International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 06 June 2025
DOI: 10.47191/ijcsrr/V8-i6-42, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

Association Between Iron Tablet Adherence and Hemoglobin (Hb) Level Improvement Among Pregnant Women in The Kampung Sawah Health Center Area, Bandar Lampung

Winda Sari[1], Betta Kurniawan[1], Sutarto[1], Reni Zuraida[1], Jhons Fatriyadi Suwandi[1,2]
[1]Master of Public Health Program, Faculty of Medicine, University of Lampung, Jl.Prof Sumantri Bojonegoro No.1, Bandar Lampung, Lampung 35145, Indonesia
[2]Department of Microbiology and Parasitology, Faculty of Medicine, University of Lampung, Jl.Prof Sumantri Bojonegoro No.1, Bandar Lampung, Lampung 35145, Indonesia

ABSTRACT: Anemia in pregnant women remains a significant public health issue in Indonesia and contributes to increased maternal and neonatal morbidity and mortality. This study aimed to analyze the association between iron supplement tablet administration and the improvement of Hb levels among pregnant women at the Kampung Sawah Health Center, Tanjung Karang Timur Subdistrict, Bandar Lampung City. A cross-sectional study design was employed. The sample consisted of 66 pregnant women, including 33 with anemia and 33 without anemia, selected from prenatal care classes. Initial Hb data were obtained from medical records, followed by Hb examination after to iron supplement tablet administration. Data were analyzed using the paired sample t-test. The findings indicate that the administration of iron supplement tablets significantly contributes to an increase in Hb levels among pregnant women. The mean Hb level increased from 11.02 g/dL to 11.40 g/dL after to iron supplement tablet administration, with the paired sample t-test showing a statistically significant result ($p < 0.0001$).

KEYWORDS: Anaemia, Adherence, Hemoglobin (Hb), Iron Supplement Tablet, Pregnant women.

INTRODUCTION

Anemia in pregnant women is one of the public health problems that has not been fully resolved, especially in developing countries such as Indonesia. World Health Organization (WHO) maternal mortality rate (MMR) in Indonesia is still higher than its neighboring countries. In 2020, the MMR in Indonesia was recorded at around 189 deaths per 100,000 live births. Meanwhile, in Malaysia this figure is lower, at around 29 deaths per 100,000 live births in 2017, and in Singapore, it is even lower, at only around 8 deaths per 100,000 live births in the same year (WHO, 2023).

In Indonesia, the results of the Indonesian Health Survey (IHS) in 2023 showed that the prevalence of anemia in pregnant women reached 27.7%. Although lower than the 2018 Basic Health Research (Riskesdas) data which recorded 48.9%, this figure is still far from the national target of 2025 which targets the prevalence of anemia in pregnant women to be below 19%. This shows that the problem of anemia has not been fully addressed systematically (Ministry of Health, 2023). In Lampung Province, especially Bandar Lampung City, based on data from the Health Office in 2023, it was recorded that 5.65% of pregnant women experienced anemia and 1.18% experienced bleeding (Lampung Provincial Health Office, 2023). At the Kampung Sawah Health Center, records from November 2024 to January 2025 revealed that among 193 pregnant women who attended antenatal care visits, 32 (16.5%) were diagnosed with anemia. Although the coverage of iron supplement tablet distribution in the region reached 94.9%, the anemia rate remained relatively high, potentially endangering both maternal and fetal health.

Many factors influence the incidence of anemia in pregnant women, including maternal age, education level, type of employment, family income, number of parities, pregnancy spacing, nutritional status, nutritional knowledge, frequency of Antenatal Care (ANC) visits, and compliance in taking Fe tablets. In addition, macronutrient consumption factors such as energy, protein, fat, and carbohydrates are also a concern because they play a role in Hb formation and maintain nutritional conditions during pregnancy.

Blood supplementation tablets are one of the main interventions recommended by WHO for the prevention and control of anemia in pregnant women. Daily iron and folic acid supplementation is recommended as part of antenatal care to reduce the risk of iron deficiency anemia, pregnancy complications, and long-term impact on the fetus (WHO, 2025). As pregnancy progresses, the

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 06 June 2025
DOI: 10.47191/ijcsrr/V8-i6-42, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

mother's blood volume increases by 50% to meet the needs of the fetus and reproductive organs. The daily iron requirement of pregnant women jumps to around 30-60 mg per day. Iron intake from the daily diet, which averages only 10-15 mg per day with a low absorption rate, is unable to meet these needs. Therefore, iron supplementation in the form of iron supplement tablet is a very important intervention (Obianeli, et al., 2024).

iron supplement tablet contains iron in the form of ferrous sulfate or other forms that can be absorbed by the body. Iron is required for the formation of Hb in red blood cells. Iron deficiency causes disruption of erythropoiesis and leads to anemia (Damayanti, E. 2013). Iron is an essential component in the formation of Hb, the main protein in red blood cells that carries oxygen to all body tissues. Iron deficiency disrupts Hb synthesis and causes iron deficiency anemia. Meanwhile, folic acid plays an important role in DNA synthesis and erythrocyte formation. The combination of both in the form of iron supplement tablet is an important intervention to meet the physiological needs of pregnant women that increase during pregnancy, especially in supporting the process of erythropoiesis of red blood cell formation (F. Daley, 2023).

Iron requirements increase significantly during pregnancy due to increased blood volume, fetal growth, and placenta. If this need is not met, pregnant women are at risk of anemia which can lead to fatigue, increased risk of bleeding during labor, premature birth, and low birth weight (LBW) in infants. To meet these needs, supplementation in the form of blood supplement tablets is important because not all pregnant women are able to meet their iron needs only from their daily diet (Sangkhae, et al., 2023).

The benefits of iron supplement tablet are not only felt by the mother, but also have a direct impact on the condition of the fetus. Regular consumption of iron supplement tablet is proven to reduce the risk of premature birth, LBW, and even neonatal death. According to the Ministry of Health, (2018) in the Guidelines for Providing Blood Addition Tablets for Pregnant Women, pregnant women are recommended to consume 1 iron supplement tablet tablet per day for at least 90 days during their pregnancy. Each tablet contains 60 mg of elemental iron and 0.25 mg of folic acid, according to WHO standards.

Improving the effectiveness of iron supplement tablet requires a comprehensive strategy that includes nutrition education, compliance monitoring, family and health worker involvement, and proactive management of side effects. This approach has been shown to improve the nutritional status of pregnant women and reduce the incidence of anemia is significant. Given these conditions, it is essential to conduct a study to analyze the association between iron supplement tablet administration and the improvement of Hb levels among pregnant women at the Kampung Sawah Health Center, Tanjung Karang Timur Subdistrict, Bandar Lampung City.

METHODS

This study employed a cross-sectional design. In this design, respondents' Hb levels were measured after receiving iron supplement tablets, using a hematology analyzer. Initial Hb levels, recorded at the time of the first anemia diagnosis during pregnancy, were obtained from medical records. The study was conducted at the Kampung Sawah Health Center from February to June 2025. The research sample consisted of 66 pregnant women, divided equally into two groups: 33 anemic and 33 non-anemic participants. Sampling was conducted using a proportional sampling technique. Exclusion criteria included the use of medications known to increase Hb levels, such as gentamicin (an antibiotic) and methyldopa (an antihypertensive), as well as a history of infectious diseases based on diagnoses recorded in the electronic medical records (EMR). Research instruments included an informed consent form, a general questionnaire to collect demographic information, a screening questionnaire to document age, medical history, current illnesses, and medications used, as well as tools and materials for Hb testing. Data were analyzed descriptively, and differences in mean Hb levels before and after iron tablet consumption were assessed using the paired sample ttest. This study has received ethical approval under reference number 197/KEPK-TJK/IV/2025.

RESULTS

Based on the research conducted, the findings are presented in Table 1. At baseline, 50% of the pregnant women were anemic. After receiving iron supplement tablets, the number of anemic pregnant women decreased to 17 individuals (25.7%). Furthermore, a normality test was performed to assess whether the data were normally distributed. The results of the normality test for both initial Hb levels and post-intervention Hb levels indicated that the data followed a normal distribution.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 06 June 2025
DOI: 10.47191/ijcsrr/V8-i6-42, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

Table 1. Initial Hb Level and After Iron Supplement Tablet Administration

Variable	Basedline		Aftar iron supplement tablet	
	n	%	n	%
Anemia	33	50.0	17	25.7
Normal	33	50.0	49	74.3
Total	66	100.0	66	100.0

The results of the paired samples t-test showed a p-value of <0.0001 ($p < 0.05$), indicating a statistically significant difference between the mean initial Hb level and the level after iron supplement tablet administration. The mean initial Hb level was 11.02 g/dL, while the mean Hb level after iron supplementation increased to 11.40 g/dL (Table 2). This suggests that there was an improvement in Hb levels following the administration of iron tablets. The increase is more likely to be clinically meaningful when the tablets are taken regularly and in accordance with the recommendations of healthcare professionals.

Table 2. Paired Sample T-Test

	Baseline Hb level	After Iron supplement tablet adminitration	*p-value*
Avreage Hb level	11.0167	11.3985	<0,0001

DISCUSSION

The results of this study showed that there was an increase in Hb levels in pregnant women after the intervention of giving iron supplement tablet, namely from the average Hb level of 11.0167 g/dL to 11.3985 g/dL. The paired sample t-test statistical test resulted in a significance value of <0.0001 (p-value <0.05), indicating that iron supplement tablet administration is effective in increasing Hb levels and has an effect on reducing anemia rates. Pregnant women who are not compliant with taking iron supplement tablet have a higher risk of anemia. This is in line with Sutanto's research (2021) which states that the compliance of pregnant women in taking blood supplement tablets greatly affects the incidence of anemia, where obedient mothers show better Hb levels compared to non-obedient mothers.

Fe tablets are important to prevent iron deficiency anemia, which is common during pregnancy. The compliance of pregnant women in taking Fe tablets determines the success of anemia prevention during pregnancy. Physiologically, iron contained in Fe tablets is required for the formation of Hb, which functions to transport oxygen throughout the body. Noncompliance in taking Fe tablets causes iron intake to be insufficient to meet the body's increased needs during pregnancy, thus increasing the risk of iron deficiency anemia.

According to Wahyuni Rahmahani & Rahmawati (2023) non-compliance in Fe tablet consumption is one of the main causes of low Hb levels in pregnant women, especially in the second and third trimesters when iron requirements increase significantly. Adherence to iron supplement tablet consumption can be influenced by various factors, such as side effects (nausea, constipation), discomfort, lack of knowledge, and support from health workers.

Providing iron supplement tablet can prevent iron deficiency anemia and a diet that supports iron absorption is still needed to ensure optimal results. Giving Fe tablets together with iron-rich foods will increase the Hb level of pregnant women in the third trimester more effectively than giving Fe tablets alone (Mutianingsih & Wathaniah, 2018). Taking iron supplements and foods that contain high iron can lead to increased iron absorption in the body. Mothers who are not compliant with taking iron supplement tablet during pregnancy are more at risk of anemia. Fe tablets are the main intervention in the prevention of iron deficiency anemia. This result is in line with Sutanto, (2021), which shows that compliance with iron supplement tablet consumption is directly proportional to Hb levels.

In a study conducted by Nuryanto, et al., (2023) daily administration of blood supplement tablets proved more effective than weekly administration in increasing Hb levels. Mean Hb levels increased significantly after the intervention, indicating the effectiveness of iron supplement tablet in improving body iron status. In a study by (Nuryanto, et al., 2023) it was mentioned that daily iron supplement tablet administration was able to increase the Hb level of pregnant women by an average of 1.2 g/dL in four weeks. However, various challenges are still faced in the implementation of iron supplement tablet supplementation programs. A study by Keysha, et al. (2024) showed that an increase in Hb levels of 1-3 g/dL generally occurs after regular supplementation for

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 06 June 2025
DOI: 10.47191/ijcsrr/V8-i6-42, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

4-8 weeks. Vitamin C intake and a diet with iron-rich foods markedly improved iron absorption. iron and Hb levels in late trimester pregnant women. Various factors can affect pregnant women's adherence to iron supplement tablet, including side effects such as nausea, constipation, metallic taste in the mouth, or ignorance about the importance of t h e tablets (Fouelifack, et al., 2019).

An international study by Berhe, et al., (2019) in Ethiopia mentioned that pregnant women who had comprehensive knowledge about anemia were 2.62 times more likely to adhere to taking iron supplements. lack of knowledge about the importance of iron during pregnancy, and the lack of education and support from health workers (Salifu, et al., 2024; Ayenew, et al., 2022). This is in line with the research of Dermawan, et al. (2024), which states that although the distribution of iron supplement tablet in some areas is high, the level of compliance is still low due to the lack of education and supervision of consumption by health workers. It is also important to pay attention to the socioeconomic status and working conditions of the mother. Mothers who work in the informal sector, such as laborers or domestic helpers, often experience excessive fatigue due to high physical workload without adequate nutritional intake. This increases the need for energy and nutrients, but limited time and resources lead to low consumption of nutritious foods. As a result, iron requirements are not met despite iron supplement tablet (Reshid & Anato, 2024).

This is reinforced by Yuanita Shilhah's research, et al. (2023) which showed that compliance of pregnant women in consuming iron supplement tablet, accompanied by vitamin C intake to help iron absorption, reduced the prevalence of anemia from 44% to only 6%. Nahrisah, et al.'s (2020) study showed that community-based nutrition education and interpersonal approaches from health workers can significantly improve adherence. In various developing countries including Indonesia, pregnant women who come from low socioeconomic groups and work in the informal sector tend to have lower adherence rates, due to high workloads that are not balanced with adequate nutritional intake (Yassin, et al., 2024).

Meanwhile, the WHO report (2023) confirms that iron supplementation during pregnancy is a key intervention to prevent anemia, and its effectiveness largely depends on adherence Daily iron and folic acid supplementation is currently recommended by WHO as part of antenatal care, to reduce the risk of anemia in pregnant women and iron deficiency. WHO also recognizes that low adherence is one of the main challenges in the success of iron supplementation programs, not the effectiveness of the supplements themselves. Although the coverage of iron supplement tablet in the Kampung Sawah Puskesmas working area is high (94.9%), the anemia rate still reaches 16.5%, which shows that the availability of Fe tablets does not guarantee the success of the program if it is not followed by adequate education and monitoring of consumption.

Thus, continuous nutrition education and personalized approach from health workers to pregnant women is essential to improve their understanding, awareness, and compliance in taking Fe tablets. Without optimal compliance, this intervention will not have the maximum impact in reducing the incidence of anemia during pregnancy.

CONCLUSION

Based on the results of research conducted at the Kampung Sawah Health Center, East Tanjung Karang Subdistrict, Bandar Lampung City, it can be concluded that the provision of iron supplement tablet significantly plays a role in the provision of blood supplements. Increase Hb levels in pregnant women. There was an increase in mean Hb level from 11.0167 g/dL before iron supplement tablet administration to 11.3985 g/dL after iron supplement tablet administration, with paired sample t-test results showing significant <0.0001 (p-value <0.05). This finding proves that iron supplement tablet is effective as an anemia prevention intervention in pregnant women.

REFERENCES

1. Ayenew Engida Yismaw, Helen Bekele Tulu, Fisseha Yetwale Kassie, & Bilen Mikonnen Araya. (2022). Iron-folic acid adherence and associated factors among pregnant women attending antenatal care at Metema District, Northwest Ethiopia. Frontiers in Public Health, 1-6.
2. Berhe, K., Fseha, B., Gebremariam, G., Teame, H., Etsay, N., Welu, G., & Tsegay, T. (2019). Risk factors of anemia among pregnant women attending antenatal care in health facilities of eastern zone of tigray, Ethiopia, case-control study, 2017/18. Pan African Medical Journal, 34, 1-10. https://doi.org/10.11604/pamj.2019.34.121.15999
3. Damayanti, E. (2013). Nutrition Science for Students and Health Professionals. Jakarta: EGC Medical Book Publisher.
4. Dermawan, Z., Permana, I., & Setiatjahjati, S. (2024). The Relationship of Blood Additive Tablet Supplements as Micronutrient Fulfillment to Potential Stunting in Indonesia; A Systematic Review of the Literature. 12(2), 41-50.
5. Lampung Provincial Health Office. (2024). Health Profile of Lampung Province in 2023 (Issue 44).

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 06 June 2025
DOI: 10.47191/ijcsrr/V8-i6-42, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

6. Fady Moustarah; Sharon F. Daley. (2023). Dietary Iron. In StatPearls. StatPearls.
7. Fouelifack, F. Y., Sama, J. D., & Sone, C. E. (2019). Assessment of adherence to iron supplementation among pregnant women in the yaounde gynaeco-obstetric and paediatric hospital. Pan African Medical Journal, 34, 1-8. https://doi.org/10.11604/pamj.2019.34.211.16446
8. Ministry of Health, R. (2018). Guidelines for the Management of Blood Addition Tablets. Indonesian Ministry of Health, 46. https://promkes.kemkes.go.id/download/fpck/files51888Buku Blood Addition Tablets 100415.pdf
9. Ministry of Health of the Republic of Indonesia. (2023). Indonesia Health Profile 2023. 100.
10. Keysha Feiruzian Rafeifadattis, Najwa Adiva Faiza Setyawan, Rahma Amalia, Yanti Windasari, Yesica Natalia Lawrence, M. A. S. S. (2024). Journal of Global Innovation. Journal of Global Innovation, 2(3), 543-551.
11. Mutianingsih, M., & Wathaniah, W. (2018). Nutrition in reproductive health. Yogyakarta: Deepublish
12. Nahrisah, P., Somrongthong, R., Viriyautsahakul, N., Viwattanakulvanid, P., & Plianbangchang, S. (2020). Effect of integrated pictorial handbook education and counseling on improving anemia status, knowledge, food intake, and iron tablet compliance among anemic pregnant women in Indonesia: A quasi-experimental study. Journal of Multidisciplinary Healthcare, 13, 43-52. https://doi.org/10.2147/JMDH.S213550
13. Nuryanto, Y. D., Faizah, A. K., & Rachmat, E. (2023). Volume 4 No. 1 : 2023 Journal of Pharmacy Science and Technology Volume 4 No. 1 : 2023. Journal Of Pharmacy Science and Technology, 4(1), 17-23.
14. Obianeli, C., Afifi, K., Stanworth, S., & Churchill, D. (2024). Iron Deficiency Anaemia in Pregnancy: A Narrative Review from a Clinical Perspective. Diagnostics, 14(20), 1-17. https://doi.org/10.3390/diagnostics14202306
15. Reshid, M., & Anato, A. (2024). Community-based nutrition education and counseling provided during pregnancy: Effects on knowledge and attitude towards iron-folic acid supplementation. Journal of Nutritional Science, 13, 1-9. https://doi.org/10.1017/jns.2024.59
16. Salifu, Y., Agyeman, Y. N., & Lasong, J. (2024). Adherence to and predictors of iron-folate acid supplementation among pregnant women in a pastoral population in Ghana: a community-based cross-sectional study. Reproductive Health, 21(1). https://doi.org/10.1186/s12978-024-01877-z
17. Sangkhae, V., Fisher, A. L., Ganz, T., & Nemeth, E. (2023). Iron Homeostasis during Pregnancy: Maternal, Placental, and Fetal Regulatory Mechanisms. Annual Review of Nutrition, 43, 279-300. https://doi.org/10.1146/annurev-nutr-061021-030404
18. Sutanto. (2021). Factors influencing the compliance of pregnant women with iron deficiency anemia to take blood supplement tablets at the Tanjung Sari Natar Health Center, South Lampung Regency in 2021. University of Lampung.
19. Wahyuni Rahmahani, I., & Rahmawati, D. (2023). The Relationship Between Compliance with Fe Tablet Consumption with the Incidence of Anemia in Pregnant Women at the Kandangan Health Center, Hulu Sungai Selatan Regency in 2022. Health Research Journal of Indonesia (HRJI), 1(6), 285-292.
20. World Health Organization, UNICEF, UNFPA, World Bank Group, & U. N. P. D. (2023). Trends in maternal mortality 2000 to 2020: Estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. Geneva: World Health Organization. https://doi.org/10.30875/9789287074102c005
21. World Health Organization. (2023). Daily iron and folic acid supplementation during pregnancy. WHO eLENA. Retrieved from https://www.who.int/tools/elena/interventions/daily-iron-pregnancy\
22. World Health Organization. (2025). Anaemia. World Health Organization. https://www.who.int/news-room/fact sheets/detail/anaemia
23. Yassin, M. A., Kumma, W. P., Haile, D. T., & Elilo, L. T. (2024). Compliance to iron folic acid consumption and associated factors among antenatal care attendant mothers in southern Ethiopia. Scientific Reports, 14(1), 27351. https://doi.org/10.1038/s41598-024-79066-y
24. Yuanita Shilhah, S., Rizal Permadi, M., Dwi Elisanti, A., Susindra, Y., Jannah, M., Health, J., & Negeri Jember, P. (2023). Adherence to Blood Addition Tablet Consumption, Iron Intake, Vitamin C and Hemoglobin Level of Pregnant Women. HARENA: Journal of Nutrition, 4(1), 2774-7654

Cite this Article: Sari, W., Kurniawan, B., Sutarto, Zuraida, R., Suwandi, J.F. (2025). Association Between Iron Tablet Adherence and Hemoglobin (Hb) Level Improvement Among Pregnant Women in The Kampung Sawah Health Center Area, Bandar Lampung. International Journal of Current Science Research and Review, 8(6), pp. 3073-3077. DOI: https://doi.org/10.47191/ijcsrr/V8-i6-42