

Anemia in preconception women in Sidemen Sub District Karangasem Regency, Bali-Indonesia

Abstract

Introduction. Iron deficiency anemia is still an important health issue related to its high prevalence and side effects, especially in pregnant women. In general, the incidence of anemia in pregnant women in Bali amounted to 46.2%. Currently, studies that focus on nutritional status including iron during preconception in Bali are still insufficient. This research aims to know the description of anemia in the preconception period. **Methods.** Cross-sectional studies were conducted on 163 preconception women. The sample is selected by the village cluster method. Each interview was conducted to obtain information about sociodemographic, anthropometric examination and hemoglobin level examination to measure the incidence of anemia. The data of the research were analyzed descriptively to get the description of the incidence of anemia and analytic analysis to obtain factors related to anemia through chi-square test. **Results.** The incidence of anemia in preconception women was 62.35%. The incidence of anemia in preconception women was more common in women with children <5 years of age, women with preconception \geq average (31.84 years), low education level, unemployed preconception women, more than two parity, chronic energy deficiency status, and body mass index with the category of obesity. However, only differences in parity variables were statistically significant ($p=0.012$). **Conclusions.** The incidence of anemia in preconception women in high category and parity is associated with a high incidence of anemia. It is recommended that the number of children is limited to decrease the incidence of anemia.

Keywords: anemia, preconception, pregnancy, parity

Introduction

Iron deficiency anemia is still an important health issue related to its high prevalence and side effects, especially in pregnant women^(1,2). Studies have reported that anemia in pregnant women can have an adverse effect on pregnancy outcomes such as low birth weight, stillbirth, preterm birth, pregnancy bleeding, postpartum bleeding, even leading to maternal death. Based on the results of Indonesian Basic Health Research in 2013, the prevalence of anemia in pregnant women in Indonesia was reported at 37.1%. Prevention efforts through the provision of Fe tablets in all pregnant women during pregnancy have not met expectations, where the coverage of iron tablets in Indonesia in 2012 is only 85%. Slightly higher than the coverage of iron tablets in pregnant women in 2011 that amounted to 83.3%⁽³⁾.

The incidence of anemia in pregnant women in Bali varies depending on the method and area of the study carried out. In general, the incidence of anemia in pregnant women in Bali amounted to 46.2%⁽⁴⁾. Among the districts in Bali Province, the incidence rate of anemia in pregnant women was highest in Karangasem regency which was 60.5% and chronic energy deficiency (CED) at 19%⁽⁵⁾. Furthermore, Karangasem regency also keeps some nutrition problems at most compared to other districts in Bali Province such as

malnutrition in under-fives children and CED incidence in pregnant women.

Sidemen sub-district as one of the areas in Karangasem regency also has the same problem. The incidence of anemia in pregnant women amounted to 60.5%, CED of 21%, underweight nutrition of 8.1%, malnutrition 1.2%, and overnutrition of 1.7%. The sidemen area also stores stunting problems in under three years children of 15.7%. Although Sidemen Public Health Center has implemented mother and children health program and family nutrition improvement through giving 90 Fe tablets to pregnant women and giving of supplementary feeding in under-fives children with undernutrition and malnutrition, the incidence of anemia and other nutritional problems is still high. This is presumably because anemia and/or nutritional deficiencies have occurred in the preconception period^(4,5).

The preconception period is measured at one year after delivery, which at this time greatly reflects nutritional status of infertile women⁽⁶⁾. Meanwhile, the period of preconception is the period of fertile start until the early stage of pregnancy⁽⁷⁾. Currently, studies that focus on nutritional status including iron during preconception in Bali are still insufficient. Based on the above, this research is aimed to know the occurrence of anemia in women during the preconception period.

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Methods

An observational survey study was conducted on 163 preconception women who were women with a 1-year postpartum period. Preconception women in the working area of Public Health Center of Karangasem Regency who has met the exclusion and inclusion criteria were selected by village cluster method. Demographic characteristic data were collected by interview method, and anthropometric data were obtained through the measurement of body weight, height, and upper arm circumference. Hemoglobin levels were obtained by using the HB-Test quick analyzer. Data analysis was achieved using descriptive and analytic analysis, including chi-square test where p was significant at <5 .

Results

Preconception female characteristics data found that the mean age of the last child was 5.09 ± 3.61 , maternal age was 31.46 ± 7.39 , parity was 1.5 ± 0.9 , height was 155.39 ± 5.69 , weight body was 55.2 ± 9.68 , arm circumference was 26.21 ± 2.57 , the body mass index (BMI) was 35.52 ± 5.88 . Based on the distribution of female characteristics of preconception it is found that most have ≥ 31 years of age, low education level, employed, parity ≤ 2 , and BMI in the overweight category. The details are shown in Table 1.

Table 2 shows that the mean preconception hemoglobin level of women was 11.49 ± 1.39 . Based on the status of anemia it was found that the incidence of anemia in preconception women was 61.35%.

The incidence of anemia in preconception women tends to be greater in children <5 years (66.2%), mother above average (67.5%), low education (71.4%), unemployed (62,7%), number of children more than 2 (88.2%), and with CED status (80%). Based on the chi-square test, the status of anemia is only related to parity as shown in Table 3.

The same incidence was seen greater in mothers with children <5 years of age, women with preconception \geq average (31.84 years), low education level, unemployed preconception women, more than two parity, CED status and BMI category obesity. However, only the difference in parity variables expressed was statistically significant with $p=0.012$. More is shown in Table 3.

Discussion

The incidence of anemia in preconception women was 62.35%. This result is certainly very large when compared with the incidence rate of preconception anemia in China that is as much as 20% of women preconception period reported as anemia, 14% have low iron reserves, and 3% have iron deficiency⁽⁸⁾. When associated with daily food intake, most pregnant women

Table 1 Frequency of distribution of preconception women characteristic

Variables	Σ	%
Child ages (years)		
<5	77	56.61
≥ 5	59	43.39
Mother ages		
<mean	80	49.08
\geq mean	83	50.92
Education		
High	64	39.26
Low	99	60.74
Occupation		
Employed	102	62.58
Unemployed	61	37.42
Parity		
≤ 2	146	89.57
> 2	17	10.43
Body Mass Index		
Obesity	17	10.83
Overweight	140	89.17

Table 2 Incidence of anemia in preconception women

Variables	Mean	Σ	%
Haemoglobin Level	11.49±1.39		
Anemic Status			
Anemia		100	61.35
Not anemia		63	38.65

Table 3 Incidence of anemia based on preconception women characteristic

Variable	Anemic Incident				p
	Yes		No		
	n	%	n	%	
Child ages (years)					
<5	51	66.2	26	33.8	0.107
≥5	32	54.2	27	45.8	
Mother ages					
<mean	43	54.4	36	45.6	0.062
≥mean	56	67.5	27	32.5	
Education					
High	38	49.4	39	50.6	0.533
Low	60	71.4	24	28.6	
Occupation					
Employed	61	59.8	41	40.2	0.423
Unemployed	37	62.7	22	37.3	
Parity					
≤2	85	58.2	61	41.8	0.012*
>2	15	88.2	2	11.8	
Arm Circumference					
CED**	12	80	3	20	0.098
Non CED**	88	59.5	60	40.5	
Body Mass Index					
Obesitas	13	76.5	4	23.5	0.140
Overweight	83	59.7	56	40.3	

*Statistically significant at $p < 0.05$; **CED = chronic energy deficiency

have nutritional intakes that do not meet the needs. Intake proteins are only fulfilled less than 70%, micronutrient intake substances such as Fe, Ca, Zn, vitamin A, and vitamin C are met only less than 77%⁽⁹⁾. In this study, it was found that women's preconception food intake contained low iron and another nutrient intake was also low.

Iron deficiency in foods is highest among the weaker populations such as infants, children, and pregnant women. The risk of developing iron deficiency is particularly severe in pregnant women with low socioeconomic and ethnic minorities, where iron requirements are higher than those absorbed from daily diets. If a woman doesn't have enough iron, the body will meet

the needs of fetal iron through an iron reserve. The need for fetal growth causes the mother to have anemia if the iron reserves are not adequate early in pregnancy. In developing countries where malaria and worms are endemic, and this is a major cause of anemia compared with iron deficiency^(10,11).

Government policies recommend supplementation of iron tablets in pregnant women, but their coverage and complications are varied. Strong evidence that iron deficiency in the first trimester of pregnancy significantly interferes with fetal growth and generally damages pregnancy outcomes compared with the incidence of anemia in trimesters 2 or 3. Iron supplementation should be given early in pregnancy, or during periods of preconception to decrease the incidence, preterm birth and administration iron in mid-pregnancy are not able to reduce the risk of preterm birth⁽¹⁰⁻¹²⁾.

Currently, the iron tablets program is only focused on pregnant women and adolescent groups, but in the preconception women group, there is no iron tablet administration program. On the other hand, the preconception group of women is a group that is likely to have a pregnancy in a relatively quick time. So prepare the reserves of nutrients, especially iron so that once entering pregnant time, body iron reserves will be sufficient.

The incidence of anemia is more prevalent in preconception group women with parity >2 compared than incidence of anemia in preconception group women with parity ≤2. This difference was statistically significant with $p < 0.05$. In women with parity, more than two generally have low iron reserves. This condition becomes heavier if the distance of births of his son to another son is also short. In this study, we found that the mean distance of children is 5.09

years. This distance is the ideal distance for the next pregnancy. The possibility of anemia experienced in pregnant women with parity above two is due to nutritional intake, especially low iron in preconception women with parity of more than 2.

The study of pregnant mother intakes and birth outcome usually measures the output for each nutrient separately because of the high correlation between most nutritional intakes and the study leads to the discovery of relationships especially in populations in industrialized countries. Public health policy takes the same step in both developed and developing countries; they generally recommend it only in pregnant women to consume iron or iron plus folate regularly because it is difficult to meet both micronutrient needs through diet⁽⁷⁾.

Conclusions

The incidence of anemia in preconception women was 62.35%. The incidence of anemia in preconception women was more common in women with children <5 years, age of preconception women ≥ average, low education level, unemployed preconception women, more than two parity, CED status, and BMI with category of obesity. However, only the difference in parity variables expressed was statistically significant. ■

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Ethics Approval: This study had been approved by ethical commission of Faculty of Medicine Udayana University with ethical clearance number 1904/UN.14.2/KEP/2017.

Conflict of interests: The authors declare no conflict of interests.

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