GENERAL

Understanding Anemia and its role in women's life.

Diya Rautela*

* *Correspondence: Diya Rautela*

Received: 01 January 2025 **Published:** 21 January 2025 **Volume 12, Issue 1** (Jan–Mar 2025)
Article no.: e92 **Open access** · free to read

Have you ever wondered why your cheeks flush during the winter? It's a sign that you're lucky to have good hemoglobin levels! But why do people in mountainous regions often have more flushed cheeks than those in lower-altitude areas? Let's dive into the science behind it.

People living at higher altitudes experience lower atmospheric pressure and reduced oxygen levels. In response, the body increases the production of red blood cells to enhance oxygen transport throughout the body, effectively meeting the oxygen demands.

There is a bit of science behind how anemia is related to hemoglobin and how ultimately red blood cells (RBCs) are coming into the role.

What is Anemia?

Anemia is a condition when a person is low on hemoglobin due to iron deficiency. In a broader sense, blood is composed of various cells, one of which is red blood cell. Now hemoglobin is a protein that binds oxygen and is present in the cytoplasm of the RBC, which is primarily responsible for transporting oxygen all over the body. For the formation of hemoglobin, iron is required. Deficiency of iron often leads to a common type of anemia which is iron-deficiency anemia.

What is the ideal range of hemoglobin (Hb) levels?

Level of Hemoglobin differ on the basis of gender, age and pregnancy. The estimate range of Hemoglobin among population mentioned below:

Men- 13.8-17.2 g/dL

Women- 12.1- 15.1 g/dL

Pregnant Women- 11.0- 14.0 g/dL

Children (1-12 years)- 11.0- 15.5 g/dL

Newborns- 14.0- 24.0 g/dL

Types of Anemia: Classification is done on the basis of deficiency of different components that affect the normal functioning of RBC.

1. Iron deficiency anemia- Lack of iron, which reduces the production of hemoglobin, affecting the optimum supply of oxygen throughout the body.

- Primary causes of this type of anemia are poor diet plan and blood loss during menstruation.

2. Folate deficiency anemia- Insufficient folate (vitamin B9) synthesis, which is essential for RBC production disrupts oxygen transport.

- Primary causes of this type of anemia are poor diet, malabsorption (Celiac disease)

3. Vitamin B12 deficiency anemia- Inadequate vitamin B12 production, which is crucial for the proper formation of RBCs affects the optimum transport of oxygen.

- Primary causes of this type of anemia are poor diet and an autoimmune condition affecting B12 absorption called pernicious anemia.

4. Sickle Cell anemia- A genetic disorder characterized by the production of abnormal hemoglobin called **hemoglobin S**

- Primary causes of this type of anemia are the transfer of abnormal genes for the production of abnormal hemoglobin.

Symptoms of anemia

General Symptoms: Absence of optimum hemoglobin levels results in fatigue, weakness, shortness of breath, dizziness, cold hands and feet, and pale skin.

Cardiovascular Symptoms: Fast and irregular heartbeat and chest pain in severe cases, due to reduced oxygen supply.

Additional symptoms: In some cases, due to reduced oxygen supply to the brain, symptoms like headaches and brain fog are experienced.

What causes anemia?

Anemia can occur in both the male and the female. But it is more common in females. Other reasons causing anemia are as follows:

1. **Iron Deficiency**: This is the most common type of anemia caused by a lack of iron.

2. **Vitamin Deficiency**: Deficiencies of folate and vitamin B12 lead to poor RBC production.

3. **Chronic diseases**: Any chronic disease related to the kidney, cancer, or any infection that disrupts the formation of red blood cells.

4. **Blood Loss**: Females having heavy blood loss due to menstruation are more prone to anemia.

5. **Inherited Disorders**: Anemia like sickle cell anemia is the cause of genetic defects in the red blood cells.

6. **Gastrointestinal**: Blood loss in the gastrointestinal tract due to ulcers and polyps can also cause anemia.

Diagnosis of Anemia

Medical History: Diagnosis of anemia includes examining the symptoms like fatigue, tiredness, shortness of breath, dizziness, weakness, and pale skin.

Physical Examination: Symptoms like rapid heartbeat and shortness of breath. An enlarged liver and spleen indicate an anemic condition.

Complete Blood Count (CBC): This test measures the count of all the cells present in the blood. Hemoglobin level is also assessed through this test.

Blood Smear: Through Blood smear, abnormalities related to the appearance of RBCs are examined, which ultimately affects the oxygen transport.

Iron level: Iron present in the blood is known as serum iron and the presence of ferritin protein indicates the storage levels of iron.

Stool test: This test is being performed to check blood loss through the gastrointestinal tract.

Why is Anemia so common in Women?

There is a significant difference in hemoglobin level between genders. Approximately **33.2%** of women (15-49 years) worldwide were predicted to be affected by anemia. In the same year, **11.3%** of men were found anemic

of the same age group.

https://www.healthdata.org/news-events/newsroom/news-releases/lancet-new-study-reveals-global-anemia-cases-remain-persistently

There are several reasons why anemia is diagnosed in women in a wider spectrum because of various possibilities like blood loss which happens every month due to menstruation, Pregnancy, and childbirth resulting in excessive bleeding and contributing to anemia in women.

Reasons why anemia is more common in women than men are as follows:

1. **Menstruation**: Women of reproductive age lose blood through menstruation each month. In addition to that, if the diet of the woman is poor, lacking essential nutrients like Iron vitamin B12, and vitamin B9. This can lead to anemia.

2. **Pregnancy**: During pregnancy, a woman's blood volume increases to meet the need of her oxygen demand as well as the child?s. This increment in volume results in a diluted form of blood, lowering the RBC concentration and leading to pregnancy-related anemia.

Alongside this, a woman?s body demands iron and folic acid to fulfill the pregnancy requirements, and these needs should be met through diet or supplements to reduce the risk of getting pregnancy-related anemia.

3. **Nutritional Deficiencies**: Inadequate diet or poor absorption of nutrients which are essential for red blood cell production, leading to anemia.

4. **Childbirth**: During childbirth, blood loss in large amounts contributes to anemia, especially if a woman is facing pregnancy complications and excessive bleeding.

5. **Hormonal Changes**: Women who have exceeded the reproductive age and there is a drop in estrogen levels during menopause causes many health problems including low iron and RBC production, contributing to anemia.

How does anemia affect pregnancy?

During pregnancy, not only does the mother have to fulfill her oxygen needs but also the oxygen demands of the baby for which the mother?s body produces an extra volume of blood, decreasing the concentration of the red blood cells. Below is mentioned how anemia can affect pregnancy:

1. Due to low hemoglobin levels, the oxygen supply is not fulfilled, leading to increased fatigue, weakness, and tiredness during pregnancy.

2. Anemia in pregnancy can cause complications during childbirth. The risk of excessive blood loss makes the recovery slower.

3. As the pregnancy journey demands an optimum level of oxygen supply and to compensate for that, the heart forces itself to transfer more oxygen in anemic condition. This leads to heart failure in severe cases.

How do the anemic conditions of the mother affect the baby?

1. **Low Birth Weight**: Inadequate oxygen supply hinders the baby?s growth, leading to decreased birth weight of the baby.

2. **Preterm Birth**: Anemia in severe cases increases the risk of premature delivery of the baby.

3. **Delayed development of the Baby**: Lack of essential nutrients in the mother like iron, folate, and vitamin B12 affects the baby?s development.

4. **Stillbirth**: Severe anemic cases in women raised the risk of stillbirth and neonatal death.

Prevention of Anemia

1. Consume food rich in iron, folate, and Vitamin B12 to increase the production of hemoglobin.

2. Take supplements as prescribed to increase the levels of iron and absorption of iron during menstruation and pregnancy.

3. Vaccinations and Infections: Prevent infections like malaria, which can contribute to anemia. Take preventive measures like getting vaccinated while visiting endemic regions.

4. Chronic diseases related to the kidney need to be treated or managed to ensure support for the body?s needs.

Some of the primary sources of the components crucial for increment of hemoglobin are:

1. **Iron:** Red meat, poultry, fish, lentils, spinach, beans. Iron is stored in the liver, spleen, and bone marrow.
2. **Vitamin B12:** Meat, fish, dairy, eggs. Absorption of vitamin B12 occurs in the small intestine
3. **Folate:** Leafy green vegetables, citrus fruits, beans, and lentils
4. **After Blood loss in pregnancy:** Iron and protein-rich foods replenish hemoglobin to manage blood loss during childbirth.
5. **Inherited Disorders:** Mutations in genes inherited from the previous generation. Food rich in iron, vitamins, and antioxidants helps manage symptoms.

Competing interests

The authors declare that they have no competing interests.

How to cite this article (Vancouver)
Rautela D. Understanding Anemia and its role in women's life. CHEARS Chronical. 2025;12(1):e92. Available from: https://chears.in/journal/volume-12/issue-1/understanding-anemia-and-its-role-in-women-s-life-92
Published in CHEARS Chronical.
https://chears.in/journal/volume-12/issue-1/understanding-anemia-and-its-role-in-women-s-life-92