ABSTRACT
Anemia is a very common disease in today’s world. Anemia is one type of blood disorder which affects people so fastly. In anemia mainly the red blood cells are affected. Hemoglobin is a part of Red blood cells. The hemoglobin transport oxygen to the body. If any deficiency in hemoglobin or red blood cells then it cannot work properly which is transport the oxygen and it cause anemia. People are aware about the anemia. There are so many people suffering from different types of anemia. There are various types of anemia like iron deficiency anemia, sickle cell anemia, Thalassemia,B12 deficiency anemia, Haemolytic anemia, Megaloblastic anemia. In this article the definition; causes, symptoms, and treatment’s overview are included. The current scenario of the Indian haematinic market is going bright. Haematinics continues to dominate with a value of Rs 1500 crores and is growing at nine per cent value growth.

KEYWORDS: Anemia, Red blood cells, Hemoglobin.

INTRODUCTION
Anemia is a decrease in erythrocyte mass or amount of hemoglobin from impaired production of erythrocytes, blood loss, or increased erythrocyte destruction. Anemia occurs when there is a decrease in red blood cell numbers or a decrease in the amount of hemoglobin. Blood cells are produced by hematopoiesis in the bone marrow. The major materials essentials for this process are proteins, vitamin B12, folic acid, and iron. The pathophysiology of anemia changes as per its etiology. Anemia includes nutritional deficiencies, inherited genetic
defects, medication-related side effects, and chronic disease. The anemia may be temporary or long-term, and can manifest in mild or severe forms. Anemia occurs when the balance between production and destruction of RBCs is disturbed by: a) Blood loss, b) impaired red cell formation due to deficiency of essential factors and bone marrow depression, c) increase destructions of RBCs. The range of hemoglobin in male—not less than 13.5 g/dL, in female—12.5 g/dL, and in children’s not less than 11 g/dL. Some common forms of anemia are most easily prevented by eating a healthy diet and limiting alcohol use. Young people recover from anemia more quickly than older people do.

Table 1: Normal Hemoglobin value

<table>
<thead>
<tr>
<th>Category</th>
<th>Reference value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>&gt;13g/dl</td>
</tr>
<tr>
<td>Women</td>
<td>&gt;12g/dl</td>
</tr>
<tr>
<td>Pregnant woman</td>
<td>&gt;11g/dl</td>
</tr>
<tr>
<td>Infants from 2 to 6 months</td>
<td>&gt;9.5g/dl</td>
</tr>
<tr>
<td>Children from 6 to 24 months</td>
<td>&gt;10.5g/dl</td>
</tr>
<tr>
<td>2yrs to 11yrs</td>
<td>&gt;11.5g/dl</td>
</tr>
<tr>
<td>Children from 12yrs</td>
<td>&gt;12g/dl</td>
</tr>
</tbody>
</table>

Types of anemia

1. Iron Deficiency Anemia

In iron deficiency anemia there is less RBC cell in blood than the normal blood the RBC is form from the bone marrow. Iron is very important for the formation of the RBC cells and
also important for the hemoglobin. Iron is necessary for oxygen circulation in the body of a person. If a person is not getting proper food every day he has the its deficiency. The major causes of it are heavy menstrual bleeding, peptic ulcer disease, bleeding because of gastrointestinal, cancer in esophagus, stomachs, small bowel, colon, slow absorption capacity of human body. There are various symptoms are show the iron deficiency in human. The symptoms are Shortness of breath, pale color of skin, brittle nails, fatigue, blue colors to the whites of eye, desired to eat non food things.

The treatment of this type of anemia is following points

- Full of iron supplement food in diet
  - Whole grain bread.
  - Soybeans.
  - Fish.
  - Meats.
  - Peanut butter.
  - Chicken and turkey
  - Oatmeal.
  - Raisins, prunes, apricots.
  - Green vegetables.
- Iron supplement tablet or capsules.
  - Iron (II) sulphate.
  - Ferrous gluconate.
  - Ferrous fumarate.
  - Ferrous bisclinate.
  - Ferrous ascorbat.

- If oral supplement is not possible than the intravenous injections are given to patient.
  - Iron sucrose.
  - Iron dextran.
  - Ferric carboxymaltose.
  - Iron isomaltoside.
  - Ferric gluconate complex.
- Iron supplement food should be given more to pregnant and breast feeding women every day.
In a severe condition the blood transfusion is given to patient. \[1-4\]

2. **SICKLE CELL ANEMIA**

The sickle cell anemia (SCA) is a blood disorder in which the shape of RBC are different from the normal RBCs and it depends on the gene of the hemoglobin. The hemoglobin are transferred from the parents to their children. The normal RBCs are in disc shape but the sickle cell anemia’s RBCs are sickled shape. The abnormal hemoglobin transfer less oxygen to body. Depending upon the mutation we can decide its several types. There are various types of the SCA. 1. Hemoglobin SS, 2. Hemoglobin SC, 3. Hemoglobin Sβ₀ thalassemia, 4. Hemoglobin Sβ⁺ thalassemia, 5. Hemoglobin SD, 6. Hemoglobin SE. The following symptoms are included in sickle cell anemia. Like Fatigue, Paleness, Yellowing of eyes and skin, Infection, fever, Sever pain, Stokes, Chest pain, Blockage of blood flow in the spleen and liver.

**Treatment of the sickle cell anemia**

- Blood transfusions (may also be given regularly to prevent stroke).
- Pain medicines.
- Plenty of fluids.
- Antibiotics.
- Hydroxyurea.
- Bone marrow transplant.
- Recent development of its treatment.
  - Increase Hb F levels.
  - Reduce dehydration within the red cell.
  - Prevent red cell membrane damage and rigidity.
  - Regulate blood vessel flow and integrity.
  - Gene therapy.
  - Blood transfusion. \[5-10\]

3. **THALASSEMIA**

Thalassemia is a blood disorder in which there is abnormal hemoglobin which cannot transport oxygen properly to body and it destroyed the red blood cells. And it is also inherited disease. Hemoglobin is a part of red blood cells. The red blood cells produce two types of protein. 1) alpha, 2) beta. If the body doesn’t produce enough of these two proteins, the red
blood cells do not form properly and cannot carry sufficient oxygen. It is shows in early age group of people. If alpha protein is not form properly it shows alpha thalassemia. Similarly if beta is not form properly it shows beta thalassemia. In the normal adult, hemoglobin A is composed of two alpha and two beta globins, is the most prevalent, comprising about 95% of all hemoglobin. Two minor hemoglobins also occur: hemoglobin A2 is composed of two alpha and two delta globins comprises 2-3.5% of hemoglobin. Hemoglobin F is composed of two alpha and two gamma globins comprises less than 2% of hemoglobin. The general symptoms of thalassemia are Bone deformities in the face, Fatigue, Growth failure, Shortness of breath, Yellow skin, Enlarged spleen, Heart problems, and liver cirrhosis.

- **Alpha thalassemia**
  - Hemoglobin does not produce enough alpha protein have alpha thalassemia. The alpha thalassemia is form of two types of gene.1. HBA1, 2. HBA2,

- **Beta thalassemia**
  - Hemoglobin does not produce enough beta protein have beta thalassemia. Beta thalassemia (β thalassemia) is a form of thalassemia caused by mutations in the HBB gene.

**Treatment of Thalassemia**

- Blood transfusions.
- Folate supplements.
- Chelation therapy with deferoxamine, deferiprone, or deferasirox.
- A bone marrow transplant[^11-14]

4. **VITAMIN B\textsubscript{12} DEFICIENCY ANEMIA**

Vitamin B\textsubscript{12} deficiency Anemia is having either fewer red blood cells than normal or having an abnormally low amount of hemoglobin in each red blood cell because lack of vitamin B\textsubscript{12}, it is also known as hypocobalaminemia. Certain conditions causes involved the Vitamin B\textsubscript{12} deficiency. Like, gastritis, weight loss surgery, Crohn’s disease, celiac disease, Immune system disorders, Graves’ disease, Antacids, Chronic alcoholism. The various symptoms are muscle weakness, a sore and red tongue, tiredness, a lack of energy, Numbness or tingling in hands and feet, Nausea, Decreased appetite, Diarrhea, Increased heart rate (tachycardia). As recommended by physician Vitamin B\textsubscript{12}. 

[^11-14]: http://www.wjpps.com
Table: 2 Daily Recommended Vitamin B\textsubscript{12}.

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Daily recommended B\textsubscript{12} (micrograms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>0.9 mcg</td>
</tr>
<tr>
<td>4-8</td>
<td>1.2 mcg</td>
</tr>
<tr>
<td>9-13</td>
<td>1.8 mcg</td>
</tr>
<tr>
<td>14 and older</td>
<td>2.4 mcg</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>2.6 mcg</td>
</tr>
<tr>
<td>Breast-feeding women</td>
<td>2.8 mcg</td>
</tr>
</tbody>
</table>

**Treatment of Vitamin B\textsubscript{12} Deficiency Anemia.**

- In generally Vitamin B\textsubscript{12} Deficiency is treated with pills and injections following the example of it.
- Diet for Vitamin B\textsubscript{12}
  - Meat.
  - Salmon and cod.
  - Milk and other dairy products.
  - Eggs.
  - Yeast.
  - Cereals.
  - Soy products.
  - Green leafy vegetables.
  - Beans.
  - Peanuts.
  - Peas.
  - Sprouts.
- Injections
  - Hydroxocobalamin (as per situation of patient)[more preferred].
- Pills and tablets
  - B complex tablet.\textsuperscript{[15-18]}

5. **HAEMOLYTIC ANEMIA**

Red blood cells last for about 120 days in the body. In hemolytic anemia, red blood cells in the blood are destroyed earlier than normal. Red blood cells are disc-shaped and look like doughnuts without holes in the center. The haemolytic anemia has main 2 types. 1. Inherited Haemolytic Anemias, 2.Acquired Haemolytic Anemias. Faulty genes cause different types of inherited haemolytic anemia. The problem with the red blood cells may involve the
hemoglobin, cell membrane, or enzymes that maintain healthy red blood cells. The spleen may remove the cell debris from the bloodstream. A disease, condition, or other factor destroys the cells. Like, Immune disorders, Infections, Reactions to medicines, Hypersplenism. The causes of haemolytic anemia. Like, Medications, such as penicillin, antimalaria medications, sulfa medications, or acetaminophen, Leukemia or lymphoma, various tumors, autoimmune hemolytic anemia. Obvious symptoms of haemolytic anemia can develop. Like, Pale skin, Fatigue, Weakness, Dizziness, Lightheadedness, Breathlessness, Yellowing of the skin and eyes, Dark tea-colored urine.

**Treatment of haemolytic anemia**
- Blood transfusions.
- Corticosteroid medications.
- Treatment with intravenous immune globulin.
- Rituximab.
- Surgical removal of the spleen.
- Immunosuppressive therapy. \(^{[19-22]}\)

**6. MEGALOBLASTIC ANEMIA**
Incomplete formation of the red blood cell results in large numbers of immature and incompletely developed cells. These red blood cells do not function like healthy red blood cells and crowd out the healthy cells, causing Megaloblastic anemia. In addition to the cells being large, the inner contents of each cell are not completely developed. This malformation causes the bone marrow to produce fewer cells, and sometimes the cells die earlier than the 120-day life span. These red blood cells that can be seen in bone marrow aspirates and in peripheral smears have been called megaloblasts. These abnormalities are due to impaired DNA synthesis and, RNA and protein synthesis. Vitamin B12 & vitamin B9 are two vitamins serving as building blocks and are essential for the production of healthy cells such as the precursors to red blood cells. It is also known as pernicious anemia. The major causes of Megaloblastic anemia are deficiency of cobalamin (vitamin B12) or folate (vitamin B9), chronic pancreatitis, diverticulosis, fistula, intestinal anastomosis, Alcoholism, Malabsorption, and Deficiency of thiamine. The symptoms of Megaloblastic anemia are fatigue, muscles weakness, weight loss, loss of appetite, nausea, fast heartbeats, numbness, difficulty walking, diarrhea, Abnormal paleness or lack of color of the skin.
Treatment of Megaloblastic anemia.

- The treatment of this type of anemia is depends on some factors like age, overall health, tolerance and response, and the severity of the disease.
- From, food items.
  - Eggs.
  - Chicken.
  - Fortified cereals.
  - Milk.
  - Shellfish.
  - Oranges.
  - Leafy vegetables.
  - Peanuts.
  - Lentils.
  - Asparagus.
  - Meat.
- Intramuscular
  - Cobalamin.
- Oral supplement.
  - B complex tablets.
  - Cobalamin.
  - Folate.\[23-27\]

CONCLUSION

The present article state the anemia is depends upon hemoglobin level in blood. Hemoglobin is a part of Red Blood Cells. The above types are depends on RBCs count in blood, size, shape. The anemia defined as the RBCs is normal than the less in blood. The above some types are inherited type of anemia. The inherited types of anemia pass through parents to their children’s. The above types of anemia are somewhere related to each other. The treatment of anemia is depends upon the type of anemia. Worldwide so many populations are suffering from anemia. Indian patients are being made to ingest totally unnecessary drugs (in the garb of nutrients). It would not be out of place to urge the drug regulation authorities to tune the drug price regime in such a way that rational (acceptable) formulations cost less than the irrational ones. Hence, measures should be taken to correct such trends and lead haematinic market to heights so that the threat of anemia can be abolished.
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REFERENCES


