

Relationship Between Characteristics of Pregnant Women and Incidence of Anemia at I Melaya Health Center, Bali Province

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Abstract

Introduction: Anemia is a condition of low levels of red blood cells (hemoglobin) in the body below normal values. Pregnant women are considered to have anemia if their hemoglobin is less than 11 gr/dl. Data retrieved from the Bali Health Department in 2022 shows obstetric complications due to anemia accounted for 23% of total pregnancies, while data retrieved from the Jembrana Health Department in 2022 shows that 445 out of 3965 pregnant women experienced anemia. This study aims to determine the relationship between the characteristics of pregnant women and the incidence of anemia in the working area of I Melaya Health Center.

Methods: This descriptive study uses a cross-sectional design based on secondary data with 132 samples.

Results: This study shows that the proportion of cases of anemia in pregnant women at I Melaya Health Center in 2022 was 59 cases (44.7%). Most of the anemia occurs in pregnant women aged <20 years, in the third trimester, with grandemultigravida parity and at obese nutritional status.

Conclusion: This study shows a significant relationship between maternal age, gestational age, the number of parities, and the incidence of anemia in pregnant women. However, there is an insignificant relationship between maternal nutritional status and the incidence of anemia in pregnant women at I Melaya Health Center.

key words: Anemia, pregnant women, risk factor

Hubungan antara Karakteristik Ibu Hamil dan Kejadian Anemia di Puskesmas I Melaya Provinsi Bali

Abstrak

Pendahuluan: Anemia merupakan kondisi rendahnya kadar hemoglobin atau sel darah merah dalam tubuh di bawah nilai normal. Untuk kehamilan, dapat dikatakan seorang ibu mengalami anemia jika hemoglobin kurang dari 11 gr/dl. Berdasarkan data profil kesehatan Provinsi Bali tahun 2022, komplikasi kebidanan akibat anemia mencakup 23% dari total kehamilan dan data profil kesehatan Kabupaten Jembrana tahun 2022 menunjukkan 445 dari 3965 ibu hamil mengalami anemia. Penelitian ini bertujuan untuk mengetahui hubungan antara karakteristik ibu hamil dan kejadian anemia di wilayah kerja UPTD Puskesmas I Melaya

Metode: Penelitian ini merupakan penelitian deskriptif menggunakan design *cross sectional* berdasarkan data sekunder dengan sampel yang digunakan sebanyak 132 sampel.

Hasil: Penelitian ini menunjukkan proporsi kejadian anemia pada ibu hamil di UPTD Puskesmas I Melaya tahun 2022 adalah sebanyak 59 kasus (44,7%). Mayoritas anemia terjadi pada ibu hamil usia <20 tahun, usia kehamilan trimester III, jumlah anak grandemultigravida, dan status gizi obese.

Kesimpulan: Hasil penelitian menunjukkan bahwa terdapat hubungan yang signifikan antara usia ibu, usia kehamilan, dan jumlah paritas dan kejadian anemia pada ibu hamil. Namun, terdapat hubungan yang tidak signifikan antara status gizi ibu dan kejadian anemia pada ibu hamil di UPTD Puskesmas I Melaya.

Kata kunci : Anemia, ibu hamil, faktor risiko.

Introduction

Pregnancy is the period when a woman carries a fetus or baby in her body. In this early phase of life, many things can affect the health of the mother and fetus. One of the most common problems in developing countries is anemia. Anemia is a condition of low levels of red blood cells (hemoglobin) in the body below normal values. Pregnant women are considered to have anemia if their hemoglobin is less than 11 gr/dl. Data retrieved from WHO in 2023 shows that the prevalence of anemia in pregnancy globally reached 37%.¹ Meanwhile, the latest Riskesdas results in 2018 stated that anemia in pregnant women in Indonesia increased from 37.1% in 2013 to 48.9% in 2018.² In Asia, anemia (regardless of severity) is the second leading cause of maternal death and accounts for 12.8% of maternal deaths after deaths due to postpartum hemorrhage.³

The maternal mortality rate (MMR) is one of the health level indicators. MMR is the ratio of maternal deaths during pregnancy, childbirth, and the postpartum period but not due to other causes such as accidents or incidents per 100,000 live births. Anemia is an indirect cause of death in pregnant women since it can increase the risk of bleeding. Anemia in pregnancy is called a “potential danger to mother and child”; therefore, full attention is needed from various parties involved in front-line health services.⁴

Symptoms of anemia can include fatigue, weakness, palpitations, low blood pressure, shortness of breath, looking pale, headaches, changes in stool color, chest pain, heart attacks, fast heartbeat, fainting, and enlarged spleen. Most of the prevalence of anemia is higher in pregnant women because, during pregnancy, there is an increase in blood volume of 50% than usual. Therefore, more iron is needed to produce more hemoglobin for additional blood.⁵ In pregnant women, hemoglobin (Hb) levels

will be lower physiologically compared to non-pregnant women, so pregnant women are more susceptible to anemia. This is because pregnant women will experience significant anatomical and physiological changes to maintain and accommodate the development of the fetus.^{5,6}

There are many factors that influence the high incidence of anemia in pregnant women. Regarding maternal age, the body organs of women under 20 years are still in the process of maturation and development, one of which is the reproductive system. The body still needs a large supply of various nutrients to fulfill reproductive development. If pregnancy occurs at this age, the need for nutrients will increase compared to women who are pregnant at the age of over 20 years. If the body does not fulfill the nutrients it needs, it will certainly result in anemia. Pregnant women aged over 35 years are also at risk of anemia because iron reserves and the body's immune system have begun to decline.⁷ The greater the gestational age, the greater the risk of the mother experiencing anemia due to hemodilution or blood thinning during pregnancy, which will reach a maximum of 5-8 months. This hemodilution factor can cause the mother's blood hemoglobin level to decrease to 10 gr/dl.⁸ Parity >3 is a predominant factor. The risk of anemia occurs because frequent pregnancies can deplete the mother's nutritional reserves in the body. In addition, the habit of consuming foods that do not contain animal protein results in a low intake of important nutrients for the mother and fetus. Diversity in food consumption plays an important role in helping increase Fe absorption in the body.⁹

The profile data retrieved from the Bali Health Department in 2022 show that obstetric complications due to anemia accounted for 23% of pregnancies. Meanwhile, the profile data retrieved from the Jembrana Health Department in 2022 shows that 445 (11.2%) of 3965 pregnant

women experienced anemia.^{10,11} This figure is quite high to become a material for joint solutions in the health sector. Based on these problems, researchers want to examine the factors that influence the incidence of anemia in the working area of the I Melaya health center, Jembrana Regency.

Methods

This descriptive study uses a cross-sectional design conducted at I Melaya Health Centre, Jembrana Regency, Bali Province. The data was obtained by analyzing a cohort of pregnant women and classifying factors associated with the incidence of anemia. The population of this study was all pregnant women who visited as “KI” to the KIA clinic at I Melaya Health Center from January to December 2022. Sample selection using the random sampling method resulted in 132 samples with exclusion criteria, which was incomplete data. After the data was recorded in Excel format, it was processed using SPSS ver. 22 with univariate statistical tests and bivariate chi-square tests to determine the relationship between characteristics of pregnant women and the incidence of anemia.

Results

The data obtained shows that 59 respondents (44.7%) experienced anemia, and 73 respondents (55.3%) did not. Most of the pregnant women visiting the KIA clinic at I Melaya Health Center were 103 aged 20-35 years (103 respondents or 78%), in the second trimester of pregnancy (56 respondents or 42.4%), with multigravida parity (77 respondents or 58.3%), and in good nutritional status (104 respondents (78.8%).

Of the 132 respondents, the respondents who experienced anemia at risk were 13 respondents (86.7%) aged < 20 years and nine respondents (64.3%) aged > 35 years. In addition, 15 respondents (57.7%) were in the

third trimester of pregnancy five respondents (100%) were multigravida parity, and two respondents (66.7%) were at the obese nutritional status.

Table 1 Frequency of Anemia in Pregnant Women at I Melaya Health Center

Hemoglobin level	number	Percentage (%)
Anemia	59	44,7
non-Anemia	73	55,3
Total	132	100

Interpretation: 44.7% of pregnant women experience anemia

Table 2 Characteristics of Pregnant Women with Anemia at I Melaya Health Centre

Variable	number	Percentage (%)
Maternal (year)		
<20	15	11.4
20-35	103	78
>35	14	10.6
Total	132	100
Gestational age (week)		
0-12	50	37.9
13-24	56	42.4
>24	26	19.7
Total	132	100
Parity		
Primigravida	50	37.9
Multigravida	77	58.3
Grandemultigravida	5	3.8
Total	132	100
Nutritional status		
low	25	18.9
Normal	104	78.8
Obese	3	2.3
Total	132	100

Interpretation: Most of pregnant women who visited the KIA clinic at I Melaya Health Center were aged 20-35 years, in the second trimester of pregnancy, with multigravida parity, and at normal nutritional status.

Table 3 Relationship between Characteristics of Pregnant Women and the Incidence of Anemia at I Melaya Health Center

Characteristics	Hemoglobin level				Total	P value
	Anemia	Non-Anemia				
Maternal Age (year)	N	%	N	%	N	%
<20	13	86.7	2	13.3	15	100
20-35	37	35.9	66	64.1	103	100
>35	9	64.3	5	35.7	14	100
Total	59	44.7	73	55.3	132	100
Gestational age (week)						
0-12	12	24	38	76	50	100
13-24	32	57.1	24	42.9	56	100
>24	15	57.7	11	42.3	26	100
Total	59	44.7	73	55.3	132	100
Parity						
Primigravida	23	46	27	54	50	100
Multigravida	31	40.3	46	59.7	77	100
Grandemultigravida	5	100	0	0.0	5	100
Total	59	44.7	73	55.3	132	100
Nutritional Status						
Low	15	60	10	40	25	100
Normal	42	40.4	62	59.6	104	100
Obese	2	66.7	1	33.3	3	100
Total	59	44.7	73	55.3	132	100

Interpretation: Anemia occurs mostly in pregnant women aged <20 years, in the third trimester, with grandemultigravida parity, and at the obese nutritional status

Discussion

The results of this study show that 59 respondents (44.7%) were found to have anemia, while 73 respondents (55.3%) did not experience anemia. This data contradicts to previous research by Syantih at the South Kuta Health Center, which found that more pregnant women were anemic (54.8%) than non-anemic (45.2%).⁶

Maternal health during pregnancy is an important factor in optimal fetal growth. Therefore, it is very important to pay attention to the nutrition of pregnant women for the needs of the fetus growth. The most common disorder indicating inadequate nutritional intake during pregnancy is anemia. Anemia

in pregnancy may cause some problems including premature birth, low birth weight, IUGR (intrauterine growth restriction), fetal death, and postnatal death.¹²

Pregnant women with anemia have a 3.5 times increased risk of death compared to pregnant women without anemia. One component of health services for pregnant women to prevent anemia is the provision of 90 iron tablets. About 95% of anemia is caused by iron deficiency. Other risk factors that play a role are maternal age, closely spaced pregnancies, pregnancy with more than one child, excessive nausea and vomiting, experiencing heavy menstruation before pregnancy, teenage pregnancy or pregnancy at age >35 years, socio-economic status,

and lack of education.¹³ In addition, older gestational age, close pregnancy spacing, the habit of ANC visits to Obstetrics and Gynecology specialists, and the nutritional status of pregnant women can influence the incidence of anemia in pregnancy.

Relationship between Maternal Age and the Incidence of Anemia

Table 3 shows the characteristics of the incidence of anemia in pregnant women based on maternal age, where there were 13 respondents (86.7%) aged <20 years, 37 respondents (35.9%) aged 20-35 years, and nine respondents (64.3%) aged >35 years. The chi-square analysis with a P-value of 0.000 shows a relationship between the age of pregnant women and the incidence of anemia at I Melaya Health Center. The younger and older a mother is to get pregnant, the higher the risk of developing anemia. The results of this research are in accordance with research conducted by Mardiah et al. (2020), which shows a significant relationship between age and the incidence of anemia in pregnant women in the working area of Sei Bejangkar Health Center, Batubara Regency. This study shows 15 cases (68.2%) of anemia occurring in the at-risk group (age < 20 years and > 35 years) and six cases (17.6%) of anemia occurring in the non-risk group.¹⁴ In addition, this research was in line with Sjahriani et al. (2016), stating that 22 pregnant women (44.9%) aged <20 years and >35 years experienced anemia at the Bandar Jaya Lahat Health Center, Lahat Regency.⁸ The age factor greatly influences a person's physiology, including the pregnancy process. The iron intake is divided between her own physiological growth and that of the fetus, while teenagers (pregnant women aged < 20 years) tend to pay less attention to their nutritional intake. On the other hand, mothers aged >35 years tend to experience anemia due to reduced iron reserves in the body,

and the body's physiological function is no longer optimal. The condition of having been pregnant and the busy activities to support the family's economy make this age group tend to ignore health status.^{6,15}

Relationship between gestational age and the incidence of anemia

Table 3 shows the characteristics of anemia in the first trimester experienced by 12 respondents (24%), the second trimester by 32 respondents (57.1%), and the third trimester by 15 respondents (57.7%). The chi-square statistical test obtained a P-value of 0.001 (<0.005), indicating a significant relationship between gestational age and the incidence of anemia in pregnant women at I Melaya Health Center. Moreover, the older the gestational age, the greater the likelihood of experiencing anemia. During pregnancy, the mother's hemoglobin levels decrease progressively from six weeks to around 35 weeks due to physiological processes. This tends to cause the incidence of anemia to increase as the trimester increases considering that the need for iron and other nutrients will also increase with increasing gestational age. This is in line with Fitri (2023), showing the incidence of anemia in pregnancy was mostly found in the second trimester (21 cases or 45.7%) and the third trimester (20 cases or 43.5%).¹⁶ This research is also strengthened by research by Taner et al. (2015), stating that gestational age greatly influences the incidence of anemia in pregnant women in the second trimester by 1.6 times greater than in the first trimester, while the third trimester has a risk of anemia 2.45 times greater than in the first trimester.¹⁷

Relationship between number of parities and incidence of anemia

Table 3 shows that there were 23 (46%) cases of primigravida with anemia, 31 (40.3%) cases of multigravida with anemia, and

five (100%) cases of grandemultigravida with anemia. The chi-square statistical test results obtained a P-value of 0.033 (<0.05), indicating a relationship between the number of children and the incidence of anemia in pregnant women at I Melaya Health Center. This is in accordance with Deprika (2017), stating there was a significant relationship between the number of parities and the incidence of anemia in pregnant women, namely 16 (38.1%) cases in multigravidas and 12 (33.3%) cases in primigravidas.¹⁸ Furthermore, this research is in line with research conducted in Pakistan, showing that anemia is related to parity. The study found that with parity > 6 , pregnant women experienced mild to moderate anemia.¹⁹ Parity > 3 times tends to have a higher risk of anemia because repeated pregnancies will cause damage to the blood vessels and uterine walls, which will usually affect the supply of nutrients to the fetus. In addition, parity or frequent pregnancies will result in a decrease in iron reserves in the mother's body and increase the risk of bleeding during pregnancy and childbirth. Mothers with more than one child tend not to be enthusiastic about their next pregnancy because they think their physical condition is still good and they can still carry out daily activities.²⁰

Relationship between nutritional status and the incidence of anemia

Table 3 shows 15 cases (60%) of pregnant women with anemia had poor nutritional status, 42 (40.4%) cases of pregnant women with nutritional anemia good, and two cases (66.7%) of pregnant women with anemia at the obese nutritional status. The chi-square statistical test shows a P-value of 0.154, indicating no relationship between nutritional status and the incidence of anemia in pregnant women at I Melaya Health Center. This research contradicts research by Riswanti (2022), stating that there is a relationship

between nutritional status, namely KEK, and the incidence of anemia in pregnant women. The study showed that seven (23.3%) cases of anemic pregnant women had poor nutritional status.²¹ Anemia often occurs in pregnant women who have poor nutritional status and experience chronic energy deficiency due to insufficient food intake and high protein and energy requirements during pregnancy. Pregnant women who experience chronic energy deficiency have LILA size < 23.5 cm compared to pregnant women who have sufficient energy needs and good nutritional status. Some important nutrients in pregnancy include iron, folic acid, and vitamin B12.^{21,22} This research also contradicts research by Tanziha et al. (2016), stating that pregnant women with CED status have a risk of anemia 1.975 times compared to pregnant women with normal nutritional status.²³ The differences in the results of this study probably occurred because most pregnant women in the I Melaya Health Center area had good nutritional status and the difference in the number of samples used.

Conclusion

This study shows a significant relationship between maternal age, gestational age, and parity and the incidence of anemia in pregnant women. Meanwhile, there is an insignificant relationship between maternal nutritional status and the incidence of anemia in pregnant women.

Suggestion

Further and in-depth research on the relationship between risk factors and anemia in pregnant women should be conducted at I Melaya Health Center. The results of this research can certainly be a reference for developing broader research, for example, by adding factors related to anemia in pregnant women, such as pregnancy spacing, patient

occupation, consumption of Fe tablets, ANC habits, and other variables.

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