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Maternal Anemia in Iraq: A Ten-Year Comprehensive Review (2014-2023) A Review of Literature

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Abstract

Particularly in developing nations, anemia throughout pregnancy is a significant global public health issue. Serious health consequences may arise for both the mother and the fetus as a result. Several past epidemiological studies have documented the extent of the issue. This study aimed to determine the prevalence of anemia during pregnancy in Iraq over the last 10 years.

A thorough evaluation of all available studies on anemia in Iraq over the past decade (2014–2023) has been conducted. Relevant research was located through the online databases ScienceDirect, MEDLINE, and Scopus. Data from numerous Iraqi studies conducted in different cities were merged into a unified format. The primary data collection sources consist of Scopus and PubMed.

The lowest documented prevalence of anemia during pregnancy over a decade was thirty-four percent, while the highest reached 84 percent. Most of the anemic pregnant women received sufficient prenatal care and were only mildly anemic during the third trimester. Some of the anemic women in the study consumed vegetables, fresh fruits, and meat regularly during their pregnancy. In contrast, others had a limited intake, as determined by dietary patterns and nutritional assessment.

This review highlights the growing prevalence of anemia among pregnant women in Iraq, with one study reporting a rate of 84.8%, indicating a critical public health concern. This issue is widespread and not confined to Baghdad, affecting multiple provinces across Iraq. High rates of anemia notably increase maternal morbidity, adverse birth outcomes, and long-term health risks for mothers and children across Iraq.

Keywords: Pregnancy, Anemia, Antenatal care, Trimester, Iron supplementation.

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Introduction

Anemia, which could affect people at any life stage, yet is more widespread in small children and pregnant women, is a very serious public health issue (1).

It could have detrimental effects. 38% of the world's population is affected by anemia during pregnancy, making it one of the most prevalent and pervasive public health issues (2).

During the 1st and 2nd trimesters of pregnancy, maternal plasma volume increases by about 50%, while red cell mass increases by only 20% to 30%. This causes a dilutional decline in hemoglobin content (3).

Hemoglobin levels of less than 11g/dL in the 1st trimester, less than 10.5g/dL in the second or third trimesters, and less than 10 g/dL after delivery are considered anemia (2).

Iron deficiency sometimes occurs in mothers with normal or reduced iron levels due to increased maternal red cell mass, iron transfer to the fetus (primarily in the 3rd trimester), and blood loss during childbirth (3).

The physiological need to conceive during gestation could increase three times over that of women who are not pregnant and who are menstruating, and this need to conceive increases as gestation progresses (4).

Another form of anemia that develops during pregnancy is megaloblastic anemia, which is caused by increased folate requirements. To prevent megaloblastic anemia and neural tube defects in the fetus, routine supplementation is especially advised before and throughout the early stages of pregnancy (4).

Other causes include a physiological MCV increase of 5–10 fL that occurs throughout normal pregnancy and a fall in cobalamin serum levels to below normal in up to 30% of pregnancy cases, which corrects after giving birth (3).
Anemia during pregnancy may also be associated with losses in other micronutrients, including riboflavin, copper, and vitamin A (5).

Usually severe and resistant to treatment, autoimmune hemolytic anemia occurs throughout pregnancy. For one or two months, the infant might experience transient hemolysis. Seldom does a severe case of idiopathic, direct antiglobulin-negative hemolytic anemia arise in the third trimester; it may be treated with immunoglobulin or corticosteroids and resolves on its own after the pregnancy (5).

A microangiopathic anemia is a rare condition linked to the disease known as HELLP (6).

Maternal morbidity and mortality, as well as low birth weight, which increase the mortality in infants, are the main problems of anemia during pregnancy. It is one of the known risk factors for many fetal and maternal issues. Preterm labor, poor weight gain, membrane rupture, PIH, unintentional membrane rupture, and premature membrane rupture are maternal concerns throughout the prenatal period (7).

Throughout the intrapartum and postnatal periods, maternal hazards include embolism, postnatal sepsis, and subinvolution. Low birth weight, prematurity, fetal distress, low Apgar score, neonatal distress necessitating prolonged resuscitation, and neonatal anemia because of the inadequate reserve are all dangers associated.

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with pregnancy. Infants who have anemia have lower intellectual developmental milestones, greater rates of failure to thrive, and higher rates of neonatal and infant mortalities compared to infants who do not have anemia (8).

Iraq truly has mild to severe anemia throughout a range of age groups, and 58% of pregnant Iraqi women have been suspected of having anemia at a level of 11 gm/dl, according to the database of anemia from 2014 to 2023. The majority of anemic pregnant women (50.2%) had poor antenatal care (46.9%), were mildly anemic (10-10.9g/dl), and were in their 3rd trimester (9).

Due to the severe dietary deficiencies, 36% of pregnant Iraqi women were believed to be anemic (10).

Nonetheless, medical professionals need more details about the severity of the ailment and ways to prevent it.

Thus, the goals of this study were to examine the state of anemia in pregnancy in Iraq today and to discuss the difficulties this nation faces in addressing the anemia epidemic.

Material and Methods:

To find pertinent research on the prevalence of anemia from 2014 to 2023, an electronic literature search of Scopus and MEDLINE (PubMed) was conducted.

The author also retrieved the available online textbooks. Clinical studies, both prospective and retrospective, were included.

The data were extracted from previously published studies in which original ethical approvals and patient consent were presumably obtained.

Serum ferritin and laboratory results (Hb) were the main focus of all the research.

The WHO classification system for pregnant women was used to categorize anemia in all of these studies. This system states that anemia is a state in which the concentration of the hemoglobin (Hb) decreases to less than 11g/dl and is classified as mild, moderate, or severe depending on the range of the levels of Hb: 10-11g/dl, 7–9.9 g/dl, and less than 7.0 g/dl (11).

The research will address the prevalence of maternal anemia in Iraq from 2014 to 2023 across the selected studies.

Results:

The results are displayed in Table 1. The estimated prevalence of anemia ranged from 34% to 84% across all studies from 2014 to 2023.
The following cities in Iraq were mentioned: Wasit, Kurdistan, Arbil, Baghdad, and Babil.

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Table 1: Prevalence of anemia of pregnancy in Iraq (2014-2023)

Iraqi city-year	Prevalence of anemia in pregnancy (%)	Number of participants	Author of the study
Arbil-2014	55.5%	400 pregnant women	Ahmed.A. Fφ
Erbil-2017	46.2%	600 pregnant women	Ahmed, H.M., R.G-
Baghdad-2017	67%	124 pregnant women	Khalil. Z. K*
Baghdad-2018	36%	2109 cases of pregnant women	Hussien and Ali, ■
Diyala-2019	68%	590 pregnant women	AL-Shawi, A. R/
Baghdad-2020	84.84%	4473 pregnant women	Jasim S. Kal-Momen, H. Al-Asadi. F∴
Wasit-2021	58%	425 pregnant women	Abdulridha.A. S>
Babylon-2022	76%	110 pregnant women	Mukeef.S. A"
Kurdistan-Erbil 2023	34.4%	157 pregnant women	Rashid.M. Y*

1. ϕDOI:10.5742/MEFM.2014.92418.
2. – Kurdistan Journal of Applied Research, volume 2, NO 2, 2017
3. *Khalil. Z. K (Iraqi Journal of Science, 2017, Vol. 58, No.2C).
4. ■Hussien and Ali, 2018 (Nutrition Research Institute).
5. / ARJ Al-Shawi -AL-Yarmouk Journal, 2019 - iasj.net.
6. ∴Vol.8No. B (2020): B)
7. > Annals of R.S.C.B., ISSN: 1583-6258, Vol. 25, Issue 68." ARCHIVES/Vol. 13 SPECIAL ISSUE 01.9.9. * ARCHIVES / VOL 7 NO 1 (2023) / Research Article.

Discussion

It is thought that maternal mortality during childbirth is increased by severe anemia during pregnancy. Using a literature review from 2014 to 2023, we sought to determine the prevalence of anemia among pregnant Iraqi women. Anemia was seen in 34–84% of cases overall (9-12).

According to our assessment, the highest anemia prevalence among pregnant females in Baghdad has been 84.84% in 2020. This is in comparison to a study conducted in 2017 and 2018, which found that the prevalence increased after a 2–to 3-year period of time, from 67% in 2017 to 36% in 2018 (13). In this review, different Iraqi cities (Baghdad, Wasit, and Kurdistan) were included, with varying numbers of pregnant women participants and study durations across different years, resulting in different prevalence rates.

According to our analysis, there may be a connection between maternal anemia throughout pregnancy and factors such as parity, maternal age, low socioeconomic level, bad eating habits, and late prenatal visits.

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Anemia can be prevented by several factors, including being a young mother, adequate iron and folate supplementation during pregnancy, and a high family income (11-14).

Many studies have concluded that blood indices are important in pregnant women and are the first step in diagnosing anemia. The MCV, MCH, MCHC, RBC count, and RDW-CV% correlate with ferritin levels, and blood film morphology can help diagnose IDA and other anemias (15-17).

Conclusion

Severe anemia during pregnancy significantly contributes to maternal mortality and morbidity. Studies conducted in Iraq between 2014 and 2023 show that anemia continues to be widespread. Anemia prevalence estimates varied from 34% to 84%. According to the review, the primary causes of anemia include low socioeconomic status, multiple pregnancies, and inadequate consumption of bioavailable dietary iron. Consequently, Iraq encounters challenges in improving socioeconomic conditions, increasing educational achievement, and altering health-related habits.

Recommendation:

1. It is recommended to undertake further studies to identify other causes of anemia related to pregnancy, and

2. Additional Iraqi cities are required to monitor pregnant women, raise their nutritional and educational status, and eventually prevent anemia.

Conflict of Interest: None to declare

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References:

1. Stephen G, Mongo M, Hussein Hashim T, Katanga J, Stray-Pedersen B, Msuya SE. Anemia in pregnancy: prevalence, risk factors, and adverse perinatal outcomes in Northern Tanzania. *Anemia.* 2018;2018(1):1846280. https://doi.org/10.1155/2018/1846280
2. Reveiz L, Gyte GM, Cuervo LG, Casasbuenas A. Treatments for iron-deficiency anemia in pregnancy. *Cochrane database of systematic reviews.* 2011(10). https://doi.org/10.1002/14651858.CD003094.pub3
3. A Victor Hoffbrand1 and Atul B Mehta1. Postgraduate hematology. *Wiley Blackwell*, 7th edition, 2016, p. 850.
4. Breymann C. Iron deficiency anemia in pregnancy. *In Seminars in Hematology* 2015 Oct 1 (Vol. 52, No. 4, pp. 339-347). WB Saunders. https://doi.org/10.1053/j.seminhematol.2015.07.003.
5. Wegmüller R, Bentil H, Wirth JP, Petry N, Tanumihardjo SA, Allen L, Williams TN, Selenje L, Mahama A, Amoaful E, Steiner-Asiedu M. Anemia, micronutrient deficiencies, malaria, hemoglobinopathies and malnutrition in young children and non-pregnant women in Ghana: Findings from a national survey. *PloS one*. 2020 Jan 30;15(1):e0228258. https://doi.org/10.1371/journal.pone.0228258.
6. Allen LH. Anemia and iron deficiency: effects on pregnancy outcome. *The American journal of clinical nutrition*. 2000 May 1;71(5):1280S-4S.

AIMCJ. (2026),3; (1):94-99
https://doi.org/10.58564/AIMCJ3.1.2026.101

7. Steer PJ. Maternal hemoglobin concentration and birth weight. *The American journal of clinical nutrition*. 2000 May 1;71(5):1285S-7S. https://doi.org/10.1093/ajcn/71.5.1285s
8. Patra S, Pasrija S, Trivedi SS, Puri M. Maternal and perinatal outcome in patients with severe anemia in pregnancy. *International Journal of Gynecology & Obstetrics*. 2005 Nov;91(2):164-5.
9. Abdulridha AS. Prevalence and Risk Factors of Anemia in Pregnant Women in Wasit Province, Iraq. *Annals of the Romanian Society for Cell Biology*. 2021 Jun 1;25(6).
10. Hussien AS, Ali SH. The Prevalence of Anemia among Internally Displaced Families residing in well-defined camps in Baghdad City. *Nutrition Research Institute*. 2018:1-0.
11. Abdul-Fatah BN, Murshid RM, Ahmed TE. Assessment of iron-deficiency anemia (IDA) and dietary patterns among pregnant women in Baghdad City, Iraq. *Journal of Pharmaceutical Sciences and Research*. 2018 Sep 1;10(9):2279-84.
12. Khalil ZK. Prevalence of anemia and determination of some hematological parameters among pregnant women in Baghdad city. *Iraqi Journal of Science*. 2017:1001-8. DOI: 10.24996/ijs.2017.58.2C.4
13. Jasim SK, Al-Momen H, Al-Asadi F. Maternal anemia prevalence and subsequent neonatal complications in Iraq. Open Access Macedonian *Journal of Medical Sciences.* 2020 Mar 10;8(B):71-5. https://doi.org/10.3889/oamjms.2020.3593
14. Hussain AM, Hussain NA. Prevalence of anemia among pregnant women in Babylon Governorate, Iraq. *Revista Latinoamericana de Hipertensión*. 2020;15(4):275-9. https://doi.org/10.5281/zenodo.4442769
15. Tandon R, Jain A, Malhotra P. Management of iron deficiency anemia in pregnancy in India. *Indian Journal of Hematology and Blood Transfusion*. 2018 Apr;34(2):204-15. https://doi.org/10.18231/j.ijogr.2024.031
16. Tiwari M, Kotwal J, Kotwal A, Mishra P, Dutta V, Chopra S. Correlation of hemoglobin and red cell indices with serum ferritin in Indian women in the second and third trimester of pregnancy. *Medical Journal Armed Forces India*. 2013 Jan 1;69(1):31-6. https://doi.org/10.1016/j.mjafi.2012.07.016
17. Abdelhafez AM, El-Soadaa SS. Prevalence and risk factors of anemia among a sample of pregnant females attending primary health care centers in Makkah, Saudi Arabia. *Pakistan journal of nutrition*. 2012 Nov 15;11(12):1113-20. https://doi.org/10.3923/pjn.2012.1113.1120