table above shows that of the 98 respondents studied, the majority of respondents have good nutritional status (MUAC≥23.5 cm) which is as much as 78 (80%) pregnant women.

Table 3. Baby Weight Distribution At Birth

Birth weight	Frquency (n)	Persentage (%)
LBW (<2500gr)	34	34.7
Normal Birth Weight (≥2500gr)	64	65.3
Total	98	100

Based on the table above shows that out of the 98 respondents studied, the majority of respondents had a normal birth weight with a category of no LBW (≥2500gr) of 64 (65.3%) pregnant women.

Table 4. Relationship between Nutritional Status of Pregnant Women with LBW

Nutritional Status	LBW				Total	OR (95% CI)	P*value*
	LBW		Normal Born Weight				
	n	%	N	%			
Malnutrition	16	80	4	20	20	3.354	0.006
Good nutrition	18	23	60	77	78	(2.234-8.562)	
Total	34	34.7	64	65.3	98		

The results of the analysis of the nutritional status of pregnant women with the incidence of LBW, showed that there were as many as 16 (80%) pregnant women who have malnutrition status with LBW category baby weight, higher percentage compared to respondents who have malnutrition status with normal birth weight of 4 (20%) pregnant women. And there are as many as 60 (77%) pregnant women who have good nutritional status with LBW, higher percentage compared to pregnant women who have good nutritional status with normal weight that is as much as 18 (23%) pregnant women.

Statistical test results obtained the value of P value = 0.006 (P value<0.05), it can be concluded that there is a significant relationship between the nutritional status of pregnant women and the incidence of LBW with a value (OR= 3,345, CI 2,234-8,562), meaning that respondents who have a history of malnutrition status while pregnant have a risk of 3,354 times giving birth to babies with LBW.

IV. DISCUSSION

1. Distribution Characteristics of Pregnant Women's History
a. Age

Based on the results of the study showed that out of the 98 respondents studied, the majority of respondents had a low risk age category (20-35th) of 65 pregnant women (66.3%).
Women between the ages of 20-35 years are at the lowest risk of complications in pregnancy. (Saifuddin, 2010) The younger and older a pregnant mother is, the more nutritional needs will affect her needs. Young age needs a lot of additional nutrition because in addition to being used for growth and development itself must also share with the fetus that is in the womb. As for the elderly need a large amount of energy also because the function of the organ is getting weaker and required to work optimally, it requires additional energy enough to support the ongoing pregnancy (Kristiyanasari, 2010).
Based on the results of research Linda (2018) stated that mothers less than 20 years old have a 1.27 times chance to give birth to babies with LBW compared to mothers aged 20-35 years and mothers over 35 years have a 2.10 times chance to give birth to babies with LBW compared to the age of 20-35 years.

2. Distribution of Maternal Nutrition Status based on MUAC

Based on table 2 shows that of the 98 respondents studied, the majority of respondents had good nutritional status / Not KEK (MUAC≥23.5 cm) which is as much as 78 (80%) pregnant women. According to Marlenywati, 2010 revealed that anthometric measurement that is often used to assess nutritional status is using MUAC. MUAC measurement is one way to determine the risk of Chronic Energy Deficiency (KEK) of Women of Childbearing Age. A better assessment to assess the nutritional status of pregnant women is by lila measurement, because in pregnant women with malnutrition (less or more nutrition) sometimes shows oedema but this rarely hits the upper arm (Hidayati, 2011).

The threshold value of MUAC with good nutrition is more than 23.5 cm, this means that mothers who give birth with good nutrition are expected to give birth to babies of normal weight. On the contrary, mothers who give birth at the risk of KEK are expected to give birth to LBW babies. If the baby is born with Low Birth Weight (LBW) will have a risk of death, malnutrition, growth disorders, and developmental disorders of the child. To prevent the risk of KEK in pregnant women before pregnancy women of childbearing age should have good nutrition, for example with MUAC not less than 23.5 cm. If the lila of the mother before pregnancy is less than that number, the pregnancy should be postponed so that it is not at risk of giving birth to LBW (Kristiyanasari, 2010)

Based on the results of research Kristiyanasari 2010 stated that mothers with malnutrition status before pregnancy have a risk of 4.27 times to give birth to LBW babies compared to mothers who have good nutritional status (normal). The weight of the baby born can be influenced by the nutritional status of the mother both before pregnancy and while pregnant. The nutritional status of the mother before pregnancy is also quite instrumental in the achievement of maternal nutrition while pregnant. The nutritional status of mothers before pregnancy has a meaningful influence on the incidence of LBW.

3. Distribution of Baby's Weight At Birth

Based on table 3 shows that the majority of 98 respondents have a normal birth weight with a category of no LBW (≥2500gr) of 64 (65.3%) pregnant women.

A low birth weight baby (LBW) is a baby with a birth weight of less than 2500 grams regardless of gestational age. Birth weight is the weight of the baby weighed within 1 hour after birth (IDAI, 2010). LBW is a major factor in increasing mortality, morbidity and neonatal disabilities, infants and children and has a long-term impact on their lives in the future. Nationally based on further analysis of SDKI, the LBW target figure is around 7.5%.

Based on the results of research by EdwiSaraswati, et al. in West Java (2005) in Kristiyanasari, 2010 showed that KEK at the limit of 23.5 cm is not yet a risk to give birth to LBW even though the relative risk is quite high. While pregnant women with KEK at the limit of 23 cm have a risk of 2.0087 times to give birth to LBW compared to mothers who have MUAC more than 23 cm (Kristiyanasari, 2010).

The results of other studies show that malnutrition in pregnant women is at risk of LBW birth (Notobroto, 2004). Similarly, the opinion of I DewaNyoman S, et al (2003) that if the size of LBW<23.5 cm means that the woman has a risk of KEK and is expected to give birth to a Low Birth Weight Baby (LBW). (Kristiyanasari, 2010)

4.Relationship between Nutritional Status of Pregnant Women and LBW

The results of the analysis of the nutritional status of pregnant women with the incidence of LBW, showed that there were as many as 16 (80%) pregnant women who have malnutrition status with LBW category baby weight, higher percentage compared to respondents who have

malnutrition status with normal birth weight of 4 (20%) pregnant women. And there are as many as 60 (77%) pregnant women who have good nutritional status with LBW, higher percentage compared to pregnant women who have good nutritional status with normal weight that is as much as 18 (23%) pregnant women.

Statistical test results obtained the value of P value = 0.006 (P value<0.05), it can be concluded that there is a significant relationship between the nutritional status of pregnant women and the incidence of LBWwith a value (OR= 3,345, CI 2,234-8,562), meaning that respondents who have a history of malnutrition status while pregnant have a risk of 3,354 times giving birth to babies with LBW.

Nutrition of pregnant women is very important for the growth of children, because the growth of the child is very determined condition during the fetal period in the womb. If the nutritional needs of pregnant women are lacking, it will also have an impact on the baby later. In addition to nutrition there are several factors that affect babies born with LBW such as maternal age, gestational age, parity, and infectious diseases (Kusparlina, 2016).

The birth weight of the baby is also influenced by several things, namely the status of Chronic Energy Deficiency (KEK) and anemia in pregnant women. Kek status is influenced by the level of maternal consumption and infectious factors where when the mother lacks energy intake for a long period of time then the mother will suffer from KEK, because mothers who suffer from KEK during pregnancy have a 5 times higher risk of giving birth to LBW compared to mothers with good nutritional status. (Pratiwi A. H., 2012).

The nutritional needs needed by the fetus while still in the womb for the growth and development of the fetus is not enough, because pregnant women with MUAC<23.5 cm have little nutrition to meet the nutritional intake of the fetus (Rahayu I. P., 2012)

When the amount of food consumed by pregnant women is insufficient or inadequate. This can cause a decrease in blood volume, so that blood flow to the placenta decreases, then the size of the placenta is reduced and the transport of nutrients is also reduced which results in stunted fetal growth and will give birth to LBW(Hidayati, 2011)

To minimize the risk of LBW in pregnant women with low nutritional status / KEK is to improve nutritional health programs in the form of counseling on nutrition and measurement of LBW in pregnant women periodically. In addition, efforts can be made in the form of food consumption arrangements, in the form of additional feeding for pregnant women KEK, monitoring weight gain and examination of Hb levels before and while pregnant

V. CONCLUSION

The conclusion in this study is that there is a meaningful relationship between the nutritional status of pregnant women based on upper arm circumference and the incidence of low birth weight value P value = 0.006 (P value<0.05) with the value (OR=3.345, CI 2.234-8562), meaning that respondents who have a history of malnutrition status while pregnant have a risk of 3,354 times giving birth to a baby with LB.

REFERENCES

Budiman, A. R. (2011). Maternal factors related to the baby's weight were born at garuda health center in 2010. Kartika Health Journal, 5(3)

Departement of HealthCianjur (2019). ProfilDepartment of Health Cianjur Year 2019-Profile Number of Anemia, Number of Pregnant Women KEK and PMT. cianjur: Department of health Cianjur

Departement of Health West Java. (2016). ProfilDepartmen of Health West Java Province 2016. West Java : Department of Health West Java

ErlynaEvasari, E. N. (2016-2017). Relationship of Age, Parity and Nutritional Status of Mothers with LBW Events. Journal of ObstretikaScientia, 4(2), 453-471.

Hidayati, F. (2011). The Relationship Between Consumption Patterns, Infectious Diseases And Dietary Abstinence Against The Risk of Chronic Lack of Energy (KEK) In Pregnant Women In Community Health CenterCiputat South Tangerang City. Thesis. (Online), (http://repository.uinjkt.ac.id/dspa ce/bitstr

Ministry of Health RI. (2015). Data And Information Center. Jakarta: Ministry of Health RI.

Kristiyanasari, W. (2010). Nutrition of Pregnant Women. Yogyakarta: NuhaMedika.

Kusparlina, E. (2016). The relationship between the age and nutritional status of the mother is based on the size of the upper arm circumference with the type BBLR. 7((1)).

Kusuma, R. A. (2019). The Relationship Between Parity and Food Abstinence To The Incidence of KEK In Pregnant Women In Bandar Lampung City Health Center. University of Bandar Lampung.

Kusuma, R. A. (2019). The Relationship of Upper Arm Circumference of Pregnant Women With Newborn Weight In Yogyakarta City. 14((2)), 117-125.

KLinda, S. (2018.). Risk Factors For Chronic Lack of Energy In Pregnant Women In West Java.

Manuaba. (2010). Obstetrics and Birth Control for Education Issue 2. Jakarta : EGC.

Marlenywati. (2010). Risk of KEK in Pregnant Women in Pontianak City in 2010. Depok: Thesis. FKM UI. Depok.

Pratiwi, A. H. (2012). Effect of Chronic Energy Deficiency (KEK) And Anemia During Pregnancy On Low Birth Weight (LBW) And APGAR Value. (http://re pository.unej.ac.id/bitstream/han dle/123456789/5505/Thesis.pdf.

Rahayu, I. P. (2012). Relationship Size Upper Arm Circumference (MUAC) Pregnant Women With The Incidence of Low Birth Weight Babies In the Working Area Of Puskesmas Mabelopura South Palu District.

Riyanto, A. (2017). Descriptor Statistics For Health. Yogyakarta: NuhaMedika.

Saefuddin, A.B. (2010.). Practical Guide to Contraceptive Services. . Jakarta: PT. BinaPustakaSarwonoPrawirohardjo.

BIOGRAPHY

First Author Suci Saftari Apriani SST.,M.Kes is a permanent lecturer who has worked for 9 years at the Cianjur Midwifery Academy Campus. Born in Cianjur on April 07, 1989. Diploma III Midwifery Education at STikes Dharma Husada Bandung in 2010. Diploma IV Midwifery Educator at Respati University Indonesia in 2011, and Completed His Master's Degree at Respati University Indonesia in 2018. Has conducted national and international journal publications in The Journal of PrianganCianjur and Proceedings at the Budi Luhur College of Health Sciences. and Always do community service twice in one year One of them Family planning Services Installation and revocation of IUD And Implants In Sukajaya Village Cianjur District year 2019.

Second Author.Ranti Lestari, SST.,MKebgraduate s2 at the University padjajaranbandung and permanent lecturer of Cianjur Midwifery Academy who has obtained lecturer certification and has a functional position of expert assistant

Third Author Elizabeth widayati, SST.,MKebgraduate s2 at the University padjajaranbandung and permanent lecturer of Cianjur Midwifery Academy and has a functional position of expert assistant

Forth Author YaniSuryani SST is a permanent lecturer of Cianjur Midwifery Academy who is currently completing her master's studies

Fifth Author KarlinaAngga P,SST.,MHKes is a permanent lecturer akbidcianjur graduate s2 at the Islamic University of Bandung