



The Effect of Nutritional Status Based on BMI on The Risk of Anemia in Pregnant Women at The Popayato Barat Public Health Center

Partner Y. Manumpil ^{1*}, Anik Purwati ²

^{1,2} Bachelor of Midwifer, Faculty of Health Sciences, Institut Sains dan Teknologi Kesehatan Rumah Sakit Dr. Soepraoen Malang, Indonesia

*Corresponding Author : anikasyda@itsk-soepraoen.ac.id

Abstract, Background: The hormonal contraceptive DMPA (Depot Medroxyprogesterone Acetate) is an injectable contraceptive method widely used by women of childbearing age because it is practical and effective in preventing pregnancy. However, prolonged use of DMPA can cause side effects, one of which is secondary amenorrhea. Secondary amenorrhea is the absence of menstruation for three consecutive months or more in women who previously had normal menstruation. The occurrence of secondary amenorrhea often causes anxiety in DMPA users, so research is needed regarding the relationship between DMPA use and the occurrence of secondary amenorrhea. Method: This study employed an analytical design with a cross-sectional approach. A sample of 30 respondents was selected using purposive sampling. The research instruments used were observation sheets and questionnaires. Data analysis used the Chi-Square test with the help of SPSS. Results: The majority of respondents (18 respondents (60.0%)) used DMPA hormonal contraception for more than 1 year. Nineteen respondents (63.3%) experienced secondary amenorrhea. The Chi-Square test results showed a p-value of 0.002 (<0.05), indicating a significant relationship between DMPA hormonal contraception use and the incidence of secondary amenorrhea in the Popayato Barat Community Health Center UPTD area. Conclusion: There is a significant relationship between the use of DMPA hormonal contraception and the incidence of secondary amenorrhea in the Popayato Barat Community Health Center UPTD area.

Keywords: Contraceptive Duration; DMPA Hormonal Contraception; Injectable Contraception; Menstrual Disorders; Secondary Amenorrhea.

1. INTRODUCTION

Pregnancy is a physiological condition that requires increased nutritional needs to support fetal growth and development and maintain maternal health. During pregnancy, nutritional needs increase, particularly for iron, protein, folic acid, and energy. If these needs are not met, pregnant women are at risk of developing health problems such as anemia and chronic energy deficiency (Ministry of Health of the Republic of Indonesia, 2023).

The nutritional status of pregnant women is an important indicator of the health of the mother and fetus. Nutritional status can be assessed using the Body Mass Index (BMI). BMI is used to determine whether a mother is undernourished, normal, or overnourished. Pregnant women with undernourished status are at higher risk of anemia due to a lack of iron reserves in the body (Supariasa, 2022; Permana et al., 2026).

Anemia in pregnant women is a health problem that is still common in Indonesia. Anemia is a condition where the hemoglobin level in the blood is lower than normal, typically less than 11 g/dL in pregnant women. According to the World Health Organization (WHO),

anemia in pregnant women is a major cause of increased risk of pregnancy and childbirth complications (Lestari et al., 2026).

The Indonesian Ministry of Health (2024) stated that the prevalence of anemia among pregnant women in Indonesia remains quite high. Factors contributing to anemia in pregnant women include insufficient iron intake, poor nutritional status, low adherence to iron tablet consumption, and closely spaced pregnancies (Pagiu et al., 2026).

Nutritional status based on BMI is closely related to the incidence of anemia in pregnant women. Women with a low BMI tend to have low iron reserves, which disrupts hemoglobin production. According to Manuaba (2022), malnutrition during pregnancy can lead to anemia, which impacts fetal growth and maternal health.

In addition to nutritional factors, anemia is also influenced by maternal age, parity, education, knowledge, and the family's socioeconomic status. However, nutritional status remains the primary factor influencing a mother's health during pregnancy (Sustiyani et al., 2026; Wahyudi et al., 2026).

Based on initial observations in the Popayato Barat Community Health Center (UPTD), pregnant women are still found to be malnourished and have low hemoglobin levels. Most pregnant women pay little attention to their diet during pregnancy, putting them at risk of anemia.

Based on this description, the researcher is interested in conducting research with the title "The Effect of Nutritional Status Based on BMI on the Risk of Anemia in Pregnant Women at the UPTD West Popayato Health Center."

2. METHOD

This study used a quantitative design with a cross-sectional approach to determine the effect of nutritional status based on BMI on the risk of anemia in pregnant women.

The study was conducted in the Popayato Barat Community Health Center (UPTD) area. The study population was all pregnant women undergoing ANC examinations within the UPTD area. A sample of 30 respondents was selected using purposive sampling.

The research instruments used observation sheets, BMI measurements, and hemoglobin levels of pregnant women. Data analysis was performed univariately and bivariately using the Chi-Square test with the help of SPSS with a significance level of $\alpha = 0.05$.

3. RESULTS

General Data

Table 1. Distribution of Respondents by Age.

Age	Frequency (n)	Percentage (%)
<20 years	5	16.7
20–35 years	18	60.0
>35 years	7	23.3
Total	30	100

Table 2. Distribution of Respondents Based on Education.

Education	Frequency (n)	Percentage (%)
Elementary School	6	20.0
JUNIOR HIGH SCHOOL	9	30.0
SENIOR HIGH SCHOOL	12	40.0
College	3	10.0
Total	30	100

Table 3. Distribution of Respondents Based on Nutritional Status BMI.

Nutritional Status BMI	Frequency (n)	Percentage (%)
Not enough	10	33.3
Normal	16	53.3
More	4	13.4
Total	30	100

Special Data

Table 4. Distribution of Respondents Based on Anemia Risk.

Risk of Anemia	Frequency (n)	Percentage (%)
Anemia	18	60.0
No anemia	12	40.0
Total	30	100

Bivariate Analysis

Table 5. Effect of Nutritional Status Based on BMI on the Risk of Anemia.

Nutritional Status BMI	Anemia	No Anemia	Total	p-value
Not enough	9	1	10	0.003
Normal	8	8	16	
More	1	3	4	
Total	18	12	30	

Table 6. Chi-Square Test Results.

Test	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11,628	2	0.003
Continuity Correction	-	-	-
Likelihood Ratio	12,014	2	0.002
Fisher's Exact Test	-	-	0.004

4. DISCUSSION

Based on the research results in Table 1, the majority of respondents were in the 20–35 age group, amounting to 18 respondents (60.0%). This age group represents a healthy reproductive age group with high nutritional needs during pregnancy. According to the Indonesian Ministry of Health (2023), those of healthy reproductive age have a lower risk of pregnancy complications than those who are too young or too old.

Table 2 shows that the majority of respondents (12 respondents, 40.0%) had a high school education. Educational attainment influences mothers' knowledge of the importance of adequate nutrition during pregnancy. According to Notoatmodjo (2022), education influences a person's health behaviors, including maintaining nutritional status during pregnancy.

Table 3 shows that the majority of respondents (16 respondents) had normal nutritional status. Good nutritional status indicates that the mother's nutritional needs during pregnancy were adequately met. However, there were still 10 mothers (33.3%) with poor nutritional status who were at risk of experiencing health problems during pregnancy.

Table 4 shows that the majority of respondents (18 respondents) experienced anemia. Anemia in pregnant women occurs due to low hemoglobin levels in the blood, which can be caused by iron deficiency and inadequate nutritional intake. According to Manuaba (2022), anemia in pregnant women can lead to impaired fetal growth and complications during labor.

The bivariate analysis results in Table 5 show that the majority of pregnant women with poor nutritional status (9 respondents) experienced anemia. Meanwhile, the majority of pregnant women with overweight status did not experience anemia. This suggests that the poorer the mother's nutritional status, the higher the risk of anemia during pregnancy.

The Chi-Square test results obtained a p-value of 0.003 (<0.05), so H_a was accepted and H_0 was rejected. This indicates that there is a significant influence between nutritional status based on BMI on the risk of anemia in pregnant women in the UPTD Popayato Barat Health Center area.

The results of this study align with those of Rahmawati (2023), who stated that pregnant women with a low BMI have a higher risk of anemia than women with normal nutritional status. Research by Sari and Wulandari (2024) also showed that maternal nutritional status is closely related to hemoglobin levels during pregnancy.

Thus, health workers, especially midwives, have an important role in monitoring the nutritional status of pregnant women and providing education on the importance of consuming nutritious food and iron tablets regularly during pregnancy.

5. CONCLUSION

Most of the respondents were in the 20–35 age group and had a high school education level. Most respondents had normal nutritional status based on BMI. Most of the respondents had anemia.

There is a significant influence between nutritional status based on BMI on the risk of anemia in pregnant women in the UPTD Popayato Barat Health Center area with a p-value of 0.003 (<0.05).

The lower the nutritional status of pregnant women, the higher the risk of anemia during pregnancy.

SUGGESTION

For Pregnant Women

It is hoped that pregnant women can increase their consumption of balanced nutritious food and regularly take iron tablets during pregnancy.

For Midwives and Health Workers

It is hoped that health workers can improve monitoring of the nutritional status of pregnant women and provide education on preventing anemia.

For Community Health Centers

It is hoped that the community health center can improve its routine nutrition education program for pregnant women.

For Further Researchers

It is hoped that further research can add other variables such as compliance with Fe tablet consumption, diet, and pregnancy spacing.

BIBLIOGRAPHY

- Arisman. (2022). Nutrition in the life cycle. Jakarta: EGC.
- Lestari, et al. (2026). Implementasi manajemen kebidanan komunitas pada ibu hamil dengan anemia ringan di Dusun Pegading Luar, Desa Batunyala, Kecamatan Praya Tengah. *Jurnal Kesehatan Tropis Indonesia*, 4(3). <https://doi.org/10.63265/jkti.v4i3.316>
- Manuaba, IBG (2022). Obstetrics, gynecology, and family planning. Jakarta: EGC.
- Ministry of Health of the Republic of Indonesia. (2023). Indonesia's health profile in 2023. Jakarta: Ministry of Health of the Republic of Indonesia.
- Ministry of Health of the Republic of Indonesia. (2024). Guidelines for integrated antenatal care services. Jakarta: Ministry of Health of the Republic of Indonesia.
- Notoatmodjo, S. (2022). Health research methodology. Jakarta: Rineka Cipta.
- Nursalam. (2022). Nursing science research methodology. Jakarta: Salemba Medika.

- Pagiu, H. W., et al. (2026). Edukasi gizi dalam pencegahan anemia dalam masa kehamilan bagi ibu hamil di Dusun Kolebarebatu, Kecamatan Rembon, Tana Toraja. *Jurnal Kabar Masyarakat*, 4(2). <https://doi.org/10.54066/jkb.v4i2.4583>
- Permana, A. H., et al. (2026). Hubungan tingkat pengetahuan gizi dan tingkat kecukupan asupan zat besi dengan status anemia ibu hamil di Puskesmas Brebes. *Jurnal Ilmu Kesehatan dan Gizi*, 4(3). <https://doi.org/10.55606/jig.v4i3.8963>
- Rahmawati, D. (2023). The relationship between nutritional status of pregnant women and the incidence of anemia. *Indonesian Journal of Midwifery*, 12(1), 33–41.
- Sari, N., & Wulandari, E. (2024). The effect of body mass index on hemoglobin levels in pregnant women. *Journal of Reproductive Health*, 15(2), 55–63.
- Supariasa, IDN (2022). Nutritional status assessment. Jakarta: EGC.
- Sustiyani, et al. (2026). Edukasi penanganan dan pencegahan anemia ringan pada ibu hamil di wilayah kerja Puskesmas Pemenang Kabupaten Lombok Utara. *Jurnal Kesehatan Tropis Indonesia*, 4(3). <https://doi.org/10.63265/jkti.v4i3.221>
- Wahyudi, et al. (2026). Gambaran kadar hemoglobin dan indeks eritrosit pada ibu hamil dengan anemia di Rumah Sakit Bersalin Sentosa. *Jurnal Kesehatan Tropis Indonesia*, 4(3). <https://doi.org/10.63265/jkti.v4i3.291>
- WHO. (2023). Maternal anemia and nutritional status during pregnancy. Geneva: World Health Organization.