



Prevalence of Anaemia in Females of Reproductive Age Group

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i60B35008

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/80711>

Review Article

Received 20 October 2021
Accepted 26 December 2021
Published 27 December 2021

ABSTRACT

Background: Anemia is a significant public health indicator linked to poor health outcomes. The restricted nature of available data makes it difficult to relate the iron status of pregnant women. It is yet unclear whether the therapy option is most successful in reducing postpartum anemia symptoms.

Aim and Objective: To discuss the existence of anemia in females of conceivable age and during pregnancy and the causes and treatments for the condition.

Description: The woman ought to contain bodily stores of iron 500 mg, which corresponds to serum ferritin levels of 60-70 g/L, for completing a normal pregnancy along with no intake of iron supplements even without developing an iron deficiency or iron-deficiency anemia. Iron deficient anemia caused by a lower percentage of iron is the most common anemia worldwide. Anemia is a prevalent problem among HIV-positive persons, especially women. It can make you feel restless, reduce your quality of life, and make it more likely that your HIV infection will worsen.

Conclusion: The experimental relevance of a few good temporary fatigues counting female patients alongside blood transfusion remains unknown. Also, such small benefits must get weighed against understood risks, such as maternal mortality (not stated) as well as maternal immunological

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sensitization, all of that might disrupt subsequent pregnancies. When comparing oral iron to a placebo, it's unclear if effectiveness (symptom alleviation) overcomes the documented gastrointestinal side effects.

Keywords: Physiological; prevalence; persistent; postpartum; erythropoietin.

1. INTRODUCTION

Anemia is a condition wherein the hemoglobin content of the blood is less than usual due to a shortage of one or more essential nutrients in the body [1]. Half of all cases of anemia are thought to be caused by iron deficiency, with genetic blood disorders and infections like hookworm and malaria being the other significant concerns [2].

The prevalence of anemia is a significant public health indicator since it is linked to poor health outcomes. Even while iron deficiency is the most common cause of anemia, limited oxygen-carrying capacity can also be caused by other illnesses such as chronic diseases, which are still serious health problems in the United States [3].

This review, which includes pregnant ladies and females of fertile age, was conducted to assist discussions at an NIH workshop on prenatal screening and supplements [4].

The restricted nature of available data makes it difficult to relate the iron status of pregnant women. Such descriptions may be made by looking at the iron levels of women of reproductive age; thus, a successful pregnancy is reliant in part on the mother's health before she gets pregnant. Because there is a necessary physiologic increase in the demands for absorbed iron during pregnancy to augment the woman's RBCs mass and ensure an appropriate iron supply for the functioning of the placenta and the growing baby, pregnancy body iron stores are crucial. The total iron required for a healthy pregnancy is 1000–1200 mg [4].

In a nutshell, iron is necessary and is a critical component of pregnancy. Anemia before surgery is relatively frequent. Pre-operative anemia is associated with a higher risk of poor outcomes following surgery, an increased length of critical care and hospital stay, postoperative problems, and an even worse overall result. Although pre-operative anemia is a strong predictor of the requirement for blood transfusion, transfusion is associated with increased length of stay, surgical anomalies, and death.

The identification, diagnosis, and management of pre-operative anemia, are high demands mostly in the pre-operative care of patients [5].

2. WOMEN AND ANAEMIA

Iron deficiency anemia, caused by a lack of iron, is the most common kind of anemia worldwide. Women are more prone to be affected by this kind of anemia for various reasons. First, women between the ages of 12 and 49 are likely to shed blood once a month during regular periods. The woman ought to have body iron stores of 500 mg, which corresponds to serum ferritin (SF) concentrations of 70–80 g/L, to finish a successful pregnancy without taking iron supplements even without developing iron deficiency (ID) as well as iron deficiency anemia (IDA) [4].

Iron is necessary for producing new blood, which substitutes the bloodshed throughout each menstrual cycle. Anemia is more likely in women who have particularly lengthy periods or who have hefty bleeding. Some women lose iron due to endometrial fibroids (noncancerous growths in the womb) that flow slowly or result from bleeding caused by the use of certain IUDs (IUDs) for contraception [6].

Second, additional iron is required for the healthy growth of the fetus throughout pregnancy. Pregnant women require 50 percent more iron than usual (27 mg per day instead of 18 mg). During childbirth, women lose blood as well. Women who are pregnant or want to get pregnant should have their iron levels checked and inform their doctors if they have any signs or symptoms of anemia. Iron-fortified prenatal supplements can help women overcome low iron levels and pregnancy-related anemia. Premature birth, low birth weight, and postnatal depression are all increased by severe anaemia during pregnancy. There is a higher risk of baby mortality immediately before or after birth [4].

If a woman had two or fewer interval pregnancies, she is more likely to develop anemia during pregnancy:

- Are pregnant with many children.
- Are vomiting a lot because of morning sickness.
- They don't eat a lot of iron.
- Are carrying a lot of weight before you get pregnant.
- Have a history of anemia prior to becoming pregnant [7].

3. OUTCOMES OF ANAEMIA

As the hemoglobin percentage falls below two-thirds of typical, physiological indications and symptoms such as uneasiness, dyspnea, and a drop in heart rate appear. Healthy people can develop cardiovascular clinical manifestations with hemoglobin as little as 50 g/l. Even more so in the well-to-do, less extreme anemia causes impaired functional ability and physical performance, as well as a decreased quality of life. Indeed, anemia is considered to have the same influence on public health as diabetes and cardiovascular diseases [5].

Anemia is a worldwide problem that unevenly affects children and women of childbearing age. Anemia affects cognitive and motor development, along with job ability. Iron deficiency anemia is also associated with poor reproductive outcomes in pregnant women, such as delivery before full term, comparatively low birth weight, and low iron reserves in the newborn, which can contribute to abnormal development. The primary prevalent reason for anemia is iron deficiency, although there are several nutritional and non-nutritional reasons. The concentration of hemoglobin in the blood is used to diagnose anemia. It is affected by several variables, including the altitude (meters above sea level), smoking, trimesters of pregnancy, age, and gender. Information regarding iron deficiency is obtained whenever blood hemoglobin levels are combined with specific other iron status markers. The presence of anemia within a particular population might be exploited to exaggerate the problem's public health implications [8].

4. WHAT CAUSES ANAEMIA?

This occurs when a woman loses too much blood during her monthly cycle, has recurrent nose bleeding, or intestinal bleeding; this is known as 'iron-deficiency anemia.'

Limit your intake of B vitamins: anemia can be caused by a lack of vitamin B folic acid;

"pernicious anemia" occurs when the body is prohibited from receiving sufficient vitamin B12.

HIV can inhibit red blood cell formation within the bone marrow cells (referring to soft portion inside bones).

HIV-related opportunistic infections, i.e., OIs, are common.

Damaged bone marrow cells as well as kidneys.

Thyroid issues in certain people (problems considering hormone responsible for regulating weight).

Few of the most often prescribed medicines to treat HIV and associated diseases.

5. DIAGNOSIS

The causes of anemia can be substantially reduced by investigation and therapy. Anemia is often detected by calculating hemoglobin and hematocrit levels (HCT). The proportion of red blood cells, i.e., RBC in the blood, is known as HCT. A total blood count is considered a routine blood test that calculates hemoglobin and hematocrit (CBC). A CBC or complete blood count shall be checked to include routine body health examinations.

- Haemoglobin(Hb) levels in ladies shall be about 13 grams per deciliter - a Hb level lower than 6.5 g/dL is considered extremely dangerous and might be fatal.
- HCT level in ladies shall be in the range of 35 – 45 percent.

6. TREATMENT

- The cause determines the treatment for anemia.
- If blood loss is the cause of the issue, the origin of the blood loss must be identified and corrected.
- If blood loss is the cause of the problem, the source of the blood loss must be identified and rectified if iron levels are low, as they are commonly in women. A woman's health care practitioner will suggest the results to boost the amount of iron in her blood. Women might well be able to change their diet to include foods that contain enough iron. Dark green leafy vegetables (collards, lettuce, kale, chard), red meat, legumes (chickpeas, legumes, soybeans), shellfish (mollusks like oysters, clams, and scallops), and fermented bread

and cereals all contain iron. Iron pills can also help to boost iron levels. Before consuming any additional vitamins, consult with your doctor.

- If your folic acid level is low, you may be able to supplement your diet with foods that contain folic acid. Dark green leafy vegetables, asparagus, legumes (lima beans, bean sprouts, chickpeas, lentils), luscious fruits (oranges, grapefruits, tangerines, lemons, limes), as well as beef liver are all high in folic acid. Folic acid pills are also available for women. Folic acid is critical for expectant mothers. Adequate folic acid levels (suggestions: 400 micrograms/day) can help prevent birth anomalies
- No matter how much vitamin B12 we get in our food, we may require B12 injections (shots) or a type of B12 we place under our tongue if our levels are low. This is because few people can tolerate this vitamin in food or pills. If you solely eat a vegetarian diet, your vitamin B12 levels may be low, and you may need to take liquid B12 under your tongue
- If a drug you're taking is causing you to develop anemia, we may need to stop using it. However, it is critical not to discontinue taking a medication without first consulting your doctor. When advanced HIV disease is the cause of anemia, HIV treatment may improve symptoms.

Other medicines aid in the production of extra erythrocytes. These medicines (Epogen and Procrit) contain erythropoietin, often known as

EPO (you get a shot of the drug). A blood transmission may occur in a small number of patients with severe anemia (getting blood directly into your blood vessels). However, transmissions are only carried out if the blood is needed immediately or if no other options are available. Speaking with your doctor will assist them in determining the best course of therapy for you based on the cause of the condition [6].

Suppose you take an iron-fortified vitamin before giving birth to a child and the mother is anemic. In that case, the worried health care practitioner may need to look into other possible explanations. In some circumstances, you may need to consult a doctor specializing in blood abnormalities (hematologist). If iron insufficiency is the reason, more iron may be recommended. If you've had gastric bypass or minor bowel surgery in the past, or if you can't take oral iron, you could need a direct injection into a vein [1].

7. POSTPARTUM IRON DEFICIENCY ANAEMIA

Iron insufficiency after childbirth causes anemia through blood loss or even less iron intake in the diet. Iron deficiency is linked with a less-than-normal blood Hb accumulation, which might be exacerbated from reasons different from anaemia also should be localized given any accompanying clinical manifestations. Fatigue, inability to breathe correctly and vertigo are all possible causes. Oral or direct injection of iron into veins, erythropoietin, which directs erythrocyte production, and erythrocyte transfusion are all possibilities for treatment [10].

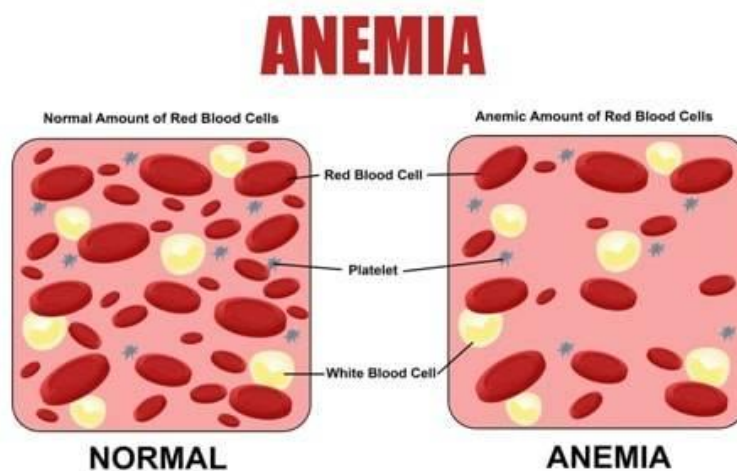


Fig. 1. Showing the normal and abnormal amounts of erythrocytes [9]

8. WAYS TO AVOID COMMON VARIATIONS OF ANAEMIA DURING GESTATION

Prenatal vitamins generally include the bulk of the micronutrients pregnant women require, such as iron and folic acid.

If a woman's iron level is low, the doctor might suggest iron supplements apart from regular pre-birth vitamins.

The majority of people can receive enough iron and folic acid during gestation by eating proper foods.

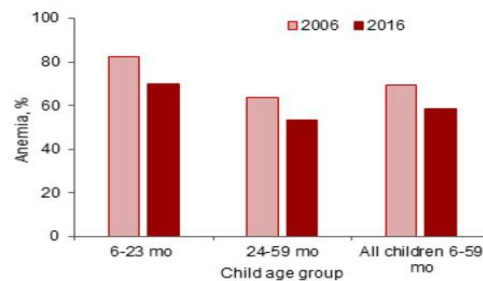
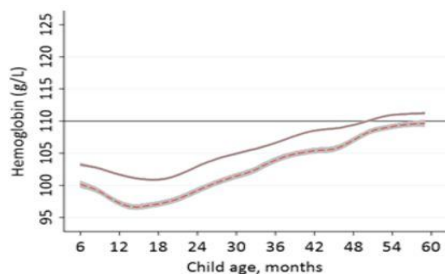
Most individuals can receive enough iron and folic acid throughout pregnancy by eating the appropriate foods.

9. TAKING CARE OF SELF

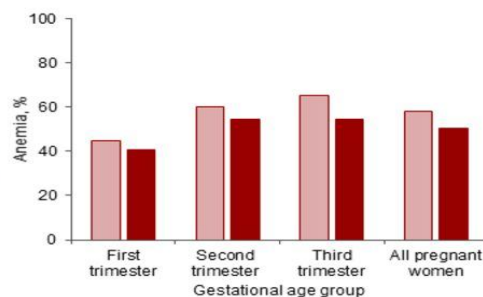
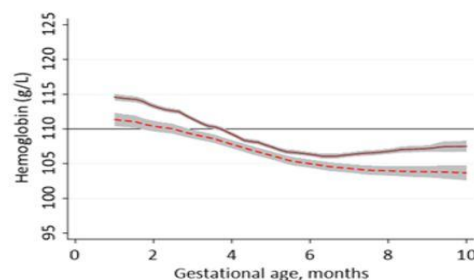
The anemia seems to be a prevalent problem among Human Immunodeficiency Virus-positive persons, specifically ladies. It might make one feel restless, reduce your quality of life, and make it more likely that your HIV infection will worsen.

Talk to your doctor if you are fatigued for no apparent cause or have been experiencing either of the listed symptoms above. He can do tests to determine if anemia is the cause of the anomaly. If that's the case, your doctor will investigate the source of the anemia and provide treatment choices. Anemia treatment enhances the strength and survival of HIV patients.

A. Children



B. Pregnant women



C. Non-pregnant women of reproductive age

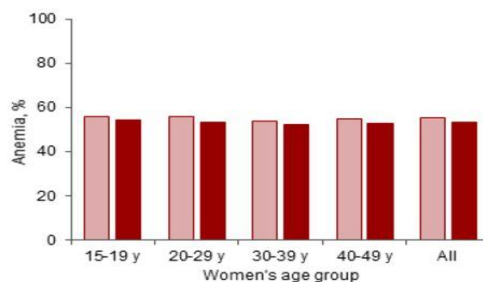
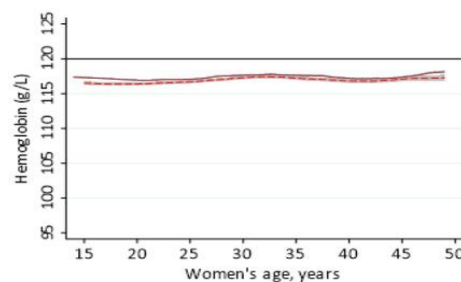


Fig. 2. Showing prevalence of anemia in different age groups [10]

10. HOW TO DETECT ANAEMIA

The health care provider will perform a physical examination to search for indicators of iron-deficient anemia. One could:

- Examine the skin, gums, or even nail beds for signs of paleness.
- Pay attention to your heartbeat to see if it's fast or irregular.
- Pay attention to your lungs for signs of quick or irregular breathing.
- Measure the size of your spleen and liver by touching your abdomen [10].

An accurate blood count is often the first test done to recognize anemia. CBC defines several points of given blood.

Such test states the quantity of Hb and hematocrit. Hemoglobin (Hb), an iron-enriched protein, is found in erythrocytes and is considered to transport oxygen within the whole body. Hematocrit is defined as a measurement of the amount of area in one's blood erythrocytes taken up. A lower level of hemoglobin detects anemia, even hematocrit. In most of racial and ethnic aggregation, the usual range of these levels differs. Your test results can be explained to the individual you want by a health care expert. The CBC also recognizes the number of erythrocytes, leukocytes, and thrombocytes in our blood. Not-so-average results might be signs of sickness, a blood disorder, or even some other anomaly.

Conclusively the CBC examines average corpuscular volume. MCV is a measurement of erythrocyte mean size. The results could provide insight into the reason for anemia. Erythrocytes with iron-deficient anemia, for instance, are frequently smaller than usual [7].

11. TESTS ALONGSIDE PROCEDURES REGARDING GASTROINTESTINAL BLOOD LOSS

A fecal occult blood test may be recommended to determine if inner bleeding has been causing iron deficient anemia. This test checks for blood in the feces and can reveal intestinal hemorrhage.

If a test detects blood in that case, other tests and procedures might be required to pinpoint the certain location of bleeding. Such procedures and tests might be used to find out bleeding inside stomach, intestines, colon, or even pelvic organs [10-15].

12. CONCLUSION

We could not make a definite conclusion about the accuracy regarding therapies of postpartum iron-deficiency anaemia due to a lack of data. The confirmation was of poor quality. Clinical outcomes were reported infrequently. Because laboratory readings do not always correlate with clinical therapy benefits, they may not be reliable indications of success. It is yet unclear whether the therapy option is most beneficial in relieving postpartum anemia symptoms. Although intravenous iron was superior in terms of gastrointestinal effects, allergy along with cardiac functions did occur, as well as further data required for determining if intravenous iron shall be blamed. The predictive value of a few temporary higher fatigue count in women treated from blood transfer is unknown. This small benefit shall get weighed against known risks, such as maternal mortality (not stated) plus maternal immune sensitization, both of that might damage future pregnancy. On comparing oral iron with a placebo, often it's unclear if the benefit (symptom alleviation) outweighs the documented gastrointestinal side effects. Due to a lack of evidence, we could not draw any conclusions about erythropoietin treatment. More studies should be done to assess therapy effectiveness based on clinical outcomes, such as the existence and severity of anemia symptoms.

There is currently no portable iron reader on the market designed specifically for iron limiting. A transferable iron reader in a usable format is urgently needed to minimize or eliminate iron deficiency anemia, specifically in developing countries and rural areas. Our teams are now working on a new, low-cost, and convenient iron reader that can be commercialized worldwide. The prevalence of anemia/IDA could be reduced in the coming years, particularly in rural areas.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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