

THE INCIDENCE OF ANEMIA IN TERMS OF GESTATIONAL AGE AND HISTORY OF CHRONIC ENERGY DEFICIENCY IN PREGNANT WOMEN

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ABSTRACT

Background One of diseases that can cause a high rate of morbidity and maternal death is anemia. Anemia in pregnancy is characterized by hemoglobin (HB) levels less than 11 mg/dl. Anemia is a condition with hemoglobin levels below 11 gr/dl in pregnant women I and III or levels <10.5 gr/dl in the II trimester. Anemia in pregnancy can be caused by lack of iron and is a type of anemia whose treatment is relatively easy or even cheap. The contribution of anemia in pregnancy to maternal mortality in Indonesia is estimated to reach 10 % to 12 %. This can be interpreted that 10-12% of maternal deaths in Indonesia. The purpose of this study was to analyze the relationship between the incidence of anemia in terms of gestational age and Chronic Energy Deficiency in pregnant women at the Siniu Public Health Center, Parigi Moutong Regency, Central Sulawesi.

Method : The research design used in this study is correlational analytic with a cross sectional time approach. The population in this study were all pregnant women in the first, second and third trimesters from April to May 2022 at the Siniu Public Health Center, Parigi Moutong Regency. The sampling method in this study uses accidental sampling techniques. Data collection using questionnaires, KIA books and medical record documentation.

Results : Of the total 40 respondents (100%) of gestational age at the Siniu Public Health Center, Parigi Moutong Regency, Central Sulawesi Most were in the first trimester (40%), Most of them did not have KEK 31 respondents (77.5%) and most were not anemic 31 (77.5) %. The analysis test using Chi Square shows that the significance level is $0.000 \leq 0.05$ it means H₀ is rejected and H₁ is accepted. Thus, there is a relationship between gestational age and Chronic Energy Deficiency in pregnant women with the incidence of anemia at the Siniu Public Health Center, Parigi Moutong Regency, Central Sulawesi.

Conclusion : It was concluded that gestational age and Chronic Energy Deficiency can cause anemia in pregnant women at the Siniu Health Center, Motong Regency, Central Sulawesi.

Keywords: Anemia, Gestational Age, Chronic Energy Deficiency

INTRODUCTION

One of the diseases that can cause high maternal morbidity and mortality is anemia. Anemia in pregnancy is defined as hemoglobin (HB) levels less than 11 mg/dl. Anemia is a condition with hemoglobin levels below 11 gr/dl in pregnant women I and III or levels <10.5 gr/dl in the II trimester. Anemia in pregnancy can be caused by iron deficiency and is a type of anemia whose treatment is relatively easy and even cheap. 1. Pregnant women are said to have anemia if the concentration of hemoglobin (Hb) < 11.0 g/dl. The contribution of anemia in pregnancy to maternal mortality in Indonesia is estimated to reach 10 % to 12 %. This can be interpreted that 10-12% of maternal deaths in Indonesia (Proverawati, 2017).

Based on the Profile of the Ministry of Health (2021) the five biggest causes of maternal death in Indonesia were bleeding (30.3%), hypertension in pregnancy (27.1%), infection (7.3%), prolonged/obstructed parturition (1.8%), and abortion (1.6%). A high maternal mortality rate was closely related to the anemia he suffered when pregnant. Of the five causes of the largest battery in Indonesia, four of which were the impact that occurs when pregnant women experience anemia. Anemia in pregnancy is a mother's condition with hemoglobin (HB) levels <11 gr% in trimester I and III while in trimester II hemoglobin levels <10.5 gr%.

The Siniu Puskesmas is one of the Puskesmas located in Parigi Moutong Regency, Central Sulawesi, in 2021 there were 39 projection targets for pregnant women. Of the 39 pregnant women who experienced 19 anemia and there were 8 people who experienced 8 people. (Data of the Sinuu Puskesmas in 2021)

From the results of pregnancy examinations conducted on 5-10 February 2022 at the Sinuu Puskesmas, almost 30% of pregnant women were found suffering from anemia, although the prevention program and pregnancy examination had been carried out. From the results of the preliminary survey conducted at the Puskesmas, there were 10 people, from the results of examinations and interviews conducted by 7

people (70%) which showed symptoms of anemia such as fatigue, pale conjunctiva. The respondents were examined for hemoglobin (HB) level <11 gr/dl. After the interview about the dietary food during pregnancy, 4 mothers said that they did not eat fish during pregnancy, did not drink milk and did not consume Fe tablets and also the lila under 23.5 cm (occurs Chronic Energy Deficiency). 2 of them were in the gestational age in the first trimester and said that there was still nausea and vomiting so that his appetite was not stable. From the explanation above it can be seen that there are still many mothers who suffer from anemia during pregnancy, although health workers have handled and counseling health well including control for anemia problems.

Some of the basic causes of the high number of morbidity and maternal mortality include nutritional factors, in addition to this need to be carried out in these studies, for example factors originating from within the individual themselves and socio -cultural factors (in this case the mother's behavior). From individual factors such as maternal age during pregnancy, mother's education, number of children born, birth spacing and nutritional status of the mother during pregnancy. While socio -cultural factors such as knowledge, attitudes, beliefs and behavior of mothers during pregnancy (Proverawati, 2017).

The impact of anemia on pregnancy that can occur premature labor, abortion, fetal growth and development in the uterus is inhibited, easy to occur infection, there is a threat of cord decompensation (Hb <6 g%), mole hydatidose (grape pregnancy), hyperemesis gravidarum, bleeding antepartum (bleeding during pregnancy), and premature rupture of membranes. Anemia can also affect and cause danger during labor that is there is a disturbance of praising strength, the first time it can last a long time, and occurs neglected parturition, the second stage lasts a long time so that it can be tiring and often requires cesarean section, in the third stage can be followed by placental retention and bleeding postpartum due to uterine atony, a four -stage can occur

postpartum hemorrhage in the uterine atonia. In the puerperium, anemia can cause uterine subinvolution, cause postpartum hemorrhage, facilitate puerperium infections, reduced breastfeeding, sudden decompensation of cords after childbirth, anemia when the puerperium, and easy mamae infection occurs. The danger of anemia to the fetus is that anemia will reduce the body's metabolic ability so that it interferes with the growth and development of the fetus in the uterus and can occur in the form of abortion, intrauterine death, high premature childbirth, low birth weight, birth with anemia, can occur congenital defects, infants are easy Received infection to perinatal death, and low intelligence.

Anemia in pregnancy can be prevented by consuming nutrition before pregnancy, regulating the distance of pregnancy and increasing knowledge. Knowledge and attitudes of pregnant women about health, especially anemia, will affect the behavior of pregnant women in the prevention of anemia by consuming iron tablets, but the program of giving iron tablets to pregnant women who suffer from anemia does not show significant results, this is caused by compliance with drinking tablets of substances Iron is less than optimal, thus the level of compliance of pregnant women in consuming iron tablets must always be monitored.

The Indonesian Midwife Association (IBI) in its program to detect anemia in pregnancy is examined Hb levels of pregnant

women. The examination is carried out before the 12th week in pregnancy and week 28. If the Hb level is less than 11gr% in pregnancy is declared anemia and must be given an iron tablet supplement (Fe) regularly 1 tablet/day for 90 days.

Based on the background above, the researcher is interested in conducting a study entitled "The incidence of anemia in terms of gestational age and a history of Chronic Energy Deficiency in pregnant women at the Siniu Puskesmas Parigi Moutong, Central Sulawesi". The purpose of this study was to analyze the relationship between the incidence of anemia in terms of gestational age and KEK in pregnant women at the Siniu Public Health Center, Parigi Moutong Regency, Central Sulawesi.

METHODS

The design of this study was correlational analytic with a cross sectional time approach. The population in this study were all Trimester I, II and III pregnant women in April - May 2022 at the Puskesmas Sinuu Parigi Moutong Regency. The sampling method in this study used the Accidental Sampling technique. Total sample 31 respondent. Collecting data using questionnaires filled out by the respondent, KIA books and medical record documentation. Data processing using SPSS statistical techniques through the process of editing, coding, scoring and tabulating. The data obtained were analyzed using univariate and bivariate techniques.

RESULTS

1. Gestational age

Table 4.4
Frequency distribution of respondents based on gestational age

| No | Gestational Age | Frequency | Percentage (%) |
|----|-----------------|-----------|----------------|
| 1 | Trimester I | 16 | 40.0 |
| 2 | Trimester II | 9 | 22.5 |
| 3 | Trimester III | 15 | 37.5 |
| | Total | 40 | 100.0 |

Source of Data: Research in 2022

Based on Table 4.4 above it is known that most of the respondents with gestational age in the first trimester as many as 16 (40.0%).

2. History of SEZ in pregnant women

Table 4.5 Frequency distribution of respondents based on SEZ of pregnant women

| No | KEK | Frequency | Percentage (%) |
|-------|------------|-----------|----------------|
| 1 | having KEK | 9 | 22.5 |
| 2 | Normal | 31 | 77.5 |
| Total | | 40 | 100.0 |

Data Source: Research in 2022

Based on Table 4.5 above it is known that most of the respondents did not suffer Chronic Energy Deficiency as many as 31 (77.5%).

3. The incidence of anemia in pregnant women

Table 4.6

Frequency distribution of respondents based on anemia in pregnant women

| No | Anemia | Frequency | Percentage (%) |
|-------|---------------|-----------|----------------|
| 1 | Having anemia | 9 | 22.5 |
| 2 | Normal | 31 | 77.5 |
| Total | | 40 | 100.0 |

Data Source: Research in 2022

Based on Table 4.6 above, it is known that most of the respondents did not have anemia (normal), as many as 31 (77, 5%).

4. Relationship between gestational age and the incidence of anemia

Table 4.7

| UK | Anemia | | | | | |
|------------------|-----------|------|-----------|------|-----------|-----|
| | Yes | | No | | | |
| | Frequency | % | Frequency | % | Frequency | % |
| First Trimester | 0 | 0.0 | 16 | 40.0 | 16 | 100 |
| Second Trimester | 9 | 22.5 | 0 | 0.0 | 9 | 100 |
| Third Trimester | 0 | 0.0 | 15 | 37.5 | 15 | 100 |
| Total | 9 | 22.5 | 31 | 37.5 | 40 | 100 |

Data Source: Research 2022

Cross tabulation of the relationship between gestational age and the incidence of anemia

Based on Table 4.7 above, it is known that most of the respondents with the first trimester of UK did not experience anemia as many as 16 (40.0 %).

5. Relationship between Chronic Energy Deficiency in pregnant women and the incidence of anemia

Table 4.8

Cross tabulation of the relationship between gestational age and the incidence of anemia

| KEK | Anemia | | | | | |
|-------|-----------|------|-----------|------|-----------|-----|
| | Yes | | No | | | |
| | Frequency | % | Frequency | % | Frequency | % |
| Yes | 9 | 22.5 | 0 | 0.0 | 9 | 100 |
| No | 0 | 0.0 | 31 | 77.5 | 31 | 100 |
| Total | 9 | 22.5 | 31 | 77.5 | 40 | 100 |

Data Source: Research in 2022

Based on Table 4.8 above, it is known that most of the respondents did not have anemia and did suffer Chronic Energy Deficiency as many as 31 respondents (77.5%).

Results of Data

- The analysis of the relationship between gestational age and the incidence of anemia

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|------------------------------|---------------------|-------|-----------------------|
| Pearson Chi-Square | 40,000 ^a | 2,000 | .42653 |
| Likelihood Ratio | 2,000 | 2 | .009 |
| Linear-by-Linear Association | N | 1 | .924 |
| of Valid Cases | 40 | | |

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 2.03.

The results of data analysis show that there is a relationship between gestational age and the incidence of anemia. The significance level is $0.000 < = 0.005$ it means that H_0 is rejected and H_1 is accepted. There

- Analysis of the relationship between Chronic Energy Deficiency in pregnant women and the incidence of anemia

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) | Sig. Exact (2-sided) | Sig. (2-Exact sided) | Sig. (1-sided) |
|------------------------------------|---------------------|----|-----------------------|----------------------|----------------------|----------------|
| Pearson Chi-Square | 40,000 ^a | 1 | .000 | | | |
| Continuity Correction ^b | 34,471 | 1 | .000 | | | |
| Likelihood Ratio | 42,653 | 1 | .000 | | | |
| Fisher's Exact Test | | | | .000 | .000 | |
| Linear Association | 39,000 | 40 | .000 | | | |
| N of Valid Cases | - | | | | | |

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.03.

b. Computed only for a 2x2 table

The results of data analysis show that the significance level is $0.000 < = 0.005$ it means that H_0 is rejected and H_1 is accepted

, thus there is a relationship between Chronic Energy Deficiency in pregnant women and the incidence of anemia

DISCUSSION

A. Respondents of gestational age

Based on Table 4.4 above, it is known that most of the respondents with gestational age in the first trimester were 16 (40.0%).

Pregnancy is a condition in the womb of a woman there are products of conception (the meeting of the ovum and spermatozoa). Pregnancy is a natural and physiological process (Yanti, 2017).

Gestational age will have 9 months according to the international calendar, 10 months according to the external calendar, or about 40 weeks. Pregnancy is divided into three monthly periods or trimesters. The first trimester is the period from the first week to the 13th week. The second trimester is the period from the 14th to the 26th week, while the third trimester, the 27th week to 38-40 weeks of full-term pregnancy (Yanti, 2017).

According to researchers, gestational age in the first trimester is still vulnerable to problems such as hyperemesis gravidarum, bleeding, miscarriage, ectopic pregnancy, etc. In the first trimester, most of the UK population are < 20 years old, with < 20 years of age the reproductive system is not fully mature, so it is prone to miscarriage and other problems. In addition, pregnant women in the first trimester of the UK are mostly primigravida (pregnant for the first time) so that in some way it will also have an effect on the experience of pregnancy and most of them have junior high school education. Indirectly, it will have relation with the knowledge gained during pregnancy. So the researcher hopes during the first trimester pregnant women in this study should often communicate or ask or share with the local midwife / experience about pregnancy.

B. The incidence of Chronic Energy Deficiency in pregnant women

Based on Table 4.5 above, it is known that most of the respondents did not suffer KEK as many as 31 (77.5%).

Chronic Energy Deficiency is a condition in which the mother has chronic (chronic) lack of food that causes health problems for the mother. So that the needs of pregnant women for increasing nutrition are not sufficient. One of the risk factors for pregnant women is chronic energy deficiency with an upper arm circumference of less than 23.5 cm or weight gain of less than 9 kg during pregnancy (Kemenkes RI 2017).

Chronic Energy Deficiency is a condition in which the mother is malnourished due to a chronic (chronic) deficiency of one or more dietary nutrients which results in relatively or absolute health problems for the mother (Sipahutar, Aritonang and Siregar, 2018).

The factors that affect the incidence of Chronic Energy Deficiency are maternal age, parity, pregnancy distance, education, occupation, socioeconomic status, nutritional status of pregnant women, and anemia status (Siregar, 2018).

According to the researcher, most of the respondents in this study did not suffer Chronic Energy Deficiency. Pregnant women who do not experience Chronic Energy Deficiency because most of them have high school and university education, and also have multigravida status (2nd pregnancy). With a fairly good education, it will help respondents in solving problems and can choose good nutrition needed during pregnancy so that Chronic Energy Deficiency does not occur. Likewise with multigravida status, this pregnant woman already has experience in previous pregnancies, so that what happened in her previous pregnancy can be anticipated or minimized, it will not happen again in this 2nd pregnancy.

C. The incidence of anemia in pregnant women

Based on Table 4.6 above, it is known that most of the respondents did not experience anemia (normal), as many as 31 (77.5%).

Anemia is a condition in which red blood cells or erythrocytes or the mass of hemoglobin in the blood is reduced so that it cannot carry oxygen to all tissues. Anemia is a condition where the level of hemoglobin in the blood is less than the normal limit based on the age group concerned, gender and physiological conditions of the *World Health Organization* (WHO, 2020).

Anemia in pregnancy is anemia because of iron deficiency, which is a national problem because it reflects the value of socioeconomic welfare of the community and its influence is very large on the quality of human resources. According to WHO 2020, the incidence of anemia in pregnancy ranges from 20-89% by setting Hb 11g% (g/dl) as the basis. Anemia in pregnancy can mean that pregnant women have iron deficiency in the blood. In addition to anemia in pregnancy, it can be said that a mother's condition with hemoglobin (HB) levels <11 gr% in the first trimester and third trimester while in the second trimester hemoglobin levels are <10.5 gr%.

Factors - Factors that can affect the incidence of anemia are the age of the mother, gestational age, antenatal care status, the status of the event in pregnant women, education (Kristiyanasari (2015).

According to researchers, in this study most pregnant women do not experience anemia. Pregnant women who no average anemia is multigravida. With this status the mother is experienced in previous pregnancy problems so that it can help the nurses or midwives in overcoming problems that may occur during pregnancy. , age 20-35 years so in theory far with problems in pregnancy.

Whereas pregnant women who experience anemia all occur in the UK Trimester II, this anemia is physiological (normal that occurs during pregnancy) because there is a blood dilution system in

the mother's body. Anemia in pregnant women does not continue in the third trimester because it can result in bleeding in later delivery.

Analyzing the relationship of gestational age with the incidence of anemia

based on Table 4.7 above it is known that most of the respondents with the UK trimester I did not experience anemia as many as 16 (40.0 %).

Anemia in pregnancy is a mother's condition with hemoglobin levels below 11 gr% in trimester 1 and 3 or levels of the boundary value and differences with women who are not pregnant due to hemodilution, especially in trimester 2 (Cunningham, 2019). The most common anemia in pregnancy is anemia due to lack of iron, due to lack of iron intake in food, disruption of absorption, increased iron requirements, or too much iron that comes out of the body, for example in bleeding. Pregnant women need iron around 40 mg per day or 2 times the needs of non -pregnant conditions. Pregnancy age is related to the incidence of anemia (Heni, 2015).

Plasma volume begins to increase from the 6th week of gestation but does not match the red blood cell count. Usually, an increase in plasma volume reaches its peak in the 24th week of pregnancy but can also increase until the 37th week of pregnancy. At its peak, plasma volume in pregnant women is 40% higher than in nonpregnant women. The volume of plasma binds more than the volume of red blood cells. Therefore, a hemodilution state occurs with a decrease in hemoglobin levels. This situation is called physiological anemia of pregnancy (Setyadi, 2018).

There is a relationship between gestational age and the incidence of anemia. Pregnant women are very susceptible to anemia. This is due to the increased need for iron in the mother's body, along with increasing gestational age. When pregnant women experience anemia, blood does not have healthy red blood cells to transport oxygen to the mother's body tissue and also the fetus. Then there was physiological

anemia in the second trimester of UK due to hemodilution during pregnancy.

According to the researchers, most of the pregnant women with UK trimesters I and III in this study did not experience anemia. This is because apart from the nutritional status of pregnant women who are quite good, it is also due to good knowledge about the handling of anemia. In this study some of the anemia occurred in the UK Trimester II, which in theory this physiological anemia occurred in the second trimester UK. However, it must remain balanced with good handling of anemia such as continuing to consume Fe tablets, eating high iron foods, protein etc. to prevent anemia from reaching the third trimester.

E. **Analyzing the Chronic Energy Deficiency relationship in pregnant women with the incidence of anemia**

based on Table 4.8 above, it is known that most of the respondents are not anemia and not as many as 31 respondents (77.5%).

Chronic energy deficiency is a condition in which a person's nutritional status is poor due to a lack of consumption of energy sources containing macronutrients, namely nutrients that are needed a lot by the body and micronutrients that are needed a little by the body. The needs of pregnant women increase from usual and an increase in the amount of food consumption needs to be added, especially food consumption of energy sources to meet the needs of mothers and fetuses (Rahmaniar, 2013).

The Energy in the body is produced by macronutrients which are converted into energy. Energy is also needed to help the process of muscle movement in the digestive tract, so this movement helps the digestive tract to the process of absorption of iron in the intestines. A person with a BMI of less than 18 is associated with a condition of being underweight or if it is much below 18 or a LILA size of less than 23.5 cm is associated with a condition of chronic energy deficiency. This happens when the energy consumption is lower than the need, which results in part of the body's energy reserves in the form of fat being used. The breakdown of fat tissue will be followed by weight loss as much as fat

is used. In general, people who lack significant protein energy with other nutritional deficiencies such as iron deficiency will cause anemia (Heny, et al., 2017). Research conducted by Dwipayana (2018) also states that there is a significant relationship between pregnant women and upper arm circumference.

According to the researchers, most of the pregnant women in this study did not experience Chronic Energy Deficiency. Because the nutritional status has been prepared before the pregnancy program and also the level of education is quite good so that it can dig up as much information as possible about pregnancy and can apply existing solutions.

In this study, there were also pregnant women who experienced KEK, this could be due to the fact that the age of pregnant women was prone to problems, namely < 20 years. At this age a lot of nutrients are needed for fetal development.

CONCLUSION

Most of the 40 respondents with gestational age in the first trimester were 16 (40.0%).

Most of the respondents from the total 40 respondents did not experience Chronic Energy Deficiency during pregnancy, as many as 31 (77.5%).

Most of the respondents from the total 40 respondents did not experience anemia in pregnancy (normal), namely 31 (77.5%).

From 40 respondents were mostly with the first Trimester, which is 16 (40.0 %).

The results of data analysis showed that the significance level of $0.000 < = 0.05$ it means that H_0 was rejected and H_1 was accepted, thus there was a relationship between gestational age and the incidence of anemia at the Siniu Public Health Center, Parigi Moutong Regency, Central Sulawesi.

The results of data analysis showed that the significance level was $0.000 < = 0.05$ it means that H_0 was rejected and H_1 was accepted, thus there was a relationship between Chronic Energy Deficiency in pregnant women and the incidence of anemia at the Siniu Public Health Center, Parigi Moutong Regency, Central Sulawesi. It is expected that health It is expected that Health Workers will

continue to maintain health promotion / counseling for pregnant women and parents of fertilizer age regarding the prevention and management of anemia during pregnancy. Respondent it is hoped that all pregnant women and parents of fertilizer age will be more active and active in obtaining information or knowledge about how to prevent and treat anemia during pregnancy.

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