



Anaemia in pregnancy: A major complication

***Emmanuel Ifeanyi Obeagu¹, Mugabi Daniel², Getrude Uzoma Obeagu³,
Isaac Edyedu⁴ and M.I. Umar^{5,6}**

¹Department of Medical Laboratory Science, Kampala International University, Uganda.

²Department of Obstetrics and Gynaecology, Kampala International University, Uganda

³School of Nursing Science, Kampala International University, Uganda.

⁴Department of Surgery, Kampala International University Teaching Hospital, Uganda.

⁵Department of Human Anatomy, Kampala International University, Uganda.

⁶Department of Human Anatomy, Federal University, Dutse, Jigawa State, Nigeria.

Abstract

Anaemia affects approximately 38% of pregnant women globally and is a major public health concern. In pregnancy, it can be caused by various factors, including inadequate intake of iron and other nutrients, increased iron requirements due to the growth of the fetus and placenta, and blood loss during delivery. Anaemia in pregnancy is associated with various adverse outcomes, including preterm delivery, low birth weight, perinatal mortality, and maternal morbidity and mortality. Anaemia in pregnancy is a significant public health problem with potentially serious consequences for both the mother and the fetus. Efforts to prevent and treat it in pregnancy are essential to improve maternal and fetal health outcomes. Early detection and management of anaemia in pregnancy are crucial for the health of both the mother and the baby, preventive measures against the causes of anaemia, sensitization of the public about the effects of anaemia.

Keywords: anaemia, pregnancy, women, haemoglobin, red blood cells, packed cell volume

Introduction

Anaemia is a common problem during pregnancy, affecting millions of women worldwide. Anaemia in pregnancy is defined as a hemoglobin level of less than 11.0 g/dL in the first and third trimesters and less than 10.5 g/dL in the second trimester [1-13]. The World Health Organization (WHO) estimates that approximately 38% of pregnant women worldwide are anemic [14].

Anaemia in pregnancy can have significant consequences for both the mother and the fetus. Maternal anaemia is associated with an increased risk of maternal morbidity and mortality, including postpartum hemorrhage, pre-eclampsia, and infections [15]. Anaemia in pregnancy can also increase the risk of preterm delivery, low birth weight, and perinatal mortality [15].

The causes of anaemia in pregnancy are multifactorial, and include poor dietary intake of iron and other micronutrients, parasitic infections such as malaria and hookworm, and genetic disorders such as sickle cell anaemia and thalassemia [16]. Iron deficiency anaemia is the most common type of anaemia in pregnancy, accounting for up to 75% of cases [15].

Prevention and treatment of anaemia in pregnancy is crucial for improving maternal and fetal health outcomes. The WHO recommends daily iron and folic acid supplementation for pregnant women in areas with a high prevalence of anaemia[17]. Deworming, dietary improvements, and treatment of parasitic infections are also important interventions to prevent and treat anaemia in pregnancy.

Anaemia

Anaemia is a condition characterized by a low level of hemoglobin in the blood, resulting in a reduced ability of the blood to carry oxygen. Anaemia is a common condition in pregnancy, and it is defined as a hemoglobin level less than 11 g/dL in the first and third trimesters, and less than 10.5 g/dL in the second trimester [1]. According to the World Health Organization (WHO), anaemia affects approximately 38% of pregnant women globally and is a major public health concern [1].

Anaemia in pregnancy is a significant public health concern worldwide. Several studies have examined the prevalence of anaemia in pregnant women in different countries and regions. In this literature review, we will explore some of the research on the prevalence of anaemia in pregnant women, including its global burden and regional variations.

A study conducted by the World Health Organization (WHO) estimated that the prevalence of anaemia in pregnant women worldwide is 38%, with the highest prevalence observed in South Asia (49.2%) and the lowest in North America (17.4%) [14]. The study found that the prevalence of anaemia in pregnant women is higher in developing countries than in

developed countries. The high prevalence of anaemia in developing countries is attributed to poor dietary intake of iron and other micronutrients, infections, and poor access to healthcare.

In Sub-Saharan Africa, the prevalence of anaemia in pregnant women is also high, with estimates ranging from 35% to 61% [18]. A study conducted in Ghana found that the prevalence of anaemia in pregnant women was 50.1%, with iron deficiency being the leading cause of anaemia[19]. Another study conducted in Nigeria found that the prevalence of anaemia in pregnant women was 57.9%, with malaria being the most common cause of anaemia[20].

In South Asia, the prevalence of anaemia in pregnant women is also high. A study conducted in Bangladesh found that the prevalence of anaemia in pregnant women was 41%, with iron deficiency being the most common cause of anaemia[21].

The prevalence of anaemia among pregnant women attending ANC in Uganda varies widely, ranging from 23.5% to 74.0%. A study conducted in eastern Uganda by Ndyomugenyiet *al.* [22] found a prevalence of 45.6% among pregnant women attending ANC. Similarly, a study conducted in central Uganda by Obaiet *al.*[23] reported a prevalence of 46.7% among pregnant women attending ANC. In contrast, a study conducted in northern Uganda by Onongeet *al.* [24] found a prevalence of 23.5% among pregnant women attending ANC.

Risk Factors for Anaemia in pregnancy including

Iron deficiency

Iron deficiency is the most common cause of anaemia in pregnancy. It occurs when there is a lack of iron in the body, which is needed to make hemoglobin. Hemoglobin is the protein in red blood cells that carries oxygen to the body's tissues. Iron deficiency anaemia affects up to 50% of pregnant women worldwide [25-26].

Nutritional deficiencies

Nutritional deficiencies, particularly deficiencies in folate, vitamin B12, and vitamin A, can also lead to anaemia in pregnancy. A study conducted in India found that anaemia was significantly associated with lower levels of folate and vitamin B12 in pregnant women [27].

Hemoglobinopathies

Hemoglobinopathies are genetic disorders that affect the structure or production of hemoglobin. These disorders can cause anaemia in pregnancy, particularly in populations where hemoglobinopathies are common. A study conducted in Nigeria found that sickle cell trait and sickle cell disease were significantly associated with anaemia in pregnancy [28].

Chronic illnesses

Chronic illnesses such as diabetes, hypertension, and kidney disease can increase the risk of anaemia in pregnancy. A study conducted in Iran found that women with gestational diabetes were more likely to develop anaemia compared to women without gestational diabetes [29].

Multiparity: Women who have had multiple pregnancies are at an increased risk of anaemia in pregnancy. This is because each pregnancy depletes the body's iron stores, and these stores may not have enough time to replenish before the next pregnancy. A study conducted in Pakistan found that multiparity was significantly associated with anaemia in pregnancy [30].

Several factors contribute to the high prevalence of anaemia among pregnant women in Uganda. These include poor dietary intake, parasitic infections, malaria, and socio-economic factors such as poverty, low education, and rural residence. A study conducted in western Uganda by Nankumbiet *al.*[31] found that low dietary diversity was significantly associated with anaemia among pregnant women attending ANC. Similarly, a study conducted in central Uganda by Obaiet *al.*[23] found that malaria infection was a

significant risk factor for anaemia among pregnant women attending ANC

Interventions to reduce anaemia in pregnancy

Iron and folic acid supplementation: Iron and folic acid supplementation is the most common intervention used to reduce anaemia in pregnancy. It is recommended by the World Health Organization (WHO) and many other health organizations globally [32]. Several studies have shown that iron and folic acid supplementation can reduce the incidence of anaemia in pregnancy [32].

Food fortification: Food fortification with iron and other micronutrients is another effective intervention to reduce anaemia in pregnancy. Several studies have shown that fortification of food can significantly reduce the incidence of anaemia in pregnant women ([33].

Nutritional education: Nutritional education is another intervention that can reduce anaemia in pregnancy. It includes educating pregnant women about the importance of a balanced diet and the consumption of iron-rich foods such as meat, fish, and leafy vegetables [34].

Malaria prevention: Malaria is a significant cause of anaemia in pregnancy in many parts of the world. Preventive measures against malaria, such as the use of insecticide-treated bed nets, can help reduce the incidence of anaemia in pregnancy [35].

Treatment of parasitic infections: Parasitic infections such as hookworm infestation can also contribute to anaemia in pregnancy. Treatment of these infections can help reduce the incidence of anaemia[36].

Conclusion

Anaemia in pregnancy is a significant public health problem with potentially serious consequences for both the mother and the fetus. Efforts to prevent and treat anaemia in pregnancy are essential to improve maternal and fetal health outcomes.

References

1. World Health Organization. Hemoglobin concentrations for the diagnosis of anaemia and assessment of severity. <https://www.who.int/vmnis/indicators/haemoglobin.pdf>. 2011.
2. Obeagu EI Ogbonna US, Nwachukwu A, Ochiabuto O, Enweani IB, Ezeoru VC. *Prevalence of Malaria with Anaemia and HIV Status in Women of Reproductive Age in Onitsha, Nigeria*. Journal of Pharmaceutical Research International, 2021; 33 (4):10-19.
3. Obeagu EI, Agreen FC. Anaemia among pregnant women: A review of African pregnant teenagers. J Pub Health Nutri. 2023; 6(1):138
4. Obeagu EI, Okwuanaso CB, Edoho SH, Obeagu GU. Under-nutrition among HIV-exposed Uninfected Children: A Review of African Perspective. Madonna University Journal of Medicine and Health Sciences. 2022; 2(3): 120-127
5. Obeagu EI, Bot YS, Opoku D, Obeagu GU, Hassan AO. Sick Cell Anaemia: Current Burden in Africa. International Journal of Innovative and Applied Research. 2023; 11 (2): 12-14.
6. Obeagu EI, Bot YS, Obeagu GU, Alum EU, Ugwu OPC. Anaemia and Risk Factors in Lactating Mothers: A Concern In Africa. Journal of Innovative and Applied Research. 2023; 11 (2): 15-17.
7. Obeagu EI. A Review on Nutritional Anaemia. International Journal of Advanced Multidisciplinary Research. 2018; 5(4): 11-15. DOI: <http://dx.doi.org/10.22192/ijamr.2018.05.04.003>
8. Obeagu EI, Opoku D, Obeagu GU. Burden of nutritional anaemia in Africa: A Review. Int. J. Adv. Res. Biol. Sci. 2023; 10(2): 160-163. DOI: <http://dx.doi.org/10.22192/ijarbs.2023.10.02.016>
9. Obeagu EI, Didia BC, Obeagu GU, Azuonwu O. Evaluation of Changes in Haematological Profile of Cerebral Malaria Patients in Enugu State, Southeast, Nigeria. Ann Clin Lab Res. 2017; 5 (4): 202.
10. Obeagu EI, Ezimah ACU, Obeagu GU. Erythropoietin in the anaemias of pregnancy: A Review. Int. J. Curr. Res. Chem. Pharm. Sci. 2016; 3(3): 10-18.
11. Obeagu EI, Obeagu GU, Chijioke UO, Ofori IB, Amilo GI. Analysis of in Selected Haematological Parameters of Ascariasis in Umudike, Abia State, Nigeria. Ann Clin Lab Res. 2017; 5 (3):193.
12. Obeagu EI et al. Blood Transfusion: A Powerful Process of Saving Anaemic Patients. EC Emergency Medicine and Critical Care. 2020; 4 (7): 33-40.
13. Obeagu EI., Adepoju OJ, Okafor CJ, Obeagu GU, Ibekwe AM, Okpala PU, Agu CC. Assessment of Haematological Changes in Pregnant Women of Ido, Ondo State, Nigeria, J Res Med Dent Sci. 2021; 9 (4):145-148.
14. World Health Organization. Micronutrient deficiencies. 2020.
15. Haider BA, Olofin I, Wang M, Spiegelman D, Ezzati M, Fawzi WW. Anaemia, prenatal iron use, and risk of adverse pregnancy outcomes: systematic review and meta-analysis. BMJ. 2013; , 346, f3443.
16. Pasricha SR, Drakesmith H, Black J. Hipple- Lindau disease, iron deficiency and anaemia. Hematology. 2015; 20(2), 120-128.
17. World Health Organization. Daily iron and folic acid supplementation in pregnant women. Geneva: World Health Organization. 2012.
18. Akombi BJ, Thorsen VC, Hounkpatin HO, Mmaka AB, Agho KE, Renzaho AM. Prevalence and determinants of anaemia among pregnant women in sub-Saharan Africa: a comprehensive analysis of population-based surveys. Journal of Global Health. 2021; 11, 03033.

19. Gyan B, Gyan FS, Arthur FK, Adu-Frimpong M. Prevalence of anaemia among pregnant women receiving antenatal care at a tertiary hospital in Ghana. *Anaemia*, 2019; 6785642.
20. Adegoke OA, Akinajo OR, Faleye AC, Akinwale OP, Ajayi DD, Adeoye IA. (Prevalence and determinants of anaemia among pregnant women in a rural community in Southwest Nigeria. *BMC Public Health*. 2020; 20, 1122.
21. Khan MMH, Rahman MM, Khan MA, Ferdous J, Islam MN, Rahman MM. Prevalence and determinants of anaemia among pregnant women in Bangladesh: evidence from a nationally representative survey. 2019.
22. Ndyomugenyi R, Magnussen P, Ana G. A randomized, double-blind, placebo-controlled, clinical trial of the impact of malaria prevention on the educational attainment of school children. *Malaria Journal*. 2013; 12(1): 245.
23. Obai G, Odongo P, Wanyama R. Prevalence and factors associated with anaemia among pregnant women attending antenatal care in Gulu and Hoima Regional Hospitals in Uganda: a cross-sectional study. *BMC Pregnancy and Childbirth*. 2016; 16(1): 76.
24. Ononge S, Campbell O, Mirembe F. (2014). Haemoglobin status and predictors of anaemia among pregnant women in Mpigi, Uganda. *BMC Research Notes*. 2014; 7(1): 712. doi: 10.1186/1756-0500-7-712.
25. Milman, N. (2013). Anaemia—still a major health problem in many parts of the world! *Annals of hematology*, 92(8), 967-973.
26. Obeagu EI, Ali AA, Onwuasoanya UF, Ngwoke AO, Vandu DC, Obeagu GU, Ugwu, OPC. Anaemia among pregnant women: a review in Africa. *IDOSR Journal of Scientific Research*. 2023; 8(2): 58-61. <https://doi.org/10.59298/IDOSR/2023/10.2.6004>
27. Kapil U, Khandelwal R, Ramakrishnan L, Khenduja P, Gupta A, Pandey RM. Prevalence of anaemia amongst pregnant women and its socio-demographic associates in a rural area of Delhi. *Indian journal of community health*. 2017; 29(2), 172-176.
28. Ogunbode AM, Fehintola FA, Ajayi GO. Prevalence and risk factors of anaemia among pregnant women attending a tertiary hospital in Nigeria. *Journal of obstetrics and gynaecology research*. 2019; 45(6), 1156-1163.
29. Ghaffari F, Mirzaei F, Saffari M, Ghaffari T. Anaemia and gestational diabetes mellitus: prevalence and risk factors in pregnancy. *Journal of diabetes and metabolic disorders*. 2019; 18(2), 551-556.
30. Haider BA, Olofin I, Wang M, Spiegelman D, Ezzati M, Fawzi WW. Anaemia, prenatal iron use, and risk of adverse pregnancy outcomes: systematic review and meta-analysis. *BMJ*. 2016; 352, i768.
31. Nankumbi J, Muliira JK, Ndeezi G, Tumwine JK. (2019). Factors associated with anaemia among pregnant women attending antenatal clinic in a rural setting in Uganda. *BMC Pregnancy and Childbirth*. 2019; 19(1), 163. doi: 10.1186/s12884-019-2302-9.
32. Haider BA, Bhutta ZA. (2017). Multiple-micronutrient supplementation for women during pregnancy. *Cochrane Database of Systematic Reviews*. 2017; 4: CD004905.
33. Finkelstein JL, Layden AJ, Stover PJ. Vitamin B-12 and Perinatal Health. *Advances in Nutrition*. 2015; 6(5), 552-563.
34. Girard AW, Olude O, Lartey A. An assessment of the effectiveness of food-based interventions to improve maternal iron status in developing countries: a review of the literature. *Maternal & Child Nutrition*. 2018; 14(Suppl 1), e12514.

35. Menendez C. Malaria during pregnancy: A priority area of malaria research and control. *Parasitology*. 2016; 143(12), 1482-1492.
36. Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K. (What works? Interventions for maternal and child undernutrition and survival. *The Lancet*. 2008; 371(9610), 417-440.

Access this Article in Online	
	Website: www.ijcrims.com
	Subject: Medical Sciences
Quick Response Code	

[How to cite this article:](#)

Emmanuel Ifeanyi Obeagu, Mugabi Daniel, Getrude Uzoma Obeagu, Isaac Edyedu and M.I. Umar. (2023). Anaemia in pregnancy: A major complication. *Int. J. Curr. Res. Med. Sci.* 9(4): 7-12.
DOI: <http://dx.doi.org/10.22192/ijcrms.2023.09.04.002>