

DIETARY PATTERNS OF PREGNANT WOMEN WITH ANEMIA IN THE WORKING AREA OF CEPIRING COMMUNITY HEALTH CENTER

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ABSTRACT

Anemia during pregnancy is a serious public health issue due to its association with the risk of maternal hemorrhage and impaired fetal growth. Inadequate dietary intake and pattern are often a primary factor contributing to low hemoglobin levels. This study aims to describe the characteristics and dietary patterns of pregnant women suffering from anemia within the working area of the Cepiring Community Health Center (Puskesmas). This is a quantitative study employing a descriptive design and a cross-sectional approach. The sample consisted of 43 pregnant women with anemia, selected using a total sampling technique. Data collection utilized a dietary pattern questionnaire with established validity—showing calculated r-values ranging from 0.491 to 0.805—and a reliability coefficient of 0.886. The study results indicate that the mean age of respondents was 29.69 years, with the majority (27 respondents or 62.8%) in the third trimester of pregnancy. Most respondents were multiparous (26 respondents or 60.5%), had a high school education (28 respondents or 65.1%), and were unemployed/homemakers (33 respondents or 76.7%). Regarding family income, the majority (23 respondents or 53.5%) earned $\geq$ Rp2,784,000. Dietary pattern analysis showed that the majority of respondents fell into the "good" category (19 respondents or 44.2%), followed by the "moderate" category (18 respondents or 41.8%) and the "poor" category (6 respondents or 14%). Future researchers could incorporate additional variables to further investigate anemia in pregnant women and identify the various risk factors contributing to its occurrence.

Keywords: anemia; dietary patterns; pregnant women.

INTRODUCTION

Anemia during pregnancy can reduce the blood's oxygen-carrying capacity, resulting in unmet oxygen demands for both the mother and the fetus (Widiastuti, 2024). Generally, anemia stems from inadequate intake of the nutrients required for hemoglobin production (Ministry of Health, 2023). However, nutritional deficiency is not the sole cause; research by Chalista Amelia et al. (2025) indicates that other factors contribute to the development of anemia in pregnant women. These factors include short intervals between pregnancies, irregular consumption of iron (Fe) supplements, infrequent Antenatal Care (ANC) visits, poor dietary habits, low income, and the mother's level of education regarding proper nutrition during pregnancy.

Several factors contribute to the high rate of anemia among pregnant women. The World Health Organization (WHO) reports that the prevalence of anemia in pregnant women is approximately 35.5%. This figure establishes anemia as a significant health issue, particularly in low- and middle-income countries. Southeast Asia ranks first, with 256.6 million pregnant women affected by anemia (WHO, 2023). This high prevalence is also reflected in Indonesia; the 2023 Indonesian Health Survey recorded an anemia rate of 27.7%. Data from the Central Java Provincial Health Office show that recorded anemia cases stood at 60,570 in 2022, subsequently decreasing to 50,420 cases in 2023 and further declining to 30,827 cases in 2024.

According to data from the Kendal Regency Health Office, 1,825 cases of anemia were recorded in 2022. This figure dropped to 1,749 cases in 2023 and continued to decline, reaching 1,723 cases in 2024. Despite this decrease, the incidence of anemia among pregnant women in Kendal Regency remains high, indicating that the issue continues to be a significant public health challenge. The problem of anemia among pregnant women is also evident at the sub-district level; Cepiring Sub-district, for instance, shows a high prevalence, with 43 recorded cases. This high number of cases underscores the fact that anemia among pregnant women remains a serious public health issue.

According to a 2022 study by Suratiah, Erryca, and Surinati, pregnant women can prevent anemia through three key pillars: undergoing hemoglobin (Hb) testing, attending routine Antenatal Care (ANC) check-ups, and possessing quality knowledge regarding anemia. In addition to these preventive measures, it is recommended to increase the intake of iron-rich foods and animal-based products. Furthermore, it is advised to avoid foods that inhibit iron absorption and to regularly take iron supplements (Retnaningtyas et al., 2022).

Diet is a crucial factor to consider during pregnancy; maternal nutritional intake can influence the course of the pregnancy and fetal growth in the womb (Abeng et al., 2021). Research by Harahap (2024) on the relationship between diet and the incidence of anemia in pregnant women indicates that adherence to taking iron-folic acid (TTD) supplements and maintaining a balanced diet plays a vital role in reducing anemia rates. This study aims to describe the dietary patterns of pregnant women suffering from anemia within the working area of the Cepiring Community Health Center.

METHOD

This study employs a quantitative approach with a descriptive design. The study population consists of all pregnant women suffering from anemia. The sample comprises 43 pregnant women with anemia within the working area of the Cepiring Community Health Center (Puskesmas). Total sampling was used as the sampling technique. Data collection instruments included Questionnaire A, covering respondent characteristics (age, gestational age, parity, education, occupation, and family income), and Questionnaire B, regarding the dietary patterns of pregnant women with anemia. Validity testing was conducted by comparing the calculated *r*-value with the table *r*-value; an instrument is considered valid if the calculated *r*-value exceeds the table *r*-value (Baruno, 2024). The calculated *r*-values for the instrument ranged from 0.491 to 0.805. The statements were deemed valid because the calculated *r*-values exceeded the table *r*-value of 0.444 (based on $n = 20$ at a significance level of 0.05). Reliability testing is a research procedure used to evaluate the consistency and stability of an instrument—such as a questionnaire—to determine if it reliably and consistently measures the variable or concept under study. An instrument is considered reliable if the Cronbach's alpha value is greater than 0.60 (Baruno, 2024). Protecting the rights of respondents is a top priority that requires researchers to adhere to ethical research standards. This entails applying the principle of justice—ensuring fair treatment for every participant—and the principle of confidentiality.

RESULT AND DISCUSSION

Table 1 shows a mean value of 29.69 with a standard deviation of 6.847. The youngest respondent was 17 years old, and the oldest was 41 years old.

Table 1.
Distribution of respondents by age on January 2026 (n = 43)

Variabel	Mean	Median	Standar deviasi	Minimum	Maximum
Usia	29,69	31	6.847	17	41

The study results indicate that the mean age of respondents was 29.69 years—falling within the healthy reproductive age range—though there were outliers at the extremes of 17 and 41 years. While the average age reflects a predominance of individuals in the healthy reproductive age group (optimal in terms of physical and psychological health), the presence of respondents aged 17 and 41 points to the existence of high-risk age groups. The age of 17 carries a vulnerability to complications due to physiological and psychological immaturity, whereas the age of 41 presents a high risk of maternal complications resulting from a decline in physiological function and immune system efficacy.

The high-risk status associated with these two extreme age groups is closely linked to nutritional status, with age serving as a significant determinant of anemia in pregnant women. Both younger and older maternal ages directly influence nutritional requirements; relatively young mothers, for instance, have higher nutritional needs (Sitawati et al., 2023). Research by Sari, Fitri, and Dewi (2021) indicates that the younger the pregnant woman, the lower her hemoglobin levels tend to be. Pregnant women under the age of 20 or over the age of 35 face a higher risk of developing anemia.

Prawirohadjo's (2021) view supports these findings, indicating that pregnant women under the age of 20 face a higher risk of anemia due to nutritional competition between maternal growth and fetal development. Meanwhile, in women over the age of 35, anemia arises from the deterioration of bodily functions and difficulties in absorbing the nutrients required for hemoglobin production.

The majority of respondents were in the third trimester; in other words, advanced gestational age is a primary indicator of anemia risk. This condition is driven by increased plasma volume—leading to hemodilution—and the high iron requirements for fetal growth, which deplete the mother's nutritional reserves. Therefore, intensive monitoring of nutrition and hemoglobin levels during the second and third trimesters is crucial for preventing anemia.

Research conducted by Munah and Salsabila (2025) demonstrates that anemia is influenced by gestational age due to the heightened nutritional demands of fetal growth, which can deplete the mother's iron stores. This increased requirement leads to a higher risk of anemia during specific periods; specifically, research by Jannah, Mahayani, Herlinawati, and Lestari (2025) indicates that the risk of anemia in pregnant women rises during the second and third trimesters.

This condition arises from changes in the body's hemodynamics; research by Hasanah (2023) indicates a direct link between gestational age and anemia, driven by shifting iron requirements. Pregnant women face a higher risk of anemia during the second trimester compared to the first and third trimesters due to increased plasma volume; meanwhile, hemoglobin and hematocrit levels decline during the first trimester, reach their lowest point at the end of the second trimester, and rise again during the third trimester.

Table 2.
Distribution of Respondents by Gestational Age, Parity, Education, Occupation, and Family Income on January 2026 (n = 43)

Variable	Category	Frequency (f)	Percentage (%)
Gestational age	Trimester I	0	0
	Trimester II	16	37,2
	Trimester III	27	63,8
Parity	Primipara	17	39,5
	Multipara	26	60,5
	Grande multipara	0	0
Education	No schooling	0	0
	Elementary School	0	0
	Junior High School	10	23,3
	Senior High School	28	65,1
	Higher Education	5	11,6
Work	Unemployee	33	76,7
	Private sector	4	9,3
	Self-employed	4	9,3
	Civil Servants /State-Owned Enterprises	2	4,7
	Farmers	0	0
		0	0
Family income	< 2.784.000	20	46,5
	≥ 2.784.000	23	53,5
Total		43	100

Table 2 shows that the majority of respondents were in the third trimester (n=27; 62.8%), and the largest group consisted of multiparous women (n=26; 60.5%). Most respondents had completed senior high school education (n=28; 65.1%), while the majority were unemployed or housewives (n=33; 76.7%); regarding family income, the majority earned ≥ 2,784,000 (n=23; 53.5%).

Based on the study results involving 43 pregnant respondents with anemia, the majority belonged to the multiparous group (26 respondents or 60.5%), while the primiparous group comprised 17 respondents (39.5%). According to Putri & Yuanita (2020), primiparous mothers are often less prepared for the childbirth process due to a lack of prior experience, with physical and mental preparation frequently receiving insufficient attention. Consequently, these pregnant women face a higher risk of anemia and hemorrhage. On the other hand, mothers with a parity greater than three may experience weakening of the reproductive organs, which can easily lead to complications resulting in anemia and hemorrhage. This study aligns with the findings of Ariani, Nurkholilah, and Winarni (2023), who reported an increased risk of anemia following the third pregnancy. This condition arises from damage to blood vessels and the uterine wall caused by repeated pregnancies, leading to inadequate nutritional supply to the fetus. Higher parity is associated with a susceptibility to a progressive decline in hemoglobin (Hb) levels.

This study is supported by Damanik, Tunggal, Yuliastuti, and Kristiana (2025), who state that women with high parity face a significantly higher risk of anemia because each pregnancy and childbirth physiologically depletes the body's iron stores.

The study results regarding the distribution of respondents' education levels indicate that the majority of pregnant women suffering from anemia—specifically 28 individuals (65.1%)—had attained a high school (SMA) level of education. The researchers analyzed that education level is a factor influencing the cognitive abilities and behaviors of pregnant women regarding anemia prevention. The prevalence of anemia cases among those with a secondary education level suggests that limited access to information and low health literacy hinder understanding of the importance of iron intake. Conversely, higher levels of education are positively associated with greater health awareness.

As explained by Sulung, Najmah, Flora, Nurlaili, and Slamet (2022), a low level of education among pregnant women tends to be associated with their health knowledge; specifically, a low educational level limits the reception of information regarding iron requirements for preventing anemia during pregnancy. Research conducted by Sulastri, Hariyanti, Silvia, and Rahma (2023) indicates that higher education enables pregnant women to become aware of and seek information regarding anemia and its consequences, thereby helping to prevent the condition. Pregnant women with higher education are more receptive to new information and find it easier to understand explanations about anemia provided by healthcare professionals.

This study is supported by Sari, Zakiyah, and Megawati (2025), who state that educational background influences health awareness among pregnant women. Women with higher levels of education tend to possess better knowledge regarding the nutrition required during pregnancy, which can help reduce the risk of anemia.

Based on the research findings, 33 (76.7%) of the pregnant women with anemia were housewives or unemployed. The researchers posit that employment status significantly influences how pregnant women manage their health. While housewives often face constraints regarding access to information and financial support, working mothers are susceptible to anemia due to physical fatigue and irregular eating habits. Consequently, the researchers conclude that the risk of anemia is not limited to specific types of employment but is instead linked to how well a mother manages her activities—whether at home or in the workplace—by ensuring adequate rest and sufficient nutritional intake to maintain fetal health.

The high prevalence of anemia among these housewives is closely linked to access to information. Pregnant women who work tend to have easier access to health information that directly impacts their nutritional status. Furthermore, employment contributes to increased family income, which supports the meeting of nutritional needs (Sulaiman et al., 2022). Mothers with high levels of mobility require a higher nutritional intake than under normal conditions; the more strenuous the physical activity, the greater the daily caloric requirement (Sitawati et al., 2023).

On the other hand, the issue of workload must also be considered in the context of housewives. Research by Isnaini, Yuliaprida, and Pihahay (2021) indicates that not being formally employed does not mean a mother is free from heavy physical burdens; in fact, housewives with more than one child may face an extremely heavy workload. Whether working in an office or at home, a pregnant woman must pay close attention to her health while carrying out daily activities. If activities are too strenuous and not balanced with adequate nutrition and rest, this can not only trigger anemia but also pose a high risk of health complications for the unborn baby.

The study results indicate that 23 individuals (53.5%) had a family income of $\geq$ Rp2,784,000. The researchers found that low income contributes directly to a decline in nutritional status due to limited purchasing power for quality food, whereas high income still carries a risk of anemia if financial resources are not prioritized for a balanced diet.

A family's financial situation is a significant determinant that can trigger anemia. Low family income can affect the nutritional needs of pregnant women (Wahyuningsih, Purwati, Dewi, and Noviyana, 2024). Financial well-being directly impacts the ability to purchase high-quality food. Women with a stable economic status generally find it easier to meet their nutritional needs and regularly undergo health check-ups to monitor their nutritional status (Sitawati et al., 2023).

Economic status is closely linked to the purchasing power required to meet the nutritional needs of pregnant women. Insufficient family income leads to a decline in both the quantity and quality of the food consumed daily, which can result in a deterioration of maternal nutritional status (Dai, 2021). This study aligns with the findings of Marini, Kuswati, and Fatimah (2024), indicating that pregnant women with family incomes below the minimum wage experience reduced purchasing power for daily food, potentially leading to inadequate nutritional intake during pregnancy.

Table 3.
Distribution of Respondents Based on Dietary Patterns on January 2026 (N = 43)

Variable	Category	Frequency (f)	Percentage (%)
Dietary Pattern	Good	19	44,2
	Fair	18	41,8
	Poor	6	14
Total		43	100 %

Table 3 shows that 19 pregnant women (44.2%) had a good diet. There were 18 pregnant women (41.8%) with a moderate diet, while 6 pregnant women (14%) had a poor diet.

The study results indicate that the majority of pregnant women with anemia—specifically 19 individuals (44.2%)—followed a diet classified as "good." Based on these findings, the researchers conclude that even when pregnant women maintain a good diet, the risk of anemia persists if the specific food choices are inappropriate. The researchers emphasize that preventing anemia is not merely a matter of the quantity of food consumed, but rather the proper selection of dietary intake—particularly animal-based proteins and vitamin C, which directly facilitate the formation of red blood cells.

Although the majority fall into the "good" category, monitoring nutritional intake remains a top priority. This is because dietary habits are a vital aspect that directly impacts fetal development in the womb (Abeng & Kasim, 2021). Nutritional requirements during pregnancy are known to be significantly higher than under normal conditions; therefore, dietary management must be tailored to the mother's needs and the fetus's development (Liana, Wulandari, and Darmi, 2023). Poor dietary quality—particularly low iron intake—is closely linked to an increased risk of anemia in pregnant women.

Research (Revita & Suyani, 2024) indicates that the poorer the dietary habits, the higher the prevalence of anemia among pregnant women. A healthy diet during pregnancy must meet both

macro- and micronutrient needs—including minerals, protein, fat, and carbohydrates—tailored to the requirements of the expectant mother and the fetus. Conversely, a poor diet is a primary cause of anemia during pregnancy, particularly due to low consumption of iron-rich foods.

This study is supported by Hasanah & Liyana (2025), who state that pregnant women with insufficient dietary intake are at higher risk of experiencing a decline in red blood cell count. This situation arises when the intake of iron, protein, vitamin C, and nutrients supporting hemoglobin synthesis is not optimally met. Poor dietary habits during pregnancy—such as low consumption of animal protein, green vegetables, and vitamin C-rich fruits—directly contribute to low hemoglobin levels, thereby increasing the incidence of anemia.

CONCLUSION

This study of pregnant women with anemia in the Cepiring Community Health Center (Puskesmas) service area reveals that the majority of respondents were 29.69 years old; 27 (62.8%) were in their third trimester, and 26 (60.5%) were multiparous. Regarding education, 28 (65.1%) had completed senior high school, while the employment status was dominated by non-working women or housewives (33 respondents, or 76.7%). Most families (23, or 53.5%) had an income of $\geq$ Rp2,784,000. In terms of dietary patterns, the majority (19 respondents, or 44.2%) fell into the "good" category, 18 (41.8%) had a "moderate" dietary pattern, and 6 (14%) had a "poor" dietary pattern.

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