

The Relationship Between Knowledge of Anemia and Its the Incidence Among Pregnant Women

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ABSTRACT

Background: The woman and fetus may suffer from anemia during pregnancy, which can lead to infection, early birth, and maternal and child deaths. Insufficient understanding of anemia is one of the factors contributing to anemia during pregnancy. Pregnant women's attitudes and behaviors to prevent anemia in pregnancy can be impacted by their ignorance of anemia. The purpose of this study was to determine the relationship between knowledge about anemia and its occurrence in pregnant women at Puskesmas Klaten Utara.

Methods: This research is a descriptive analytical study with a cross-sectional approach. The population in this study consisted of pregnant women who were registered and attended antenatal care at Puskesmas Klaten Utara during October–November 2023. A total of 50 respondents who met the inclusion criteria were selected using accidental sampling technique. Data were collected through questionnaires and analyzed using the Spearman Rank correlation test.

Results: According to statistical studies, the incidence of anemia in pregnant women at Puskesmas Klaten Utara is correlated with the amount of knowledge about anemia in pregnant women, with a correlation value of 0.442 and a significant value of $p\text{-value} = 0.001$ ($p\text{-value} < 0.05$).

Conclusion: There is a significant positive correlation between pregnant women's knowledge and the incidence of anaemia at the North Klaten Community Health Centre. Strengthening anaemia prevention programmes through regular supervision and health education is essential. Midwives are expected to raise awareness and compliance among pregnant women in taking iron tablets to reduce the incidence of anaemia.

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INTRODUCTION

Pregnant mothers and their fetuses are negatively impacted by anemia throughout pregnancy. Increased rates of infections, maternal and infant mortality, and preterm births are all linked to anemia in pregnant women. Pregnancy-related iron deficiency anemia can impact the fetus's or baby's growth and development both during and after pregnancy. Furthermore, iron deficiency during pregnancy can harm the development of the developing brain and result in a lifelong decline in a child's IQ (Kementerian Kesehatan RI, 2021).

According to Mayasari et al. (2023), the number of pregnant women, age, parity, and educational level are some variables that can contribute to the occurrence of anemia. Mardalena (2021) states that high-risk pregnancies can endanger both the mother and the fetus, as well as increase the likelihood of bleeding and mortality before or after delivery. This condition is most likely caused by untreated anemia during pregnancy.

According to Sari et al. (2022), the occurrence of anemia in pregnant women is influenced by parity and the mother's age during pregnancy. Similarly, Acheampong et al. (2018) stated that age and nutritional status are the two most important factors affecting the incidence of anemia in pregnant women. Consistently, Zuiatna (2021) found that nutritional status is the most dominant factor influencing the occurrence of anemia during pregnancy.

Furthermore, Heriyansyah and Rangkuti (2020) reported that the interval between a previous pregnancy and the current pregnancy has a significant relationship with the incidence of anemia in pregnant women. Utama (2021) also explained that nutritional status, measured through mid-upper arm circumference, is related to the occurrence of anemia in pregnant women. Meanwhile, Devi et al. (2021) revealed that knowledge, attitudes, and behaviors in preventing anemia are factors that also contribute to the occurrence of anemia in pregnant women.

Giving each expecting mother 90 iron tablets is one way to prevent anemia in this particular population. Pregnant women in Central Java were more likely to receive 90 iron tablets in 2022 (90.82%) than in 2020 (92.48%). Particularly for Klaten, 95.92% of the 90 iron tablets that were provided in 2022 were provided (Badan Pusat Statistika Provinsi Jawa Tengah, 2022). In 2022, Dinas Kesehatan Kabupaten Klaten reported that 1,299 people, or 9.0% of the population, had anemia. One of the maternal and child health issues that the Klaten Regency KIA service detected at Puskesmas Klaten Utara is the continued high prevalence of high-risk cases in pregnant women. Of the 37 high-risk instances that were found in 2022, 11 (or 29.7%) were anemic-stricken pregnant women (Dinas Kesehatan Kabupaten Klaten, 2022).

Although the government has made various efforts to prevent and combat anaemia in pregnant women—such as providing a minimum of 90 iron tablets during pregnancy—the incidence of anaemia in pregnant women remains high. This situation occurs because most pregnant women do not have adequate knowledge about the dangers of anaemia and the importance of prevention efforts. Therefore, this study aims to determine the relationship between pregnant women's knowledge of anaemia and the incidence of anaemia at the North Klaten Community Health Centre, as well as to provide a new perspective on the role of mothers' knowledge as a key factor in anaemia prevention.

MATERIALS AND METHODS

This type of research is descriptive analytical with a cross-sectional approach. Descriptive analytical research aims to determine the relationship between independent variables (pregnant women's knowledge about anaemia) and dependent variables (incidence of anaemia in pregnant women) in order to obtain an overview and conclusions that explain the phenomena occurring in the research subjects.

This study was conducted from August to December 2023 at the North Klaten Community Health Centre. The data collection technique used a cross-sectional method, in which all data were collected at one time. The sampling technique used was accidental sampling, with a total of 50 pregnant women who were registered and underwent

pregnancy check-ups at the North Klaten Community Health Centre during October–November 2023.

The inclusion criteria in this study included pregnant women who were registered at the North Klaten Community Health Centre, willing to be respondents, and able to communicate well. The exclusion criteria were pregnant women who were seriously ill, did not complete the questionnaire, or were unwilling to participate in the entire research process.

The variables in this study included the level of knowledge of pregnant women about anaemia and the incidence of anaemia in pregnant women. The data sources consisted of primary data, obtained through questionnaire completion and haemoglobin level checks using a haemoglobin meter, and secondary data, obtained from medical records at the North Klaten Community Health Centre.

The research instrument was a closed questionnaire with pre-determined answer choices. The validity test was conducted on 20–23 October 2023 in a class for pregnant women at the North Klaten Community Health Centre with 30 respondents, using a table r value of 0.361. Of the 20 questions, 3 were invalid (calculated $r < \text{table } r$), resulting in a total of 17 valid questions. The reliability test results showed a Cronbach's Alpha value of 0.735, which means that the questionnaire was reliable.

Data analysis was performed using univariate and bivariate methods. Univariate analysis was used to describe the frequency distribution of each variable, while bivariate analysis used the Spearman Rank correlation test, because the independent and dependent variables were on an ordinal scale.

This study obtained ethical approval from the Health Research Ethics Committee Dr. Moewardi General Hospital with ethical permit number 1.948/X/HREC/2023 dated October 31, 2023. All respondents gave their consent after receiving an explanation of the purpose and procedures of the study through an informed consent form.

RESULTS

Table 1. Frequency Distribution of Pregnant Women ($n = 50$)

Characteristics	Frequency (n)	Percentage (%)
Age (years)		
< 20 years	2	4
20-35 years	45	90
> 35 years	3	6
Total	50	100
Work		
Self-employed	6	12
Housewife	39	78
Civil servant	5	10
Total	50	100
Education		
Low (Primary-Junior High School)	17	34
Middle (Senior High School)	25	50
High (Bachelor, etc.)	8	16
Total	50	100

Characteristics	Frequency (n)	Percentage (%)
Pregnancy		
First	22	44
Second	20	40
Third	5	10
>Third	3	6
Total	50	100
Gestational Age		
Trimester I	10	20
Trimester II	18	36
Trimester III	22	44
Total	50	100
Weight Changes		
Weight Gain	47	94
Constant Weight	1	2
Weight Loss	2	4
Total	50	100
Hemoglobin Level		
Normal (≥ 11 gr%)	14	28
Mild Anemia (9-10,9gr%)	30	60
Moderate Anemia (7-8,9gr%)	6	12
Severe Anemia (< 7 gr%)	0	0
Total	50	100
Anemia Knowledge		
Good	14	28
Enough	15	30
Not enough	21	42
Total	50	100

According to Table 1. mentioned, the majority of respondents—45 individuals, or 90%—are between the ages of 20 and 35. As many as 39 respondents (78%), the majority of their occupations are housewives. It is known that the majority of respondents—up to 25 individuals, or 50%, have only completed secondary school. First pregnancies make up the majority of the respondents' gravida features; 22 individuals (44%). The characteristics of the pregnancy age are mostly trimester III, as many as 22 people (44%). Changes in the respondents' weight, as many as 47 people (94%) experienced weight gain. As many as 30 people (60%) experienced mild anemia. The characteristics of the respondents who have knowledge about anemia are mostly less knowledgeable, as many as 21 people (42%).

Table 2. Correlation Between Pregnant Women's Knowledge About Anemia and the Incidence of Anemia at Puskesmas Klaten Utara (n = 50)

Knowledge Level	Normal n (%)	Mild Anemia n (%)	Moderate Anemia n (%)	Total n (%)	r	p-value*
Good	10 (71.4)	3 (10.0)	1 (16.7)	14 (28.0)	0.442	0.001

Knowledge Level	Normal n (%)	Mild Anemia n (%)	Moderate Anemia n (%)	Total n (%)	r	p-value*
Fair	2 (14.2)	10 (33.3)	3 (50.0)	15 (30.0)		
Poor	2 (14.2)	17 (56.7)	2 (33.3)	21 (42)		
Total	14 (28)	30 (60)	6 (12)	50 (100)		

Note: *Spearman Rank Correlation

Table 2. shows the relationship between pregnant women's knowledge of anaemia and the incidence of anaemia at the North Klaten Community Health Centre. The results show that most respondents with poor knowledge experienced mild anaemia (81.0%), while pregnant women with good knowledge mostly had normal haemoglobin levels (71.4%). Based on the results of the Spearman Rank correlation test, a value of $r = 0.442$ with $p = 0.001$ was obtained, indicating a positive and significant relationship between the level of knowledge and the incidence of anaemia. The better the pregnant women's knowledge about anaemia, the less likely they are to experience anaemia.

DISCUSSION

Based on the results of a study conducted in 2023 at the North Klaten Community Health Centre on 50 pregnant women, most respondents had insufficient knowledge about anaemia during pregnancy. Anaemia during pregnancy is poorly understood by mothers who have not had previous pregnancy experience. This is in line with the opinion of Mayasari et al. (2023), who stated that experience is one source of knowledge that can help a person understand and discover the truth through learning from previous experiences. Thus, personal experience is an important means of increasing understanding about the prevention of anaemia during pregnancy (Omar et al., 2023; Bizuneh & Azeze, 2022; Oyerinde et al., 2023).

The results showed that of the 50 respondents, 36 pregnant women had anaemia, consisting of 30 women with mild anaemia and 6 women with moderate anaemia, while 14 respondents did not have anaemia. This condition is supported by the findings of Devi et al. (2021), which explain that pregnant women's lack of knowledge about the increased need for iron during pregnancy is one of the main causes of iron deficiency anaemia. Bivariate analysis showed a significant relationship between the level of knowledge of pregnant women and the incidence of anaemia with a moderate level of relationship (Sari et al., 2022). This means that the knowledge of pregnant women about anaemia contributed 44.2% to the incidence of anaemia in the working area of the North Klaten Community Health Centre.

This finding is consistent with the results of a study by Chandra et al. (2019) at the Simpang Kawat Community Health Centre in Jambi City, which showed a relationship between pregnant women's knowledge about anaemia and the incidence of anaemia, where 10 out of 12 mothers with insufficient knowledge experienced anaemia. Thus, it can be concluded that there is a significant relationship between the level of knowledge of pregnant women and the incidence of anaemia during pregnancy (Agustina et al., 2021; Balcha et al., 2023).

The results of this study indicate that the level of knowledge among pregnant women is significantly related to the incidence of anaemia, thus improving health education is an important step in preventing anaemia in pregnant women. Health workers,

especially midwives, are expected to play an active role in providing comprehensive information on the importance of iron intake, a balanced diet, and compliance with iron tablet consumption (Zuiatna, 2021). In addition, the results of this study also provide a basis for local governments and community health centres to strengthen anaemia prevention programmes through routine monitoring, classes for pregnant women, and the integration of nutrition education into antenatal care (ANC) services in order to reduce the incidence of anaemia in the working area of the North Klaten Community Health Centre.

This study has limitations because it only examines the relationship between two variables, namely knowledge level and anaemia incidence, without considering other factors such as nutritional status, dietary patterns, parity, and birth spacing, which may also influence anaemia in pregnant women. In addition, the relatively small sample size and accidental sampling method may limit the generalisation of the research results to a wider population. Therefore, further research is recommended to use a larger sample size, an analytical research design with a multivariate approach, and involve other relevant variables in order to provide a more comprehensive understanding of the factors that influence the incidence of anaemia in pregnant women.

CONCLUSION

Based on the analysis results, there is a significant relationship between the level of knowledge of pregnant women and the incidence of anaemia at the North Klaten Community Health Centre. Pregnant women with low levels of knowledge have a higher risk of anaemia than pregnant women with good knowledge. These results indicate that knowledge plays an important role in preventing anaemia during pregnancy, particularly in relation to iron intake and a balanced diet. It is hoped that health workers, especially midwives in the Klaten Utara Community Health Centre, can increase health education activities for pregnant women on the importance of preventing anaemia, including how to take iron tablets regularly and choose foods that are rich in iron.

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REFERENCES

- Acheampong, K., Appiah, S., Baffour-Awuah, D., Saka Arhin, Y., & Author, C. (2018). Prevalence of anemia among pregnant women attending antenatal clinic of a selected hospital in Accra, Ghana. *International Journal of Health Sciences & Research*, 8(6), 186–192.
- Agustina, R., Hasyim, H., Rahmawati, R., Rachmi, C. N., Prihatini, S., & Dibley, M. J. (2021). Associations of knowledge, attitude, and practices toward anemia with anemia prevalence and height among Indonesian adolescent girls. *International Journal of Environmental Research and Public Health*, 18(21), 11151. <https://doi.org/10.3390/ijerph182111151>

- Balcha, W. F., Eteffa, T., Tesfu, A. A., & Alemayehu, B. A. (2023). Maternal knowledge of anemia and adherence to its prevention strategies: A health facility-based cross-sectional study design. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 60, 1–12. <https://doi.org/10.1177/00469580231167731>
- Badan Pusat Statistik Provinsi Jawa Tengah. (2022). *Profil Kesehatan Provinsi Jawa Tengah 2022*. Retrieved 22 November 2025 from [Profil Kesehatan Provinsi Jawa Tengah 2022 - Badan Pusat Statistik Provinsi Jawa Tengah](#)
- Bizuneh, A. D., & Azeze, G. G. (2022). Knowledge on anaemia and benefit of iron–folic acid supplementation among pregnant mothers attending antenatal care in Woldia town, North-eastern Ethiopia: A facility-based cross-sectional study. *Journal of Health, Population and Nutrition*, 41(32). <https://doi.org/10.1186/s41043-022-00315-9>
- Chandra, F., Junita, D. D., & Fatmawati, T. Y. (2019). Tingkat pendidikan dan pengetahuan ibu hamil dengan status anemia. *Jurnal Ilmiah Ilmu Keperawatan Indonesia*, 9(4), 653–659. <https://doi.org/10.33221/jiiki.v9i04.398>
- Devi, D., Lumentut, A. M., & Suparman, E. (2021). Gambaran pengetahuan dan sikap ibu hamil dalam pencegahan anemia pada kehamilan di Indonesia. *E-CliniC*, 9(1), 204–211. <https://doi.org/10.35790/eci.9.1.2021.32415>
- Dinas Kesehatan Kabupaten Klaten. (2022). *Profil Kesehatan Kabupaten Klaten 2022*. Retrieved 22 November 2025 from www.dinkes.klaten.go.id
- Heriyansyah, R., & Rangkuti, N. A. (2020). Hubungan jarak kehamilan dengan kejadian anemia ibu di Puskesmas Danau Marsabut Kabupaten Tapanuli Selatan tahun 2019. *Jurnal Kesehatan Ilmiah Indonesia*, 4(2).
- Kementerian Kesehatan Republik Indonesia. (2021). *Pedoman gizi seimbang ibu hamil dan ibu menyusui*. Retrieved 22 November 2025 from <https://repository.kemkes.go.id/book/879>
- Mardalena, I. (2021). *Dasar-dasar ilmu gizi dalam keperawatan*. Pustaka Baru Press.
- Mayasari, R., Almujaheediani, T., & Penulis, K. (2023). Faktor-faktor yang berhubungan dengan kejadian anemia pada ibu hamil. *Jurnal Ilmu Kesehatan Budi Mulia*. Retrieved from <https://journal.budimulia.ac.id/>
- Omar, K. A., Alomar, M. J., & Hasan, H. (2023). Anemia prevalence, associated factors, and outcomes in pregnant women: A cross-sectional study. *Saudi Journal of Biological Sciences*, 30(5), 1021949. <https://doi.org/10.1016/j.sjbs.2023.1021949>
- Oyerinde, O. O., Nkanga, E. A., Oyerinde, I. E., Akintoye, O., Asekun-Olarinmoye, I., & Alabi, Q. K. (2023). Factors affecting anemia in pregnant women in Ibeju-Lekki, Lagos State, Nigeria. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 60. <https://doi.org/10.1177/00469580231159961>

- Sari, D. M., Hermawan, D., Sahara, N., & Nusri, T. M. (2022). Hubungan antara usia dan paritas dengan kejadian anemia pada ibu hamil di wilayah kerja Puskesmas Seputih Banyak. *Malahayati Nursing Journal*, 4(5), 1315–1327. <https://doi.org/10.33024/mnj.v4i5.6412>
- Utama, R. P. (2021). Status gizi dengan kejadian anemia pada ibu hamil. *Jurnal Ilmiah Kesehatan Sandi Husada*, 10(2), 689–694. <https://doi.org/10.35816/jiskh.v10i2.680>
- Zuiatna, D. (2021). *Faktor-faktor yang mempengaruhi kejadian anemia pada ibu hamil. Jurnal Kebidanan Malahayati*. Retrieved 22 October 2025 from <http://ejurnalmalahayati.ac.id/index.php/kebidanan>