RELATIONSHIP BETWEEN ANEMIA AND KEK IN PREGNANT WOMEN WITH THE INCIDENCE OF BBLR IN NEWBORN BABIES

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ABSTRACT

This study aims to determine the relationship between anemia and KEK in pregnant women with the incidence of BBLR in newborns in the Simpang Keuramat Health Center Work Area, North Aceh Regency. This study used an observational analytical approach with a cross-sectional approach method. The results showed that there was a relationship between anemia in pregnant women and the incidence of LBW in newborns (P-0.009), and there was a relationship between KEK in pregnant women and the incidence of BBLR (P-0.000) in the Simpang Keuramat Health Center work area, North Aceh Regency. In conclusion, anemia in pregnant women and chronic energy deficiency (KEK) in pregnant women tend to cause BBLR.

Keywords: Anemia, Newborns, BBLR, KEK

INTRODUCTION

The success of maternal health programs can be assessed through the main indicator of the Maternal Mortality Rate (MMR) and can be defined as all deaths during pregnancy, childbirth and postpartum caused by its management but not due to other causes such as accidents or incidents. This maternal health problem increases the need during pregnancy, both for the mother and her fetus. Pregnancy results in increased iron requirements. Lack of iron and protein consumption will result in decreased hemoglobin levels which will result in anemia. Anemia in pregnant women can result in the risk of premature birth, maternal and child death and infectious diseases. Iron deficiency anemia in pregnant women can affect the growth and development of the fetus/baby during pregnancy and afterwards (Ministry of Health, 2020).

Based on WHO data2020 the prevalence of anemia in pregnant women worldwide has decreased by 4.5% over the past 19 years, from 2000 to 2019, while in Indonesia in 2019 the incidence of anemia in pregnant women increased by 44.2% from 2015 by 42.1%. The results of the 2018 Riskesdas stated that in Indonesia 48.9% of pregnant women experience anemia. As much as 84.6% of anemia in pregnant women occurs in the 15-24 age group, 23-25 years old by 33%, 35-44 years old by 33.6% and 45-54 years old by 24%. The prevalence of anemia and the risk of chronic energy deficiency in women of childbearing age can affect the health condition of children at birth including the potential for low birth weight (Harahap, 2022; Ministry of Health of the Republic of Indonesia, 2018).

Anemia in pregnant women can have an impact on both the mother and the child she is carrying, such as postpartum hemorrhage, Low Birth Weight (LBW), Abortion, Fetal death in the womb, Prematurity and easy infection. While the impact on the

mother can occur in labor disorders, the threat of cordis decompensation and premature rupture of membranes (Ministry of Health, 2018). The prevalence of pregnant women who are at risk of KEK in 2020 in Indonesia is 9.7%, in Aceh the prevalence of pregnant women who are at risk of KEK is 8.5% (Ministry of Health of the Republic of Indonesia, 2021) Chronic Energy Deficiency (KEK) and Anemia can occur simultaneously during pregnancy. Common factors that cause KEK and anemia are lack of nutritional intake of the mother during pregnancy, not only affecting the baby born but also a risk factor for maternal death (Lipoeto et al., 2020).

To prevent anemia, every pregnant woman is expected to receive at least 90 iron tablets during pregnancy. The coverage of iron tablets for pregnant women in Indonesia in 2020 was 83.6%. This figure increased compared to 2019 by 64%. During the Covid-19 pandemic, the Ministry of Health issued several health guidelines, one of which was for pregnant women and health workers in handling and examining pregnancy. This was determined as an effort to prevent and transmit Covid-19 to pregnant women who are one of the groups that are vulnerable to infection. The policies taken include checking pregnancy with health workers if there are no signs of pregnancy danger, and postponing the implementation of pregnancy classes until the Covid-19 pandemic improves. This policy has an impact on the lack of health information received by mothers during pregnancy (Rosita & Rusmimpong, 2022; Ministry of Health, 2020).

One of the services provided to newborns is weighing. Based on data reported from 34 provinces to the Directorate of Nutrition and Maternal and Child Health, in 2021 it was reported that newborns were weighed (81.8%), while of the newborns weighed, there were LBW babies (2.5%). The number of LBW babies decreased compared to 2020, which was (3.1%). The condition of LBW babies is caused by the condition of the mother during pregnancy (Indonesian Health Profile, 2021).The government's efforts to overcome pregnant women at risk of KEK are by increasing nutritional education for pregnant women about KEK through the provision of Educational Information Communication (KIE), providing nutritional services and KIA services to pregnant women in the form of providing Fe tablets, screening pregnant women at risk of KEK and providing additional food (PMT) to pregnant women at risk of KEK through nutritional guidance and KIA in stages (Ministry of Health, 2021). The role of midwives in KEK cases is to assess the nutritional status of pregnant women and their relationship to fetal growth, assess maternal weight gain and its relationship to pregnancy complications, identify deviations from normal pregnancy and carry out appropriate treatment including referring to more adequate service facilities (Ministry of Health of the Republic of Indonesia, 2019).

Research conducted by Fatimah (2020) on the relationship between KEK in pregnant women and the incidence of LBW in the Raja Desa Health Center work area found that there was a relationship between the incidence of KEK and the incidence of LBW. Mothers who are classified as KEK are mothers who experience a lack of energy for a long time, even before pregnancy. Inadequate nutritional intake during embryo implantation can have fatal consequences for fetal development in the following trimester.

Astuti's (2024) research on anemia and chronic energy deficiency (CED) in pregnant women is related to the incidence of low birth weight (LBW) in the work area of the Kandangan Health Center, Temanggung Regency. The results of the study showed a relationship between anemia and the incidence of LBW and CED has a

significant relationship with the incidence of LBW.Mothers who experience anemia have a risk of giving birth to a LBW baby that is 3 times greater than pregnant women who are not anemic and mothers who experience KEK have a risk of giving birth to a LBW baby that is 2 times greater than pregnant women who do not experience KEK.

This study focuses on anemia and KEK in pregnant women to determine its relationship with the incidence of LBW in newborns in the working area of Simpang Keuramat Health Center, North Aceh Regency. In addition, there has been no research combining several variables.

RESEARCH METHODS

The research method used to achieve the research objectives using a quantitative analytical observational approach with a descriptive method. This study was conducted to determine the relationship between anemia and KEK with the incidence of LBW in newborns. This study was conducted in the Simpang Keuramat Health Center work area in May 2024. The population in this study were pregnant women who visited the Simpang Keuramat Health Center using the inclusion criteria of being willing to be respondents, being able to read and write. Sampling using the accidental sampling technique with a sample size of 30 people. Data collection by measuring LILA, weighing, examining TTV, and examining hemoglobin. The bivariate analysis technique was carried out using the chi square test, analyzed with the help of computerized software 21 for windows.

RESEARCH RESULT

Table. 1
Frequency Distribution of Respondent Characteristics

Respondent Characteristics	Amount	Percentage (%)
Mother's Age		
Resty	3	10.0
No Resti	27	90.0
Pregnancy		
First of all	3	10.0
Multi-para	23	76.7
Big multi-para	4	13.3
Height		
15-160 cm	27	90.0
>160 cm	3	10.0
Weight		
40-60 kg	27	90.0
>60 kg	3	10.0
Upper Arm Circumference		
KEK	13	43.3
Normal	17	56.7
Amount	30	100

Based on the table 1, it can be seen that the majority of mothers' ages are in the non-resti category, namely 27 people (90.0%), the majority of multiparous mothers' pregnancies are 23 people (76.7%), the majority of mothers' heights are 150-160 cm, namely 27 people (90.0%), the majority of mothers' weights are 40-60 kg, namely 27 people (90.0%) and the majority of mothers' upper arm circumferences are in the normal category, namely 17 people (56.7%).

Table. 2
Frequency Distribution of Hemoglobin (Hb) Levels in Pregnant Women in the Work Area

Hb	Amount	(%)
Anemia	25	83.3
No Anemia	5	16.7
Amount	30	100

The results of the study showed that the hemoglobin levels of pregnant women in the Simpang Keramat Health Center work area, North Aceh Regency in 2024 were mostly in the anemia category, namely 25 people (83.3%).

Table. 3
The Relationship Between Anemia in Pregnant Women
and the Incidence of Low Birth Weight in Newborns

Anemia Condition	Detection of LBW Incidents				Total		P	OR	95% CI	
	LBW		No LBW		F	%				
	F	%	F	%					Lower	Upper
Anemia	16	64.0	9	36.0	25	100	0.009	0.360	0.213	0.607
No	0	0.0	5	100.0	5	100				

Based on the table, it is known that 25 pregnant women experienced anemia, and 16 people were detected with LBW (64.0%), 5 pregnant women did not experience anemia and no LBW detection was found. The results of the chi square statistical test obtained p = 0.009 <0.05, meaning that there is a relationship between anemia and the incidence of LBW in newborns in the Simpang Keramat Health Center work area, North Aceh Regency in 2024.

Table. 4
The Relationship Between KEK in Pregnant Women and the Incidence of LBW
in Newborns in the Work Area

KEK Conditions	Detection of LBW Incidents				Total		P	OR	95% CI	
	LBW		No LBW		F	%				
	F	%	F	%					Lower	Upper
KEK	13	100	0	0.0	13	100	0,000	5,667	2,029	15,824
No KEK	3	17.6	14	82.4	17	100				

Based on the table above, it is known that 13 pregnant women experienced KEK, and 13 people were detected with LBW (100%), 17 pregnant women did not experience KEK and 3 people were detected with LBW (17.6%). The results of the chi square statistical test obtained p = 0.000 <0.05, meaning that there is a relationship between KEK and the incidence of LBW in newborns in the Simpang Keramat Health Center work area, North Aceh Regency in 2024.

DISCUSSION

The Relationship between Anemia in Pregnant Women and the Incident of LBW in the Work Area

Anemia in pregnancy is a condition where the body has few red blood cells or cells that carry oxygen to various organs of the body. The health condition of pregnant women is very important because it affects the condition of the mother at the time of delivery. Anemia in pregnancy is very dangerous for the mother and her fetus, the impact of anemia on pregnant women is abortion, premature labor, fetal growth and development disorders or low birth weight (LBW), antepartum hemorrhage, premature rupture of membranes. Anemia in pregnancy is a condition of the mother with Hb levels <11 gr% in the first and third trimesters while in the second trimester the Hb level is <10.5%. Anemia in pregnancy is called "Potential Danger To Mother And Child" (potential to endanger the mother and child), therefore anemia requires serious attention from all parties involved in health services.

The cross tabulation results between anemia variables and the incidence of LBW showed that the chi square test results obtained a p-value of 0.009, which means that there is a significant relationship between anemia in pregnant women and the incidence of LBW. The results of the analysis showed an OR value (95% CI) = 0.360 means 0.360 times the estimated probability of mothers who do not experience anemia, then there will be no LBW compared to mothers who experience anemia. The results of this study are in line with the results of a study conducted by Aditianti et al., (2015) with the results of the chi square test (p-0.000) which can be concluded that anemia in mothers during pregnancy is a factor in the occurrence of LBW.

Based on the results of the study, it shows that most pregnant women who experience anemia are aged 20-35 years. According to researchers, the results of the study showed that as many as 18 pregnant women experienced anemia, experiencing an estimated fetal weight that did not match the gestational age. Many other factors can cause LBW, including maternal nutrition, pregnancy history, fetal condition and social conditions are also factors that influence the occurrence of LBW. Anemia in pregnancy can occur due to an increase in blood plasma volume which causes hemoglobin levels in the blood to decrease (Dagne et al., 2021).

Nutritional anemia begins with depletion of iron stores (ferritin) and increased iron absorption which is described by increased iron binding capacity, resulting in depletion of iron stores, reduced transferrin saturation, reduced amount of protoporphyrin converted into heme along with decreased serum ferritin levels, resulting in anemia characterized by low Hb levels. Mothers who experience a lack of blood supply to the placenta will affect the function of the placenta to the fetus (Antarsih & Suwarni, 2022). Mothers during pregnancy experience physiological changes that cause an imbalance in the amount of blood plasma in red blood cells which can be seen in the form of decreased hemoglobin levels (Devi, 2021). This will affect oxygen to the uterus and disrupt intranutrient conditions, especially fetal growth, which will have an impact on fetuses with LBW.

The Relationship between KEK in Pregnant Women and the Incidence of LBW

The results of the study found that 13 pregnant women experienced KEK, and 13 people were detected with LBW (100%), 17 pregnant women did not experience KEK and 3 people were detected with LBW (17.6%). The results of the chi square statistical test obtained p = 0.000 <0.05, meaning that there is a relationship between

KEK and the incidence of LBW in newborns in the Simpang Keramat Health Center work area, North Aceh Regency in 2024.

Nutritional deficiencies in pregnant women are more likely to result in LBW or general abnormalities than to cause specific anatomical abnormalities. The condition of the mother with KEK pregnancy causes a direct relationship between the mother and the fetus to not be fully fulfilled, because if the mother experiences chronic energy deficiency, usually the mother is more easily tired, weak, so that it can affect the movement of the fetus's activity is weak and if the problem is not immediately addressed will result in the output results issued or the baby that is issued will experience birth with low birth weight.

The results of this study are in line with Retnaningtiyas & Siwi study (2020) which states that there is a relationship between KEK and the incidence of LBW with a p-value of 0.005. According to the researcher's assumption, the results of this study indicate that there is a significant relationship between KEK in pregnant women and the incidence of LBW. Pregnant women with KEK will affect childbirth such as difficult and prolonged labor, premature labor (premature), bleeding after childbirth and childbirth with an increasing surgical process (Mowu'u et al., 2024; Irmadani & Pudspita, 2022). Pregnant women who experience KEK will also affect fetal growth such as miscarriage, abortion, stillbirth, neonatal death, congenital defects, anemia, in babies with stillbirths, and births with LBW (Adhelna et al., 2022; Permatasari et al., 2020).

The condition of the mother with KEK pregnancy causes a direct relationship between the mother and the fetus to not be fully fulfilled. Because if the mother experiences KEK, the mother usually gets tired and weak easily so that it can affect fetal growth and there will be a birth with low birth weight. In addition, the research results obtained in the field are that mothers who are not KEK and give birth to LBW here can be caused by experiencing other cases such as maternal factors (age, parity, anemia, previous history of LBW, history of abortion, pregnancy spacing is too close, preeclampsia), fetal factors (chromosomal abnormalities, congenital infections) that can support the occurrence of LBW, but for this case it was not included by the researcher, because the researcher only focused on 2 cases, namely anemia and KEK (Lina & Harahap, 2022; Yanti, 2022).

CONCLUSION

The results of the study of the Relationship between Anemia and KEK in pregnant women with the incidence of LBW in newborns in the Simpang Keuramat Health Center Work Area, North Aceh Regency 2024 can be concluded that there is a relationship between Anemia in pregnant women with the incidence of LBW in newborns in the Simpang Keuramat Health Center Work Area, North Aceh Regency 2024 and There is a relationship between KEK in pregnant women with the incidence of LBW in newborns in the Simpang Keuramat Health Center Work Area, North Aceh Regency 2024.

SUGGESTION
Theoretically

This research is expected to be used as a reference for further research, and become reading material in the Aceh Polytechnic library to increase knowledge and information for students and lecturers.

In practical terms
For Respondents
To increase knowledge and information for pregnant women about how to maintain health conditions during pregnancy and also fetal health so that the baby is born healthy and normal.
Share Policy
The results of this study are expected to provide information and basic data for further research on the relationship between anemia and KEK in pregnant women with the incidence of LBW in newborns.

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