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Assessment of Hemoglobin Level in the Rural Area with Special Reference to Human Beings

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Abstract: *Blood is a Fluid connective tissue in higher animals that transports necessary substances viz., Oxygen, Carbon dioxide, nutrients, Hormones etc. Haemoglobin (Hb) is a globin protein which plays a vital role in the transport of substances. Abnormal level of haemoglobin causes disorders like Anemia, Sickle cell anemia and Viral diseases. The percentage of Hb is differ in different age, sex, ethnic background, body build social, nutritional and environmental factors. Anemia is a condition where there is decrease in the level of Hb the cut –off levels of Hb, which is given by WHO. In this study we analyzed the Hb (g/dl) in the different groups like Male –female etc.*

Keywords: Haemoglobin

I. Introduction

Blood is special body fluid in animals that transports substances such as nutrients and oxygen to the cells and transports metabolic waste products such as carbon dioxide away from those same cells. Hemoglobin is the metalloproteinase iron containing oxygen transport in the red blood cells. Hemoglobin has an oxygen binding capacity of between 1.36 to 1.37 ml oxygen per gram of hemoglobin, which increases the total blood oxygen capacity.

The mammalian hemoglobin molecule can bind (carry) up to four oxygen molecules. When the diet does not contain iron, anemia develop normal person has about 13-17g /dl of hemoglobin.

Any person whose hemoglobin level is below 11-12g/dl is considered anemic. About 90% of the total anemic cases are due to iron deficiency, and the rest are due to deficiency of nutrient like folic acid and vitamin B12. Folic acid and vitamin B12 are important for the production of blood cells. Human rarely suffers from iron deficiency due to poor diet. Most of the iron in the body is located in the hemoglobin of circulating red blood cells. In healthy populations the values of hematological parameters are affected by a number of factors such as age, sex, ethnic background, body build, social, nutritional and environmental factors.

II. Material and Methods

The totals of 100 male and female subjects are taken for this study. The subjects were selected from rural area Chikkala, Maharashtra. Subjects were volunteers (N.S.S).

Information was collected about physiologic condition age, sex, health status and life style. The data collection takes place for 10 hrs. For collecting blood samples and conducting the test with help of the rural hospital staff Naigaon. For determine the hemoglobin level in the blood we use the Sahli-Helings Test. In this method, blood is mixed with dilute hydrochloric acid.

This process hemolysis the red cells, disrupting the integrity of the red cells membrane and causing the release of hemoglobin, which, in turn, is converted to a brownish –colored solution of acid hematin. The acid hematin solution is then compared with a color standard. This method is sufficient accurate for routine examination. Results are reported both in grams per 100 ml of whole blood and in percent of normal values. There are a number of modifications of the Sahli-Helige method, and 100 percent may be equal to from 13.8 g to 17.3g.

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III. RESULTS

In our survey we determine the quantity of Hb (g/dl). We divided the subject into age groups. we make a comparison about percentage of haemoglobin between male (years) 19-23.

Table 1: Details of number of subjects investigated.

Age groups (years)	No. investigated (Male)
19-23	50

Table 2: Mean Hb (g/dl) based on the age and sex.

Age groups (years)	Sex	Mean Hb(g/dl)
19-23	Male	12

Table 3: Details of number of subjects investigated.

Age groups (years)	No. investigated (Female)
18-22	50

Table 4: Mean Hb (g/dl) based on the age and sex.

Age groups (years)	Sex	Mean Hb(g/dl)
18-22	Female	10

3.1 Normal Hemoglobin levels According to the World Health Organization (WHO)

A healthy hemoglobin level depends on maintaining good nutrition and regular physical exercise. In return, the mean Hb (g/dl) of the age group 19 to 24 was 14.5 g/dl

Most of the subjects are having the healthy level of Hb (g/dl), which is given by the WHO. But some of the volunteers are having very less amount of Hb than the normal healthy Hb levels, so they were anemic patients. The anemic conditions of that person are due to the poor diet.

The main reason for having less amount of Hb due to by taking poor diet and some habits, like smoking, alcohol drink because iron is an important component of hemoglobin, consuming iron-rich foods will raise the haemoglobin levels, iron rich foods, like Fortified foods (These products include breakfast cereals, pasta, bread, malted drinks and grits. The Food and Nutrition Board recommended 18 mg iron for women and 8 mg for men) , animal sources (seafood, poultry, eggs and beef), plant sources (red kidney beans, lentils, soybeans, black beans, white beans and cowpeas).

IV. CONCLUSION

Hb is a very important metallprotein in the blood. We find out amount of Hb present in the blood, we diagnosis that whether the patient is suffering with anemia or not by our survey we conclude that the maximum volunteers male are having healthy amount of Hb (g/dl), the limits which is given by the WHO, some of the volunteers female are having very less amount of Hb they consider as an anemic patients, there is a significant difference between the amount the amount of Hb present in the subjects and the different age groups and sex by this we said that the amount of Hb on the blood varies on the age and the sex.

Abbreviations

- Hb: Haemoglobin
- g/dl: gram per deciliter
- WHO: World Health Organization
- Keywords: haemoglobin anemia.

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