



Research

Types of Anemia in Pregnant Women in Makassar City

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INFORMASI ARTIKEL

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KATA KUNCI

Pregnant women; Anemia; Microcytic; Normocytic; Macrocytic.

KORESPONDENSI

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A B S T R A K

Background: The government has carried out efforts to overcome iron deficiency anemia by giving iron tablets to pregnant women, but these efforts have not given satisfactory results, as evidenced by the high incidence of anemia, especially in Indonesia, where the incidence of anemia in Indonesia according to WHO, in 2016 is 42%, above the average incidence of anemia worldwide, which is 40%.

Objective: This study aims to determine the prevalence of macrocytic, microcytic and normocytic anemia in pregnant women in Makassar City.

Methods : 41 pregnant women had anemia after examining the Hb of pregnant women in the third trimester using the Easy Touch brand at the public health center Tamalate, Pampang and Antang obtaining Hb <11 g/dL conducted from November 2021 to January 2022. Then the respondents were given informed consent regarding the study. Then proceed with interviews and filling out questionnaires related to the identity of the mother and the current pregnancy history of pregnant women. For analysis, 3cc of blood was taken in the clinical pathology laboratory at the Wahidin Sudiro Husodo Teaching General Hospital, Makassar. MCV < 80 fL indicates Microcytic, MCV 80-100 fL indicates Normocytic and MCV > 100 fL indicates macrocytic. The data obtained were then tabulated by descriptive analysis.

Results: Only 24 samples were identified as anemia using a haematology analyzer in the clinical pathology laboratory at the Wahidin Sudiro Husodo Teaching General Hospital, Makassar. From the complete blood count, MCV < 80 fL (Microcytic) were 13 samples (54.2%) and MCV 80-100 fL (Normocytic) were 11 samples (45.8%). It was not found for MCV values > 100 fL (Macrocytic).

Conclusions: Iron deficiency patients describe microcytic morphology, where iron deficiency plays a more significant role in anemia in pregnant women. Chronic disease can cause normocytic anemia, and anemia of chronic disease is the second cause of anemia.

INTRODUCTION

Anemia in pregnancy is called Potential Danger To Mother and Children (potentially harmful to mother and child), that's why anemia requires serious attention from all parties involved in health services at the forefront. Anemia has a significant impact on the health of the mother and fetus, it interferes with the delivery of oxygen across the placenta to the fetus and interferes with normal intrauterine growth, leading to fetal death and perinatal death. Anemia was associated

with an increase in preterm delivery (28.2%), preeclampsia (31.2%) and maternal sepsis. Many studies have shown that there is a relationship between anemia and maternal morbidity and mortality. According to WHO, worldwide anemia contributes to 20% of all maternal deaths⁽¹⁾. It is estimated that there are two billion people with anemia with the highest prevalence in Asia and Africa⁽²⁾. The World Health Organization (WHO) states that anemia is the 10 biggest health problem in the modern century, where 40% of pregnant women in the world experience anemia due to the increased need for iron that occurs during pregnancy. Meanwhile, according to WHO, the incidence of anemia in Indonesia was 42% in 2016⁽³⁾.

Based on the 2018 Basic Health Research (Riskesmas) data, the prevalence of anemia in pregnant women in Indonesia increased from 37.1% in 2013 to 48.9% in 2018. This proves that the incidence of anemia in pregnant women is increasing every year so this is a problem. health which is one of the main priorities to be addressed immediately⁽⁴⁾. Anemia can be classified based on its morphology, namely normocytic, microcytic and macrocytic anemia. Anemia in pregnancy was determined using the classification of hemoglobin (Hb) levels from WHO < 11 g / dl. The WHO classification of anemia is divided into 3, namely the degree of anemia is defined as mild anemia (Hb levels 9.0-10.9 g / dL), moderate anemia (Hb levels 7.0-8.9 g / dL), and severe anemia (levels of Hb 7.0-8.9 g / dL). Hb less than 7.0 g/dL (Fallatah et al., 2020). Meanwhile, the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention) has defined anemia in which the hemoglobin is less than 11 g/dL in the first and third trimesters, and less than 10.5 g/dL in the second trimester⁽⁵⁾. In a cohort study conducted by Judistiani et al, it was shown that anemia had a 4-fold increase in prevalence in the third trimester⁽⁶⁾.

Important causes of anemia in developing countries include micronutrient deficiencies, infectious diseases, hemoglobinopathies, and maternal blood loss. In terms of morphology, iron deficiency anemia is usually microcytic, and anemia from chronic disease is normocytic, whereas macrocytic anemia is generally associated with B12 and folate deficiency, or drug and alcohol toxicity⁽⁷⁾. Efforts to overcome iron deficiency anemia have been carried out by the government through a program of giving iron tablets to pregnant women, but these efforts have not given satisfactory results, this is evidenced by the high incidence of anemia, especially in Indonesia, where the incidence of anemia in Indonesia according to WHO in 2016 which is 42%, above the average incidence of anemia worldwide, which is 40%⁽³⁾.

Based on information from the Makassar City Office, there is no data that specifically shows the incidence of anemia, only the incidence of anemia in pregnant women. This is the background for researchers to determine the prevalence of microcytic, macrocytic and normocytic anemia. This aims to determine the cause of anemia in pregnant women so that it is hoped that the incidence of anemia in pregnant women will decrease. Based on data from the Makassar City Health Office, there were 6002 cases of anemia from 31,021 pregnant women who carried out pregnancy checks in all Makassar City Health Centers in 2020 where, the number of anemic pregnant women in Trimester 3 was 107 pregnant women in 4 Puskesmas in Makassar City who had The highest incidence of anemia in 2020 was in the Tamalate Health Center with 19 cases, the Makkasau Health Center with 20 cases, the Antang Health Center with 31 cases and the Pampang Health Center 37 cases⁽⁸⁾. With the above problems, the researchers intend to conduct a study with the title "Prevalence of Microcytic, Macrocytic and Normocytic Anemia in Pregnant Women in Makassar City".

METHOD

The research method used is analytical descriptive method to determine the prevalence of macrocytic, microcytic and normocytic anemia in pregnant women in Makassar city. The population was all third trimester pregnant women with anemia (Hb < 11 g%) who checked themselves in 3 Puskesmas in Makassar City which had the highest incidence of

anemia in 2020, namely in Tamalate Health Center 19 cases, Antang Health Center 31 cases and Antang Health Center 31 cases. Pampang Health Center 37 cases. Data collection techniques used are observation, interviews and literature study. Samples were taken by purposive sampling technique based on certain criteria. This study lasted for 3 months with: inclusion criteria Third trimester pregnant women with anemia (Hb < 11 g%) and Willing to participate in the study.

RESULT AND DISCUSSION

Table 1. Description of Age in Third Trimester Pregnant Women

Age	n	%
< 20 years	5	20.8
20-35 years old	8	33.3
>35 years old	11	45.8
Total	24	100

Based on table 1, it is known that most of the respondents are aged over 35 years with a total of 11 people (45.8%), age 20-35 years as many as 8 people (33.3%) while the least are respondents with age under 20 years namely 5 people (20.8%).

Table 2. Description of Parity in Third Trimester Pregnant Women

Parity	n	%
Primipara	15	62.5
Multipara	9	37.5
Total	24	100

Based on table 2, there were 15 (62.5%) pregnant women with primiparous parity and 9 (37.5%) pregnant women with multiparity.

Table 3. Description of Hb Levels in Third Trimester Pregnant Women

Hb Level	n	%
Mild anemia: 10.9-9.0 d/L	16	66.7
Moderate anemia: 8.9-7.0 g/dl	8	33.3
Total	24	100

Table 3 shows that pregnant women with mild anemia were obtained as many as 16 people (66.7%) while pregnant women with moderate anemia were obtained as many as 8 people (33.3%).

Table 4. Description of Types of Anemia in Third Trimester Pregnant Women

Types of Anemia	n	%
< 80 fL (Microcytic)	13	54.2
80-100 fL (Normosotic)	11	45.8
Total	24	100

Anemia in pregnant women based on the results of this study can be seen from table 4 that as many as 13 people (54.2%) with the type of microcytic anemia and 11 people (45.8%) with the type of normosotic anemia.

Pregnancy is a physiological process so that a mother needs to plan her pregnancy by considering various factors that can affect the health condition of the mother and fetus, including the age factor. Based on table 1, it was found that most anemic pregnant women aged over 35 years, namely 45.8% and the age of anemic pregnant women under 20 years was also obtained as much as 20.8%. This study is in line with the results of research conducted by plora novita on pregnant women in the city of Medan in 2019 showing the majority of anemic pregnant women have a high risk age of less than 20 years and more than 35 years of 61.1% ⁽⁸⁾.

In conditions that require a lot of iron, pregnancies that occur in very young or very old women will be susceptible to anemia. The younger and older the age of a pregnant mother will affect the nutritional needs needed. Lack of fulfillment of nutrients during pregnancy, especially at the age of <20 years and >35 years will increase the risk of anemia. A pregnant woman at risky age, which is <20 years, there will be food competition between the fetus and the mother who is still in the process of growth. Pregnant women aged <20 years tend not to be ready to support the need for additional red blood cells for the fetus, while the need for iron in the body is quite a lot for the growing period of the fetus and pregnant women ^{>(9)}. Mothers who become pregnant at the age of 35 years, have entered the early degenerative phase, so that body functions are not optimal and experience various health problems. Pregnancy under the age of 20 and above 35 years is a pregnancy that has a risk of anemia.

Table 2 in the results of this study shows that anemia in pregnant women is mostly found in pregnant women with primiparous parity as much as 62.5% and pregnant women with anemia with multipara parity also obtained as much as 37.5%. Anemia in pregnancy in this study was mostly experienced by mothers with primiparous pregnancies or mothers who had their first pregnancies. The first pregnancy and delivery increase the health risks that arise because the mother has never had a previous pregnancy ^(8,10). Mothers who are pregnant for the first time tend to still adapt to their first pregnancy, so that anemia in pregnant women is more common in their first pregnancy. The results of this study are in line with the research of Desi et al (2015) of 168 primiparous pregnant women who checked their pregnancy at the Lampung Health Center, there were 108 (64.3%) primiparous mothers who experienced anemia and 60 (35.7%) primiparous mothers did not experience anemia ⁽¹¹⁾. In addition to primiparous pregnancy, anemia can occur in women with high parity related to the mother's biological condition and iron intake. Parity is more at risk when associated with a short gestational interval ⁽¹⁰⁾.

The results of this study can be seen in table 3 that pregnant women with mild anemia obtained as many as 16 people (66.7%) while pregnant women with moderate anemia obtained as many as 8 people (33.3%). The results of this study are in line with Melku et. Al (2014) where 64% of pregnant women have mild anemia, 30% moderate anemia and 6% severe anemia. As described above, in addition to iron deficiency, chronic disease is also a cause of anemia in pregnant women. Lack of consumption of animal foods and vegetables is one of the causes of anemia in this study. Iron is needed to help the body produce fresh red blood cells that are rich in oxygen and nutrients. If optimal conditions and good consumption but pregnant women still experience anemia, it is necessary to look for other causes of the problem, whether absorption, consumption of drugs, alcohol or disease suffered by the mother that causes anemia in pregnant women. In this study, most of the third trimester pregnant women experienced mild anemia where the Hb level was 10.9-9.0 g/dL ^(12,13).

The main cause of iron deficiency is not eating iron-rich foods, such as animal protein since before and during pregnancy. However, getting iron intake from food alone will not be enough to meet the needs of the mother throughout pregnancy. In fact, during pregnancy, the blood volume will increase by up to 50 percent to be able to meet the needs of yourself and the growing fetus. That's why the body's daily iron needs must also be met through iron supplements, in order to avoid the condition of a shortage of red blood cells ^(14,15). In addition to iron deficiency, there are also 3 other types

of anemia that may be suffered by pregnant women. This type of anemia is classified based on the size of the cells and the hemoglobin they contain, namely: 1. Macrocytic, 2. Microcytic and 3. Normocytic. In the results of this study, the types of anemia experienced by pregnant women based on the results of complete blood tests in laboratory tests were microcytic and normocytic anemia types. Table 4 shows that the distribution of the two types of anemia in pregnant women is almost the same, namely the microcytic type obtained as much as 54.2% and the normocytic type 45.% or only a difference of 2 people from the total 24 respondents.

The results of this study are in line with Kiran Nursing et.al (2016) who examined the prevalence and pattern of anemia in the 2nd and 3rd trimesters in India where 51% had hypochromic microcytic anemia, 32% normochromic normochromic and 4% macrocytic anemia. This is in contrast to the research of Alemayehu, et al (2016) which examined the prevalence, severity and determinants of anemia in pregnant displaced women in Sudan, the most suffered by respondents in this study was normochromic normocytic anemia, with a percentage of 56.2%. followed by microcytic hypochromic anemia with a percentage of 42.3% and 1.5% macrocytic anemia ⁽⁹⁾.

Microcytic morphological features are common in patients with iron deficiency. The data obtained in this study are in accordance with the theory which states that iron deficiency plays a greater role in the occurrence of anemia in pregnant women than hypervolemia. The morphological features of normochromic normocytic erythrocytes found in 11 pregnant women (45.8%) in this study were very common in pregnant women. This can be caused by hemodilution which normally occurs during pregnancy, so this is a physiological decrease in Hb levels. Although morphologically they are normocytic, this does not necessarily guarantee that these 11 pregnant women are free from iron deficiency, because during pregnancy the morphological changes of erythrocytes to microcytic hypochromic are often not prominent and are not found. However, Serum ferritin levels generally remain low during pregnancy. Further examination is needed, namely serum ferritin to ensure a person is free from iron deficiency anemia.

The causes of normocytic anemia can be caused by hemolytic anemia, anemia due to acute kidney failure, post-bleeding anemia, anemia of chronic disease, and sideroblastic anemia. During pregnancy, the state of the body undergoes major changes so that additional tablet supplementation is needed to form hemoglobin. Supplements that can be given during pregnancy for example iron supplements which are a government program in which 90 tablets of Fe are given to pregnant women because this iron can help the process of erythropoiesis in the body. In addition, giving blood-boosting drugs during pregnancy can reduce anemia. But apart from giving blood-boosting supplements, the existence of counseling such as counseling about iron-rich foods consumed during pregnancy has a great influence or impact on the occurrence of anemia. In addition, further laboratory tests such as ferritin, serum iron and other supporting laboratories are also very important to diagnose the cause of anemia in pregnant women⁽¹¹⁾.

CONCLUSIONS

Pregnant women who did an examination at the Tamalate, Pampang and Antang Puskesmas, most of the respondents were over 35 years old with a total of 11 people (45.8%), age 20-35 years as many as 8 people (33.3%) while at least are respondents under the age of 20 years, namely 5 people (20.8%). A total of 15 people (62.5%) pregnant women with primiparous parity and 9 people (37.5%) pregnant women who were multiparous..The classification of anemia in pregnant women with mild anemia was obtained as many as 16 people (66.7%) while pregnant women with moderate anemia were obtained as many as 8 people (33.3%), in this study no severe anemia was found.For types of anemiathere were 13 people (54.2%) with the type of microcytic anemia and 11 people (45.8%) with the type of normosotic anemia. Microcytic morphological features are commonly found in patients with iron deficiency where iron deficiency plays a greater role in

the occurrence of anemia in pregnant women than hypervolemia. The morphological features of normochromic normocytic erythrocytes found in 11 pregnant women (45.8%) in this study were very common in pregnant women. This can be caused by hemodilution which normally occurs during pregnancy, so this is a physiological decrease in Hb levels. Although morphologically they are normocytic, this does not necessarily guarantee that the 11 pregnant women are free from iron deficiency. because in pregnancy the morphological changes of erythrocytes to hypochromic microcytic is often not prominent and not found. However, serum ferritin levels generally remain low during pregnancy. Further examination is needed, namely serum ferritin to ensure a person is free from iron deficiency anemia.

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