

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20262557>

Case Series

Implementation of individualized nursing care plans among antenatal mothers with anemia in a tertiary care hospital: a case series

Madhubala A.¹, Madhumitha R.¹, Mariya James¹, Mekala Moorthy^{2*}

¹B.Sc. Nursing IV Year Student, KMCH College of Nursing, Coimbatore, Tamil Nadu, India

²Department of Obstetrics and Gynecology Nursing, KMCH College of Nursing, Coimbatore, Tamil Nadu, India

Received: 27 May 2026

Revised: 08 July 2026

Accepted: 16 July 2026

*Correspondence:

Mekala Moorthy,

E-mail: buddlymeghu87@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Anemia during pregnancy remains one of the most common nutritional disorders affecting maternal and fetal health, particularly in developing countries. Nurses play an important role in identifying maternal problems, providing health education, improving dietary practices, and promoting adherence to iron supplementation. This case series describes the nursing management of ten antenatal mothers diagnosed with anemia (hemoglobin <11 g/dl) who were admitted to the antenatal ward of KMCH Hospital, Coimbatore, Tamil Nadu, during February and March 2026. Each mother underwent a comprehensive nursing assessment, and individualized nursing care plans were developed based on the identified nursing problems. The most common symptoms were fatigue (80%), generalized weakness (60%), breathlessness (50%), headache (50%), and poor appetite (50%). Imbalanced nutrition (90%), fatigue (80%), deficient knowledge regarding anemia management (80%), and activity intolerance (60%) were the major nursing problems identified. Nursing interventions included nutritional counselling, reinforcement of iron-folic acid supplementation, dietary advice to improve iron absorption, monitoring of maternal condition, and health education. Following implementation of the nursing care plans, seven mothers showed improvement in symptoms, dietary practices, and adherence to iron therapy, while three mothers showed partial improvement and required continued counselling and follow-up. This case series highlights the importance of individualized nursing care in improving maternal understanding, treatment adherence, and early management of anemia during pregnancy.

Keywords: Antenatal mothers, Anemia, Nursing care, Iron deficiency anemia, Pregnancy, Case series

INTRODUCTION

Pregnancy is associated with several physiological changes that increase the demand for nutrients, particularly iron. Adequate hemoglobin levels are essential to meet the increased oxygen requirements of both the mother and the developing fetus. When these increased demands are not met, anemia develops, affecting maternal health as well as pregnancy outcomes. According to the WHO, anemia in pregnancy is defined as a hemoglobin level below 11 g/dl and continues to be a major public health problem worldwide, particularly in low- and middle-income countries.¹ Iron deficiency remains the leading cause of

anemia during pregnancy. Other contributing factors include poor dietary intake, inadequate birth spacing, repeated pregnancies, low socioeconomic status, parasitic infections, poor compliance with iron-folic acid supplementation, and limited awareness regarding maternal nutrition.²⁻⁴ In India, anemia continues to affect a large proportion of pregnant women despite the implementation of national nutritional programmes and routine antenatal care services. The National Family Health Survey-5 reported that more than half of pregnant women in India are anemic, highlighting the continued burden of this condition.³

Maternal anemia is associated with several adverse outcomes for both the mother and the fetus. Common maternal problems include fatigue, generalized weakness, dizziness, reduced physical capacity, and poor tolerance to blood loss during childbirth. If left untreated, anemia increases the risk of preterm birth, low birth weight, intrauterine growth restriction, postpartum infections, delayed maternal recovery, and other pregnancy-related complications.⁵⁻⁸ Early identification and timely management are therefore essential to improve maternal and neonatal outcomes.

Nurses play a central role in the prevention and management of anemia during pregnancy. Routine assessment, identification of nursing problems, nutritional counselling, reinforcement of iron-folic acid supplementation, health education, and regular follow-up can improve maternal knowledge and treatment adherence. Individualized nursing care plans help nurses address the specific needs of each mother and provide care that is appropriate to her clinical condition.¹² Although several studies have reported the prevalence and medical management of maternal anemia, fewer publications have described the practical implementation of individualized nursing care plans in routine antenatal practice. Sharing such clinical experiences may help nurses understand the common problems encountered by antenatal mothers with anemia and the nursing interventions that can be incorporated into daily practice. Therefore, this case series was undertaken to describe the nursing management and short-term outcomes of antenatal mothers with anemia admitted to a tertiary care hospital.

CASE SERIES

This case series describes ten antenatal mothers diagnosed with anemia (hemoglobin <11 g/dl) who were admitted to the antenatal ward of KMCH Hospital, Coimbatore, Tamil Nadu, between February and March 2026. Institutional permission was obtained before the commencement of the study, and written informed consent was obtained from all participants. All mothers underwent a detailed nursing assessment on admission. Information regarding demographic characteristics, obstetric history, previous history of anemia, dietary habits, and compliance with iron-folic acid supplementation was collected. Clinical assessment included general physical examination, severity of anemia, presenting symptoms, dietary practices, and identification of nursing problems. Based on the assessment findings, individualized nursing care plans were prepared and implemented for each mother. Nursing interventions included nutritional counselling, reinforcement of iron-folic acid supplementation, advice regarding iron-rich foods and foods that enhance iron absorption, guidance on adequate rest and activity, monitoring of maternal condition, and health education regarding anemia prevention and the importance of regular antenatal follow-up. These interventions were planned according to current recommendations for the management of anemia during pregnancy.^{12,18}

Patient characteristics

The demographic and obstetrical characteristics of the antenatal mothers are presented in Table 1. Half of the participants (50%) were between 26 and 30 years of age, while 30% were between 21 and 25 years and 20% were between 31 and 35 years. Five mothers (50%) were primigravida, four (40%) were gravida two, and one (10%) was gravida three. Most participants were housewives (60%). Four mothers (40%) had a previous history of anemia. Seven mothers (70%) reported regular intake of iron-folic acid tablets, whereas two (20%) reported irregular intake and one (10%) was not taking iron supplementation.

Table 1: Demographic and obstetrical characteristics of antenatal mothers with anemia (n=10).

Variables	Frequency	Percentage
Age (years)		
21-25	3	30
26-30	5	50
31-35	2	20
Gravida		
G1	5	50
G2	4	40
G3	1	10
Educational status		
10th standard	3	30
12th standard	3	30
Graduate	4	40
Occupation		
Housewife	6	60
Teacher	2	20
Nurse	1	10
Accountant	1	10
Previous history of anemia		
Yes	4	40
No	6	60
Iron-folic acid supplementation		
Regular	7	70
Irregular	2	20
Not taking	1	10

Clinical presentation

The clinical findings observed at the time of admission are summarized in Table 2 and 3. Six mothers (60%) were in stable general condition, while four (40%) appeared weak. Pallor was present in five mothers (50%). None of the mothers had oedema or icterus on physical examination. Five mothers (50%) had mild anemia (hemoglobin 10.0-10.9 g/dl) and five (50%) had moderate anemia (hemoglobin 7.0-9.9 g/dl). Severe anemia was not observed in any participant. Fatigue was the most frequently reported symptom (80%), followed by generalized weakness (60%). Breathlessness, headache,

and poor appetite were each reported by five mothers (50%).

Table 2: General physical examination findings among antenatal mothers with anemia (n=10).

Variables	Frequency	Percentage
General condition		
Stable	6	60
Weak	4	40
Pallor		
Present	5	50
Absent	5	50
Oedema		
Present	0	0
Absent	10	100
Icterus		
Present	0	0
Absent	10	100

Table 3: Clinical features of anemia among antenatal mothers (n=10).

Variables	Frequency	Percentage
Severity of anemia		
Mild anemia (10.0-10.9 g/dl)	5	50
Moderate anemia (7.0-9.9 g/dl)	5	50
Severe anemia (<7 g/dl)	0	0
Presenting symptoms		
Fatigue	8	80
Generalized weakness	6	60
Breathlessness	5	50
Headache	5	50
Poor appetite	5	50

Dietary assessment

The dietary assessment findings are presented in Table 4. All participants reported consuming a mixed diet. Four mothers (40%) had the habit of drinking tea or coffee immediately after meals, whereas six (60%) did not. Since tea and coffee may interfere with iron absorption, dietary counselling focused on modifying these practices in addition to encouraging regular intake of iron-rich foods and foods rich in vitamin C.^{2,18}

Table 4: Dietary history among antenatal mothers with anemia (n=10).

Variables	Frequency	Percentage
Diet types		
Vegetarian	0	0
Mixed diet	10	100
Tea/coffee immediately after meals		
Yes	4	40
No	6	60

Nursing management

Based on the nursing assessment, individualized nursing care plans were prepared for all mothers. The identified nursing problems are presented in Table 5. Imbalanced nutrition related to inadequate intake of iron-rich foods was identified in nine mothers (90%). Fatigue and deficient knowledge regarding anemia management were each identified in eight mothers (80%). Activity intolerance was observed in six mothers (60%), while ineffective health management was identified in three mothers (30%).

Nursing interventions focused on improving maternal nutritional practices, reinforcing adherence to iron-folic acid supplementation, educating mothers about dietary sources of iron and vitamin C, advising them to avoid tea or coffee immediately after meals, promoting adequate rest, monitoring maternal symptoms, and providing counselling regarding the importance of regular antenatal follow-up.^{12,18}

Table 5: Nursing problems identified among antenatal mothers with anemia (n=10).

Nursing problem	Frequency	Percentage
Imbalanced nutrition	9	90
Fatigue	8	80
Deficient knowledge regarding anemia management	8	80
Activity intolerance	6	60
Ineffective health management	3	30

Outcomes

The outcomes following implementation of the individualized nursing care plans are shown in Table 6. Seven mothers (70%) demonstrated improvement in symptoms, dietary practices, and adherence to iron-folic acid supplementation during their hospital stay. Three mothers (30%) showed partial improvement and required continued counselling and follow-up after discharge. None of the mothers showed deterioration in their clinical condition during the period of observation.

Table 6: Outcome evaluation following implementation of individualized nursing care plans (n=10).

Outcome	Frequency	Percentage
Achieved	7	70
Partially achieved	3	30
Not achieved	0	0

DISCUSSION

Anemia continues to be one of the most common nutritional problems during pregnancy and remains a

major concern in maternal health, particularly in developing countries.^{1,3} This case series describes the nursing management of antenatal mothers with anemia admitted to a tertiary care hospital and their clinical response during the period of hospitalization.

Half of the mothers in the present series were between 26 and 30 years of age, and 50% were primigravida. Similar observations have been reported in earlier studies, where maternal anemia was frequently seen among women in the reproductive age group and during the first pregnancy.^{4,8} The increased nutritional requirements of pregnancy, together with inadequate dietary intake and poor compliance with iron supplementation, may contribute to the development of anemia.^{2,8}

Fatigue was the most common symptom observed in the present series, followed by generalized weakness, breathlessness, headache, and poor appetite. These findings are comparable with those reported by Rahman et al and Beressa et al who identified fatigue and reduced physical capacity as common clinical manifestations of maternal anemia.^{5,7} Such symptoms can interfere with a mother's daily activities and reduce her overall well-being during pregnancy.

Dietary assessment showed that all mothers consumed a mixed diet. However, four mothers reported drinking tea or coffee immediately after meals. Tea and coffee are known to reduce iron absorption, and this may affect the response to oral iron therapy.¹⁸ Similar observations have been reported in previous studies evaluating dietary practices among pregnant women with anemia.⁸ Nutritional counselling was therefore included as part of the nursing care plan for all mothers.

Imbalanced nutrition was the most common nursing problem identified in this series, followed by fatigue, deficient knowledge regarding anemia management, and activity intolerance. These findings indicate that nursing care should focus not only on iron supplementation but also on improving dietary practices, increasing awareness about anemia, and encouraging adherence to treatment. Individualized nursing care plans helped address the specific needs of each mother through counselling, health education, symptom monitoring, and reinforcement of iron-folic acid supplementation.¹²

Seven mothers showed improvement in symptoms, dietary practices, and adherence to iron-folic acid supplementation following implementation of the nursing care plans, while three mothers showed partial improvement during the period of hospitalization. Similar improvements following nutrition education and counselling have been reported in earlier studies.^{10,14,15} Although the observation period in the present series was short, the mothers responded positively to the nursing interventions provided.

This case series has some limitations. It included only ten antenatal mothers from a single tertiary care hospital, and outcomes were assessed only during the hospital stay. Long-term follow-up was not carried out, and there was no comparison group. Therefore, the findings should be interpreted with caution. Studies involving larger numbers of participants and longer follow-up are needed to better understand the effect of individualized nursing care on maternal outcomes.

CONCLUSION

Anemia remains a common health problem among pregnant women and continues to affect maternal well-being during pregnancy. In this case series, fatigue, poor dietary practices, inadequate knowledge regarding anemia management, and activity intolerance were the most frequently identified nursing problems. Individualized nursing care, including nutritional counselling, reinforcement of iron-folic acid supplementation, health education, and regular assessment, was associated with improvement in symptoms and treatment adherence in most of the mothers during their hospital stay. The observations from this case series support the value of individualized nursing care as part of routine antenatal services. Early assessment and timely nursing interventions may help improve maternal health and encourage better compliance with treatment. Further studies involving larger numbers of participants and longer follow-up are needed to strengthen the available evidence.

ACKNOWLEDGEMENTS

The authors express their sincere gratitude to the Principal, KMCH College of Nursing, Coimbatore; the management of KMCH Hospital; the Department of Obstetrics and Gynecological Nursing for granting permission to conduct this case series; and to all the antenatal mothers who willingly participated.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. WHO. WHO Global Anaemia estimates, 2025 Edition, 2026. Available at: https://www.who.int/data/gho/data/themes/topics/anaemia_in_women_and_children. Accessed on 21 May 2026.
2. WHO. WHO recommendations on antenatal care for a positive pregnancy experience, 2026. Available at: <https://www.who.int/publications/i/item/9789241549912>. Accessed on 21 May 2026.
3. International Institute for Population Sciences (IIPS), ICF. National Family Health Survey (NFHS-5), 2019–21: India report. Mumbai: IIPS, 2021. Available at: [chrome-extension://efaidnbmnnnibpcajpcgglefindmkaj/](https://efaidnbmnnnibpcajpcgglefindmkaj/)https:

//dhsprogram.com/pubs/pdf/FR375/FRdf. Accessed on 21 May 2026.

4. Ruiz de Viñaspre-Hernández R, Juárez-Vela R, García-Erce JA, Nanwani-Nanwani K, González-Fernández S, Gea-Caballero V, et al. Iron deficiency anemia during pregnancy and maternal and neonatal health outcomes: A prospective study, Spain, 2021-2022. *Heliyon.* 2024;11(1):e41565.
5. Rahman MM, Abe SK, Rahman MS, Kanda M, Narita S, Bilano V, Ota E, et al. Maternal anemia and risk of adverse birth and health outcomes in low- and middle-income countries: systematic review and meta-analysis. *Am J Clin Nutr.* 2016;103(2):495-504.
6. Chen Y, Zhang Y, Wang H, Zhao N, Luo X, Liu J. Maternal anemia during pregnancy and adverse neonatal outcomes: a prospective cohort study. *JAMA Netw Open.* 2024;7(1):e235214.
7. Beressa G, Tesema GA, Teshale AB, Kebede WM. Maternal anemia and adverse pregnancy outcomes: a systematic review and meta-analysis. *BMC Pregnancy Childbirth.* 2024;24:118.
8. Sunuwar DR, Singh DR, Chaudhary NK, Pradhan PMS, Rai P, Tiwari K. Prevalence and factors associated with anemia among women of reproductive age in seven South and Southeast Asian countries: Evidence from nationally representative surveys. *PLoS One.* 2020;15(8):e0236449.
9. Debi S, Dutta S, Kaur H. Compliance with iron and folic acid supplementation among pregnant women attending antenatal clinics. *J Obstet Gynecol India.* 2020;70(3):214-20.
10. Yismaw AE, Tarekegn AA, Debelew GT. Adherence to iron supplementation and associated factors among pregnant women attending antenatal care services. *BMC Pregnancy Childbirth.* 2022;22:145.
11. Doenges ME, Moorhouse MF, Murr AC. Nursing care plans: Guidelines for individualizing client care. 10th ed. Philadelphia: FA Davis Company; 2019.
12. Engidaw MT, Gebremariam AD, Tsegaye AT. Effectiveness of nutrition education on iron supplementation compliance among pregnant women: a systematic review. *Public Health Nutr.* 2025;28(2):215-23.
13. Anato A, Girma A, Fikadu K. Effect of counselling on iron supplementation adherence among pregnant women using the Health Belief Model approach. *BMC Pregnancy Childbirth.* 2025;25:87.
14. Lowdermilk DL, Perry SE, Cashion K, Alden KR. Maternity and women's health care. 12th ed. St. Louis: Elsevier; 2020.
15. Dutta DC. Textbook of obstetrics. 10th ed. New Delhi: Jaypee Brothers Medical Publishers; 2022.
16. WHO. Daily iron and folic acid supplementation in pregnant women, 2023. Available at: <https://www.who.int/tools/elena/interventions/daily-iron-pregnancy>. Accessed on 21 May 2026.

Cite this article as: Madhubala A, Madhumitha R, James M, Moorthy M. Implementation of individualized nursing care plans among antenatal mothers with anemia in a tertiary care hospital: a case series. *Int J Reprod Contracept Obstet Gynecol* 2026;15:3210-4.