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(RESEARCH ARTICLE)

Incidence of anemia in pregnant women in the coastal area of North Buton Regency, Southeast Sulawesi Province, Indonesia, 2024

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Abstract

Background: Anemia in pregnant women is still a global public health problem, especially those domiciled in coastal areas this study aims to analyze the relationship between the incidence of anemia and the level of maternal knowledge, and the consumption of Fe tablets in pregnant women in the coastal area of North Buton Regency, Southeast Sulawesi Province.

Methods: This study used a *cross sectional method*, carried out in the working area of the Kulisusu Health Center, North Buton Regency by involving 126 pregnant women who met the sample criteria. The sampling technique was carried out by simple random sampling. Data analysis uses *the chi square* test with a significance value *of p<0.05*.

Results: The results showed that the incidence of anemia was related to the knowledge of pregnant women (*P-value < 0.000*) and the consumption of Fe tablets (P-value < 0.000).

Conclusion: There is a relationship between the incidence of anemia and maternal knowledge and consumption of Fe tablets. Therefore, the incidence of anemia during pregnancy can be prevented by consuming at least 90 Fe tablets during pregnancy, improving nutritional intake during pregnancy and educating nutrition and health related to pregnancy problems

Keywords: Anemia; Pregnant women; Knowledge; Iron tablets; Coastal areas

1. Introduction

Anemia in pregnancy is a global health problem because it interferes with physical health, cognitive development, productivity, and reflects the economic status of underdeveloped countries or countries of low and middle-income countries/LMICs.{1,2,3}. According to World Health Organization data, the prevalence of pregnant women who experience anemia is still very high at around 36.5% {4}. Based on the World Bank's income category, the prevalence of anemia in pregnant women in LMICs is 45%. Meanwhile, in high-income countries, the prevalence of anemia in pregnant women is only about 17% {5}. Pregnant women from coastal areas are almost twice as likely to experience anemia, especially if their pregnancy is in the 2nd or 3rd trimester {6}.

Treatment of anemia has significant health implications during pregnancy As shown in the most recent meta-analysis data, the risk of maternal mortality decreased by up to 20% for every 1 g/dl increase in hemoglobin concentration {7}. SThe latest report by Syarif, et al,{8} showed that pregnant women who lived in urban slums in Makassar-Indonesia,

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had less knowledge (AOR = 3.03, 95% CI 1.26-7.29,*P*= 0.013) and the practice of taking low iron-boosting supplements (AOR = 2.85, 95% CI 1.18–6.92,*P*= 0.020) is the main factor related to iron deficiency in pregnant women by 78%.

The prevalence of anemia in pregnant women in Southeast Sulawesi Province in 2020 was 10.5%, the highest in Muna Regency at 40.69%, and Buton Regency at 23.5% {9}. Especially in North Buton Regency, it was reported that there was an increase in the incidence of anemia cases in pregnant women, in 2020 as much as 26.5% and in 2021 as much as 27.03% {10}. Our previous study showed that the anemia status of pregnant women living in the coastal areas of northern Buton Regency, Southeast Sulawesi Province was significantly related *(P<0.05)* With mothers < 20 years old and >35 years old, the pregnancy gap is too close and the economic income is low {11}. In this problem, we are interested in conducting a follow-up study on the analysis of the level of knowledge and consumption of nutritional iron tablets for pregnant women as the goal of our research

2. Methods

This cross sectional research was carried out in the working area of the North Buton Regency Kulisusu Health Center, involving 126 pregnant women who met the sample criteria. The sampling technique was carried out by simple random sampling. The variable in this study was the mother's knowledge about anemia and adherence to Fe tablet consumption.

Mother's knowledge has good and poor criteria, assessed using a guttman scale questionnaire with a score range of 0-1 (score 0 if the answer is wrong and score 1 if the answer is correct) with a total of 10 items. The Fe tablet consumption compliance variable was assessed using a guttman scale questionnaire with a score range of 0-1 (score 0 if the answer is wrong and score 1 if the answer is correct) with a number of questions of 10 items. Data is presented as numbers and percentages for categorical variables. Continuous data is expressed as mean ± standard deviation (SD) or median with Interquartile Range (IQR). Data analysis uses *the chi square* test, if the P-value < 0.000, it is considered significant.

3. Results and discussion

Table 1, shows the results of the bivariate statistical test using *the chi square* method , the value *of p value=0.000*,

This means that there is a significant association between knowledge and consumption of Fe tablets and the incidence of anemia.

Table 1 Analysis of Factors for the Incidence of Anemi of Pregnant Women in Coastal Areas of Regency North Buton, Southeast Sulawesi Province

Variable	**N**	**%**	***P-value***
Anemia status			
Anemia	55	43.7	
Usual	71	56.3	
Knowledge			0.000
Good	72	57.1	
Less	54	42.9	
Fe tablet consumption			0.000
Orderly	67	53.2	
Irregular	59	46.8	

Source: Primary Data, 2024

The results of the comparative analysis of our study showed that there was an influence on *the value of p value = 0.000* of the level of maternal knowledge and the consumption of Fe tablets. It is known that pregnant women with anemia status have less knowledge as much as 62.5% compared to pregnant women who are not anemia have a less level of knowledge of only 37.1%. Furthermore, pregnant women with anemia status but irregularly consumed iron tablets as much as 81.4% compared to pregnant women who were not anemia but irregularly consumed iron tablets only 18.6%.

Iron deficiency during pregnancy not only has a significant impact on the condition of the mother but also the fetus. Adverse effects such as low birth weight, premature birth, increased neonatal and maternal morbidity have been linked to iron deficiency and anaemia during pregnancy, particularly in low- and middle-income countries (12). In addition, the low knowledge of pregnant women about anemia will have a bad effect on their pregnancy. Knowledge is a factor in a person's behavior, can cause changes in people's perceptions and habits, therefore increasing knowledge can change people's behavior from negative to positive can also form beliefs related to understanding the importance of pregnancy checkups, counseling, signs and how to overcome anemia, which is expected to prevent anemia in pregnant women (13,14).

Our study shows that the level of knowledge about anemia and iron-containing foods is related (*p value=0.000*) to the incidence of anemia in pregnant women from the coastal area of North Buton Regency, Southeast Sulawesi Province, Indonesia. Pregnant women with anemia status have less knowledge as much as 62.5%, compared to pregnant women who are not anemia (37.5%). Our study is consistent with the study reported by Appiah, et al, (15) that there is a significant association of maternal knowledge about anemia ($p = 0.001$) with adherence to anemia prevention strategies (iron tablet consumption). Only 13.5% of pregnant women had high knowledge of anemia, while 58.4% and 28.1% had moderate and low knowledge in District in Western-North Region, Ghana.

Good knowledge can change people's perception of behavior to be good about the importance of pregnancy checks, consumption of iron tablets according to the rules, nutrition and health education. On the other hand, the low knowledge of pregnant women about the dangers of anemia will have an impact on the growth and development process of the fetus and the child to be born. The results of our study showed that there was a significant relationship (*P=0.000*) between irregular consumption of Fe tablets and the incidence of anemia in pregnant women in the working area of the North Buton Health Center. In accordance with the research conducted by Sarah & Irianto (16) showed that there was a significant relationship with the value *(p= 0.000)* between the adherence to the consumption of Fe tablets and the incidence of anemia in pregnant women in the Working Area of the Pajeruk Health Center.

The administration of iron tablets to pregnant women by health workers is in accordance with the program and rules because every activity at the posyandu or if pregnant women go to the Health Center is always given iron tablets but in our study there are 81.4% of pregnant women who experience irregular anemia consume iron tablets, they often forget to take iron tablets and or deliberately do not consume them because there are side effects such as nausea, vomiting and difficulty defecating. The irregularity of pregnant women consuming iron tablets was also reported in a previous study by Souza, et al, (17) that one of the causes of non-compliance of pregnant women consuming iron tablets is due to various side effects of iron intake such as nausea, excessive vomiting, and others, some pregnant women tend to stop iron therapy. Furthermore, a study reported by Imdad & Bhutta (18) revealed that iron tablet supplements are lacking during pregnancy. Significantly ($p<0.05$) is related to the risk of giving birth to babies with low birth weight (BBLR), miscarriage, risk of bleeding, and even causing the death of the mother and her baby.

Previous studies revealed that the need for iron tablet supplementation was given as needed and pregnancy up to 12 weeks. Iron plays an important role during pregnancy for growth, hematopoiesis, and fetal development. Therefore, after 12 weeks of pregnancy, the need for iron will decrease because it is no longer needed for the formation of these organs and tissues (19), If iron concentration levels are higher than normal it can lead to cell dysfunction β the pancreas and impaired glucose metabolism, the risk of gestational diabetes (20,21). Considering the physiology of iron as one of the nutrients of pregnant women, it is necessary to inform decision-making about the consideration of the benefits and risks of iron supplementation in pregnant women who are iron deficient, iron sufficient, and iron excess (22)

4. Conclusion

There is a relationship between the incidence of anemia was related to the knowledge of pregnant women (*P-value < 0.000*) and the consumption of Fe tablets (P-value < 0.000). Pregnant women with anemia status have less knowledge as much as 62.5% compared to pregnant women who are not anemia have a less level of knowledge of only 37.1%. Furthermore, pregnant women with anemia status but irregularly consumed iron tablets as much as 81.4% compared to pregnant women who were not anemia but irregularly consumed iron tablets only 18.6%.

Suggestion

Anemia during pregnancy can be prevented by the regularity and need of the mother to consume Fe tablets during pregnancy, in addition to increasing nutrition and health education as well as intense communication before pregnancy and during pregnancy with local health workers is very important to support the success of the government's program to reduce the prevalence of anemia in pregnant women.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Harrison RK, Lauhon SR, Colvin ZA, McIntosh JJ. Maternal anemia and severe maternal morbidity in a US cohort. Am J Obstet Gynecol MFM. (2021) 3:100395. 10.1016/j.ajogmf.2021.100395

[2] Liyew AM, Tesema GA, Alamneh TS, Worku MG, Teshale AB, Alem AZ, et al. Prevalence and determinants of anemia among pregnant women in East Africa; a multi-level analysis of recent Demographic and Health Surveys. PLoS ONE. (2021) 16:e0250560. 10.1371/journal.pone.0250560

[3] Salma WO, Yasir Haya LOM., Binekada IMC, Fristiohady A, Alifariki LO. Reference Book on Portraits of Coastal Peoples; Nutrition & Health Innovation Concept.Yogyakarta, Indonesia: Deepublish. 2021.: p.192

[4] WHO Prevalence of anaemia in pregnant women (aged 15-49) (%) 2021, https://www.who.int/data/gho/data/indicators/indicator-details/GHO/prevalence-of-anaemia-in-pregnant-women-(-), Available at, 03 December 2024.

[5] The World Bank Prevalence of anemia among pregnant women (%)-Least developed countries: UN classification | Data. 2019, https://genderdata.worldbank.org/en/indicator/sh-prg-anem, Available at, 03 December 2024

[6] Um S, Sopheab H, Yom A, Muit JA. Anemia among pregnant women in Cambodia: A descriptive analysis of temporal and geospatial trends and logistic regression-based examination of factors associated with anemia in pregnant women. PLoS One. 2023 Dec 7; 18(12): e0274925.

[7] Arora K, Bahadur A, Mishra D, Mundhra R. Assessment of anaemia and nutritional status of antenatal women attending a tertiary care hospital. J Family Med Prim Care. June 30, 2022; 11(6):3238–3244.

[8] Syarif AL, Ansariadi, Wahiduddin, Wijaya E, Amiruddin R, Citrakesumasari, Ishak H. Awareness and practices in preventing maternal iron deficiency among pregnant women living in urban slum areas in Makassar City, Indonesia. J Educ Health Promot. 2024;12:452.

[9] Butur Regency Health Office. Health Profile of North Buton Regency in 2020 and 2021.

[10] Southeast Sulawesi Provincial Health Office. Southeast Sulawesi Province Health Profile [Internet]. Kendari: P2PL Division of the Provincial Health Office. South Sulawesi; 2020. https://pusdatin.kemkes.go.id/index.php?category=profil-kesehatan-kabupaten&provid=PV-027. Available at, 03 December 2024.

[11] Mirnawati, Salma WO, Tosepu R. Analysis of risk factors for the occurrence of Anemi in pregnant women. Obsgin Journal Volume 14, Number 3, September 2022

[12] Kumar P, ShahP, AwasthiV, KheraB, Agarwal M ,Lakhtakia M ,Kumar D. Anemia in Pregnancy: A knowledge, Attitude and Practice Survey Amongst Obstetricians and Gynaecologists in India. J Obstet Gynaecol India. 2022; 72(5):382–388.

[13] Fitria NE. The Relationship between Pregnant Women's Knowledge about Fe Tablets and the Incidence of Anemia. Endurance Journal: A Scientific Study of Health Problems. 2018; 3(1):1–6.

[14] Fatimah S, Kania ND. The relationship between the level of knowledge of pregnant women about anemia and the risk of BBLR events. Journal of Midwifery and Public Health. 2019; 1(1):1–8.

[15] Appiah PK, Nkuah D, Bonchel DA. Knowledge of and Adherence to Anaemia Prevention Strategies among Pregnant Women Attending Antenatal Care Facilities in Juaboso District in Western-North Region, Ghana. J Pregnancy, 2020:2139892.

[16] Sarah S, Irianto I. Effect of Adherence Level of Fe Tablets on the Incidence of Anemia in Pregnant Women in the Third Trimester at the Pejeruk Health Center in 2017. YARSI Medical Journal. 2018; 26(2):75–85.

[17] Souza AI, Batista Filho M, Bresani CC, Ferreira LOC. Figueiroa J. N. Adherence and side effects of three ferrous sulfate treatment regimens on anemic pregnant women in clinical trials. Cadernos de Saúde Pública. 2009; 25(6):1225–1233

[18] Imdad A, Bhutta ZA. Routine iron/folate supplementation during pregnancy: effect on maternal anaemia and birth outcomes. Paediatric and Perinatal Epidemiology. 2012; 26(1):168–177.

[19] Martínez-Galiano JM, United States Amezcua-Prieto C,Cano-Ibañez N,Salcedo-BellidoI,Bueno-Cavanillas A , Delgado-Rodriguez M. Maternal iron intake during pregnancy and the risk of small for gestational age. Matern Child Nutr. 2019; 15(3): e12814.

[20] Bowers, KA, Olsen, SF, Bao W, Halldorsson, T.I., Strøm M, Zhang C. Plasma concentrations of ferritin in early pregnancy are associated with risk of gestational diabetes mellitus in women in the Danish National Birth Cohort. The Journal of Nutrition, 2016; 146(9), 1756–1761. 10.3945/jn.115.227793.

[21] Nastaran, SA, Nourossadat K, Abbas HF, Hamid AM. (2012). Hemoglobin level during the first trimester of pregnancy in gestational diabetes. Polska Gynecology, 83(12), 929–933.

[22] GeorgieffMKKrebs NFCusickONE. The Benefits and Risks of Iron Supplementation in Pregnancy and Childhood. Annu Rev Nutr. 2019; 39: 121–146.