

The relationship between anemia in pregnant women and Low Birth Weight (LBW): A literature review

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Abstract

Iron deficiency anemia in pregnant women is thought to be associated with an increased risk of giving birth to low birth weight (LBW) babies. This study aims to conduct a literature review of the relationship between anemia in pregnant women and the incidence of LBW. The literature review was carried out by searching for research articles in electronic databases. Articles that met the inclusion criteria were then analyzed descriptively. Based on the 6 articles reviewed, there is a significant relationship between anemia in pregnant women and an increased risk of giving birth to LBW. Pregnant women with anemia have a higher risk of giving birth to LBW babies than those without anemia. It is suspected that anemia interferes with the flow of oxygen and nutrients to the fetus, thereby inhibiting its growth. Anemia in pregnant women is associated with an increased risk of LBW. Detection and treatment of anemia from early pregnancy is important to prevent complications of LBW.

Keywords: Anemia; Pregnant Women; Low Birth Weight; Postpartum Hemorrhage; Prett

1. Introduction

Anemia in pregnant women is a health problem that often occurs throughout the world. It is estimated that around 41.8% of pregnant women in the world suffer from anemia (7). Anemia in pregnant women can cause various complications, one of which is low birth weight (LBW) in babies. LBW is defined as a baby's birth weight of less than 2500 grams, and is the main cause of infant morbidity and mortality throughout the world (2). In Indonesia, Riskesdas 2018 recorded the prevalence of anemia in pregnant women at 48.9% (1). Anemia can have a serious impact on pregnant women and their fetuses. One of the complications that is of concern is the increased risk of giving birth to a baby with a low birth weight (LBW). LBW babies are at risk of experiencing higher perinatal morbidity and mortality than babies with normal birth weight (11). Anemia can interfere with the transfer of oxygen and nutrients from mother to fetus through the placenta, which inhibits fetal growth and development (10). In addition, severe anemia in late pregnancy is thought to trigger chronic hypoxia in the fetus which can trigger premature birth (3). Premature birth itself is the biggest risk factor for LBW. Therefore, preventing LBW through optimizing the health of pregnant women is important.

2. Material and methods

This research method is a literature review by searching for related research articles on Google Scholar. The keywords used in the article search were "anemia AND pregnancy AND low birth weight", "maternal anemia AND risk of low birth weight", "iron deficiency anemia AND preterm birth". The article inclusion criteria used are: (1) quantitative research articles (observational or experimental) that investigate the relationship between anemia in pregnant women and LBW,

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(2) research subjects are pregnant women or mothers giving birth, (3) articles are written in Indonesian or English, (4) articles published in peer-reviewed scientific journals, (5) full-text articles.

3. Results and discussion

The following are articles that have been collected and analyzed:

Table 1 List of Articles

No	Author	Research Title	Method	Result
1.	Gusman virgo & Tia Halimah	THE RELATIONSHIP OF ANEMIA IN PREGNANT WOMEN WITH THE INCIDENT OF LOW BIRTH WEIGHT (LBW) IN BANGKINANG REGIONAL HOSPITAL 2018	This research is a quantitative analytical research with a cross sectional research design, the research was carried out in the medical records room at Bangkiang Regional Hospital using a systematic random sampling technique.	Based on the research results, it can be determined that the prevalence of anemia in the Regional Hospital was 53 (37.1%) people and the incidence of LBW was 58 (40.6%). There is a relationship between the incidence of anemia in pregnant women and the incidence of LBW based on the results of the chi-square test, (13).
2.	Adinda Aida Yasmin & Amanda Tarisa Kairana	ANALYSIS OF THE RELATIONSHIP OF ANEMIA IN PREGNANT WOMEN TO LOW BIRTH WEIGHT (LBW) BABIES: LITERATURE REVIEW	This research is a literature review study which aims to determine the correlation between anemia in pregnant women and the risk of low birth weight (LBW) in babies.	Based on the results of the literature review, 11 selected articles were found which showed that anemia in pregnant women can increase the risk of low birth weight in babies, (15).
3.	Rahadinda et al	THE RELATIONSHIP OF ANEMIA IN PREGNANT WOMEN AND THE INCIDENT OF LBW AT ABDUL WAHAB SJAHRANIE SAMARINDA HOSPITAL	This research uses a case control research method in which there are 106 respondents in the research, of which 53 are case respondents and 53 are control respondents.	Based on the research results, it shows that there is a positive correlation ($p=0.000$; $OR=0.876$) which shows that there is a relationship between anemia in pregnant women and the incidence of LBW. Pregnant women with anemia are 8 times more likely to give birth to LBW babies than pregnant women who do not have anemia, (6).
4.	Suhartati et al	THE RELATIONSHIP OF ANEMIA IN PREGNANT WOMEN WITH THE INCIDENT OF LOW BIRTH WEIGHT IN THE WORKING AREA OF THE TANTA HEALTH CENTER, TABALONG DISTRICT, 2016	This research used an analytical survey method with a case control research design and a retrospective approach whose research subjects were all babies born in the Tanda community health center area in 2016.	Based on the results of the chi-square test, the p value was 0.000 with $\alpha = 0.005$, which indicates that there is a relationship between anemia in pregnant women and the incidence of LBW. Pregnant women who have anemia have a 9 times greater risk of giving birth to low birth weight babies compared to mothers who do not have anemia, (12).

5	Ros Rahmawati & Saniah Umar	THE RELATIONSHIP OF ANEMIA IN PREGNANT WOMEN AND THE INCIDENT OF LOW BIRTH WEIGHT (LBW) IN THE SITI FATIMAH MOTHER AND CHILD RSKD MAKASAR	This research uses an analytical survey research type with a case control approach	Based on the results of the chi-square analysis, it shows that the p value is 0.000 with $\alpha = 0.005$, which shows that there is a relationship between anemia in pregnant women and the incidence of LBW with an OR of 4.706, which shows that mothers who have anemia have a 4.706 times greater risk of giving birth to low birth weight babies. than pregnant women who do not have anemia, (9).
6	Nailah Rahmah & Idawati Karjadidjaja	THE RELATIONSHIP OF ANEMIA IN PREGNANT WOMEN TO THE INCIDENCE OF LOW BIRTH WEIGHT (LBW) IN THE PASAR REBO DISTRICT PRIVATE HEALTH CENTER, EAST JAKARTA	The research design used was cross sectional using 100 female respondents who gave birth at the Pasar Rebo District Health Center, East Jakarta in 2017.	Based on the results of the chi-square analysis, a p-value of 0.000 and an OR value of 39 were obtained, indicating that there is a relationship between anemia in pregnant women and the incidence of LBW. OR 39 shows that mothers who have anemia have a 39 times greater risk of giving birth to low birth weight babies than pregnant women who do not have anemia.

Based on various articles that have been studied, there is a significant relationship between anemia in pregnant women and the incidence of low birth weight (LBW). From the results of the literature review, consistent evidence was found that anemia in pregnant women is associated with an increased risk of giving birth to LBW babies based on significant statistical test results where pregnant women with anemia have a higher risk of giving birth to LBW babies than pregnant women without anemia. Similar findings were also reported in a literature review by Yasmin et al. who found 11 journals that consistently showed that anemia in pregnant women increases the risk of LBW. The relationship between anemia in pregnant women and the incidence of low birth weight is supported by other observational studies such as by Wulandari et al. (2021) who found that anemic pregnant women had a 9 times higher risk of giving birth to LBW babies than non-anemic pregnant women. The underlying mechanisms include disruption of the flow of oxygen and nutrients from the mother to the fetus due to anemia, which can inhibit fetal growth, as well as an increased risk of premature birth in anemic pregnant women. Another mechanism by which anemia in pregnant women can contribute to LBW is through an increase in the risk of fetal birth weight that is small for the gestational age or IUGR (5). Iron deficiency causes a decrease in maternal blood volume which in turn can reduce uteroplacental blood flow. This has an impact on reducing the supply of oxygen and essential nutrients for optimal fetal growth in the uterus. Therefore, strong detection and treatment of anemia in pregnant women is important to prevent the occurrence of LBW. Routine iron supplementation during pregnancy has been proven to be effective in reducing the incidence of LBW by more than 50% in anemic pregnant women (4). Apart from that, balanced nutritional counseling and increasing consumption of food sources of iron are also needed to support the prevention and treatment of anemia in pregnant women.

4. Conclusion

Based on the results of the literature review analysis regarding the relationship between anemia in pregnant women and the incidence of low birth weight (LBW), it can be concluded that there is a significant relationship between the incidence of iron deficiency anemia in pregnant women and an increased risk of giving birth to LBW babies. Pregnant women with anemia have a higher risk of giving birth to LBW babies than pregnant women without anemia. Anemia is thought to interfere with the flow of oxygen and nutrients from the mother to the fetus so that it can inhibit fetal growth. Anemia is also associated with an increased risk of premature birth, which is the main cause of LBW. Iron supplementation has been proven to be effective in reducing the incidence of LBW in pregnant women who suffer from anemia. Detection and treatment of anemia in pregnant women as early as possible is very important to prevent LBW.

Compliance with ethical standards

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Disclosure of conflict of interest

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