ISCA Journal of Biological Sciences _____ ISSN 2278-3202
Vol. **1(2),** 38-42, June **(2012)** *ISCA J. Biological Sci.*

Studies on Human Anaemia Haemoglobin Hb assays R.B.Cs. count in Ujjain, MP, India

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Available online at: www.isca.in
(Received 23rd May 2012, revised 25th May 2012, accepted 29th May 2012)

Abstract

Cases for the present investigation were selected from two important andexclusive hospitals for Anaemia patients In Ujjain, M.P. India. The percentage of anaemia is more in women compared to men. The commonest age group affected by anaemia was found from 21-30, preventive factor included-awareness about the public health problem by education, high socioeconomic status, Muslim religion etc. The best food for per anaemic patients are apple, orange juice, tomato, soya bean, honey, corn, wheat roti methisalad Brinjal etc.

Keywords: Haemoglobin, human, weakness, poor memory and low blood pressure, iron deficiency.

Introduction

Anaemia is a clinical condition in which the red blood cell count or haemoglobin (Hb) content is less than normal, generally different in males and females. For men, anaemia is typically defined as haemoglobin level less than 12 gram/100ml blood, and in women haemoglobin level is less than 11 grams/100 ml blood. Haemoglobin (found inside R.B.Cs) normally carries oxygen from the lungs to the tissues, anaemia leads to hypoxia (lack of oxygen) in organs. Human cells are depending on oxygen for survival. Anaemia is the most common disorder of the blood. Haemoglobin has an oxygen binding capacity of 1.34 ml O2 per gram of haemoglobin. Two main causes of anaemia are: By a decrease in production of RBC or 'Hb' and second are By a loss or destruction of R.B.Cs abnormally. Example - malaria, jaundice hepatitis's B, kidney failure, parasitic infection, nutritional deficiencies etc (figure 3-4)

Symptoms: Anaemia goes undetermined in many people and symptoms can be minor or vague. The signs and symptoms can be related to the anaemia itself, or the underlying cause most commonly, people with anaemia report non-specific symptoms of a feeling of weakness, Fatigue, general malaise and sometimes poor concentration. They may also report (shortness of breath) on exertion. In very severe anaemia, the body may compensate for the lack of oxygen-carrying capability of the blood by increasing cardiac output. The patient may have symptoms related to this, such as, angina (if pre-existing heart disease is present) on examination, the signs exhibited may include pallor (pale skin, mucosal linings and nail beds) but this is not a reliable sign. There may be signs of specific causes of anaemia, e.g. (in iron deficiency), jaundice (when anaemia results from abnormal break down of red blood cells — in haemolytic anaemia), bone deformities (found in thalassemia major) or leg ulcers. In severe anaemia, there may be signs of a hyper dynamic circulation: tachycardia (a fast heart rate), bounding pulse, flow murmurs, and cardiac ventricular hypertrophy (enlargement).

Some important symptoms are: Weakness, fatigue, skin paleness, shortness of breath, fast irregular heartbeat, low blood pressure, headache, poor memory difficulty in thinking, cold hands and feet.

Material and Methods

In the present study survey of anaemic patients was done in SS and CHL hospitals in Ujjain, MP. India.

Sample Preparation: Blood samples were collected by finger stick. The finger end lightly presses using a rocking motion to stimulate blood flow. Two or three drops of the blood is collected directly in to the cuvettes. Record the result write name, of the patient.

Methods: Automatic blood count. Blood is drawn in cuvettes containing an anticoagulant (EDTA, sometimes citrate) to stop it from clotting, and transported to a laboratory. Complete blood count performed by an automated analyser.

The blood is well mixed (though not shaken) and placed on a rack in the analyser. The cell counting component counts the numbers and types of different cells, the result 'HB' are printed out.

Quality control: Maintain the proper storage conditions, keeping the cuvettes tightly closed at room temperature. Blood controls must be dated when opened and be stored at room temperature or in the refrigerator. They are good for 30 days from the opening date .Bring the controls to room temperature before use and be sure to mix them well before testing.

Statistical analysis: Probabilities of significant differences in the mean of Anaemia patients from different survey reports were determined according to student's t- test confidence limits were set at P= <.001.

Results and Discussion

The survey was carried out from Nov.2010 to Jan.2011 covering a total of 700 cases. A total of 200 male and 500 females were included. Information was collected about education, religion social status; physiological condition: age, sex, Hb% etc. Anaemia is higher in women as compared to men .In all of 500 women: mild anaemic are 156, moderate anaemic are 226 severe anaemic are 118 (anemics conditions). In all of 200 male: mild anaemic are 56, moderate anaemic are 103severe anaemic are:-41.

Preventive factor included: Muslim religion because very few cases were found in Muslims during hospital survey, probably, due to the fact that their regular diet includes, egg and other non – veg foods. High socioeconomic status: whose person consume good nourishment, having iron rich diet egg, pulses, meat, egg yolk, beat, corn, spinach etc. Education increases awareness about public health problem such as: anaemia, diabetes, obesity and B.P: etc[1.]

In the present study, which had mainly confined to the adult persons .The commonest age group affected by anaemia was found from 21-30 age groups next higher cases are found in children age 0-10 years (figure-1,2). The problem is of more serious concern and magnitude in infant and children; recent estimates from India documented an anaemia prevalence of approximately 80% in children aged between 6 and 36 months [2.]

A complete data set is given in the table 1 and 2

Table –1
In female shows Anaemia in local human population, According to 'HB' level also include statistic and p- value

Age group	Mild 10-10.9g/dl	Moderate 8-9.9 g/dl	Sever <8g/dl	Total	Female Vs male p-value	0
0-10	40	50	20	110	>0.5	0
11-20	12	24	12	48	<.01	0
21-30	40	63	47	150	.001	0
31-40	14	17	10	41	<.01	0
41-50	17	20	13	50	.001	0
51-60	16	19	8	43	>.025	0
61-70	10	24	06	40	<.01	0
71-80	07	09	02	18	<0.5	0
Total	156	226	118	500	00	0

Table –2
In male shows Anaemia in local human population according to 'HB' level

Age group	Mild 10-10.9g/dl	Moderate 8-9.9 g/dl	Sever <8g/dl	Total
0-10	08	19	09	36
11-20	07	10	03	20
21-30	10	25	10	45
31-40	07	11	06	24
41-50	06	13	02	21
51-60	09	10	04	23
61-70	06	08	03	17
71-80	03	07	04	14
Total	56	103	41	200

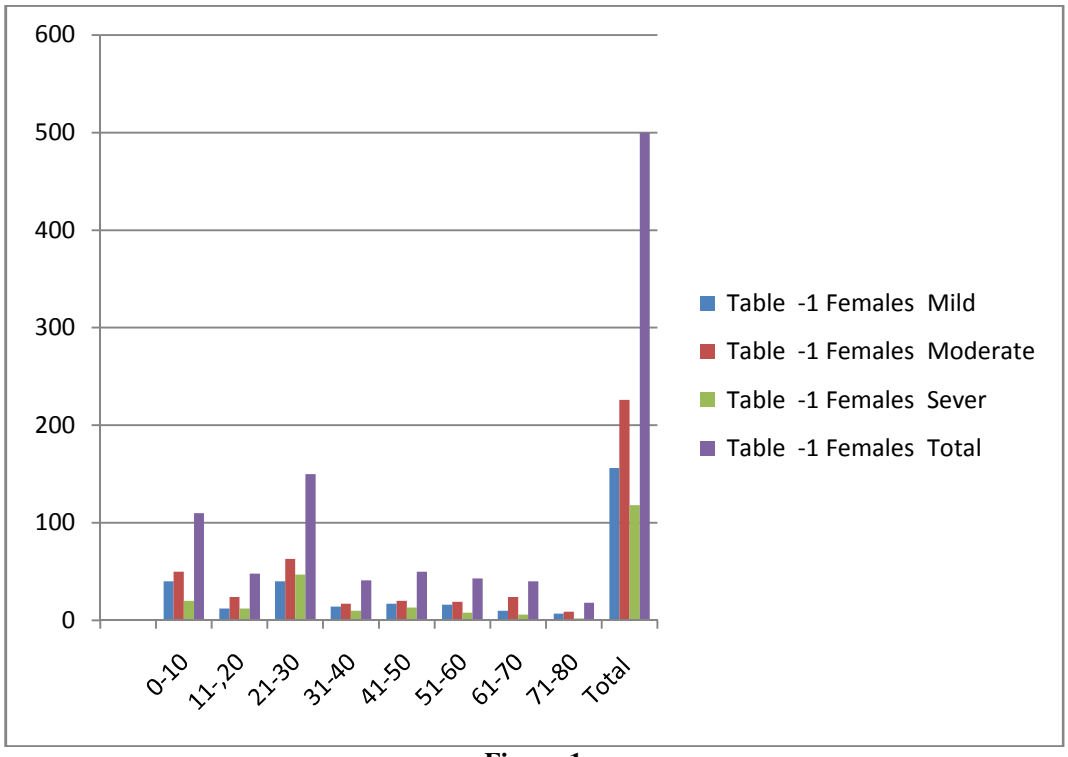


Figure-1
Female anaemic conditions. The commonest age group affected by Anaemia was found 21-30 compared to other age group

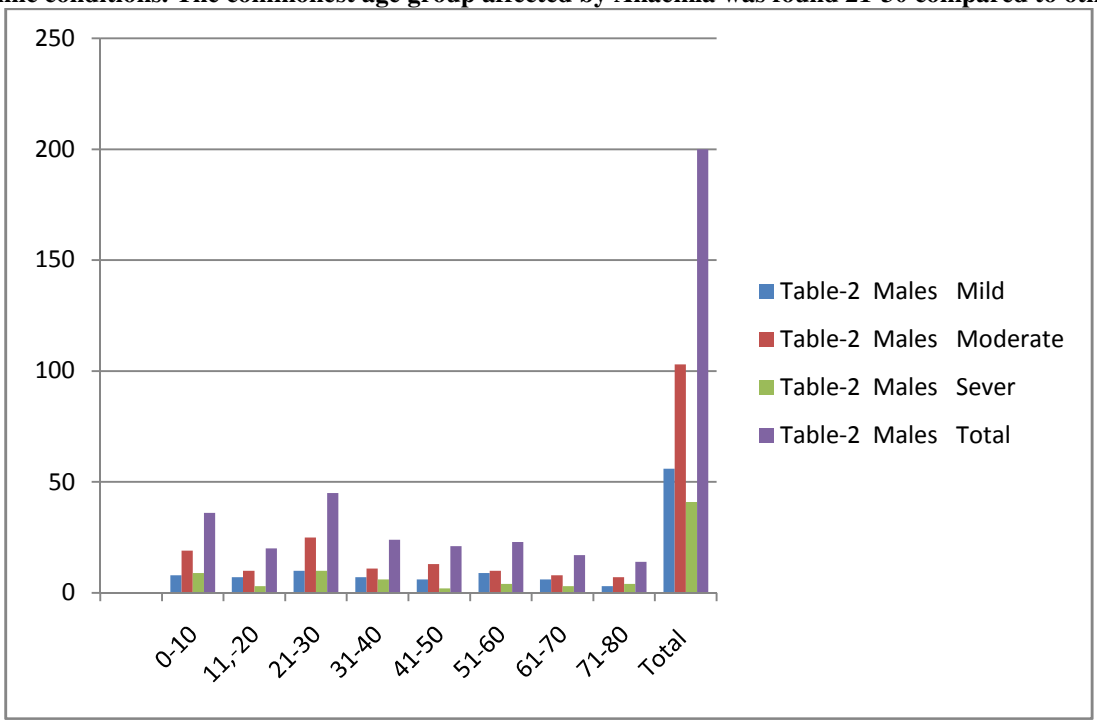


Figure-2
Male anaemic conditions, the commonest age group affected by Anaemia was found 21-30 compared to other age group

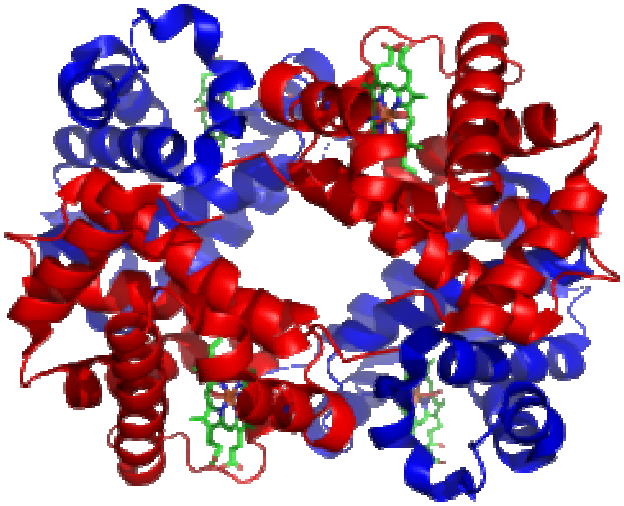
Hemoglobin, human, adult (heterotetramer, $(\alpha\beta)_2$)	
	
Structure of human hemoglobin. The protein's α and β subunits are in red and blue, and the iron-containing heme groups in green. From PDB HEMOGLOBIN	
Protein type	metalloprotein , globin
Function	oxygen-transport
Cofactor(s)	heme (4)

Figure -3
Structure of Human Haemoglobin

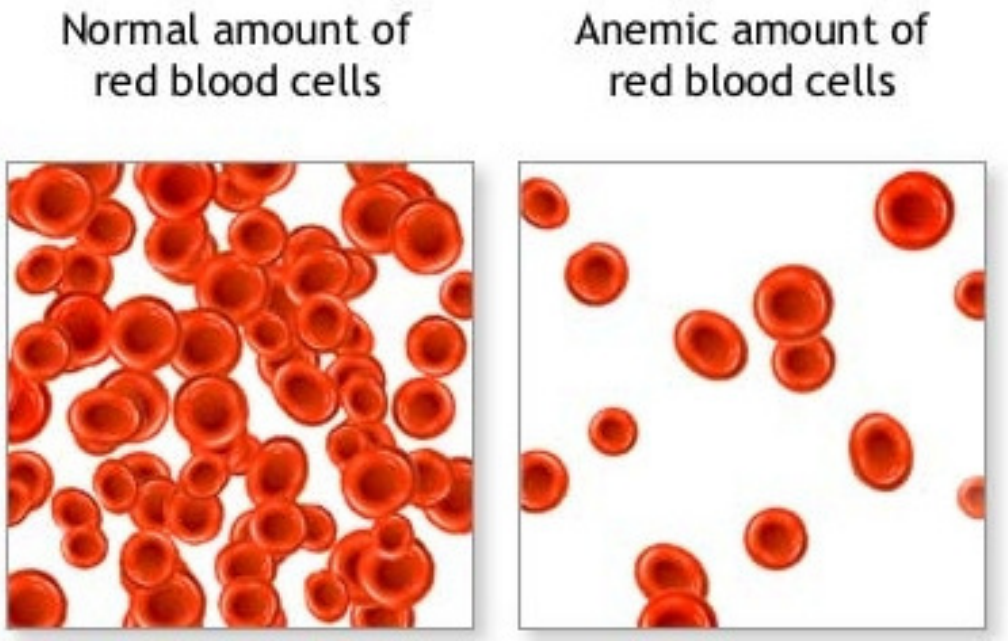


Figure-4
Amount of red blood cells- normal and anaemic condition

Anaemia is a major Public Health Problem .particularly in the developing countries[3] similarly anaemia is a public health Problem in Ujjain, MP, India. It is well known that there are a number of physiologic characteristics, such as age and sex influence haemoglobin concentration[4,5]. Similarly the present study reports that age and sex of human anaemic patients are important factors. There are some environmental factors, which also influence haemoglobin distribution such as changes in altitude[6,7,] and smoking habits[8] Vitamin 'A' deficiency[9,]and inflammation due to infection[10,]also influence the haemoglobin concentration.

We believe that improving women overall nutrition status and their access to resources (income) will have the greatest impact on reducing anaemia in India[11]. In the present survey most of the patients examined fall under the category of lower middle class group therefore, we suggest that state and central governments and other NGO groups should launch some special programmes so as to improve anaemic condition.

The high prevalence of anaemia among women in India is a burden for them, for their families, and for the nation. However Iron supplementation programs for a variety of reason have not been effective in reducing anaemia prevalence in India[12.] Suggestive diet for anaemic patients in early morning: apple, orange juice, lime juice beet root juice. Lunch allugobi, rajma, spinach soup, cereal milk wheat biscuits with low fat milk. Evening: mixed salad, moong dal tomato salad, brown rice and dinner wheat rotis, methi salad green pulav bringel, corn soybeans, kat hal. Other measures: drink 8 to 10 glasses of water More over iron rich non veg food diet included red meat, liver, egg, etc. can prevent anaemia well.

The present survey work show that in Ujjain, MP, India anaemia is main problem particularly in women those over age 21-30 significantly female are more commonly affected (p=.oo1). Anaemia diseases in human being are growing fact in India and also in Ujjain, MP, India for so many reasons fined. These for the presented survey study provide important data, to the govt. and other agencies so is to control this problem in future in India.

Acknowledgement

I would like to thanks SSC and CHL hospital Ujjain, MP. India and Dr. Sushil gupta Dr. Anjuman khan, shalendre malviay for their kind permission and help in these investigation and for the use of laboratory facilities in the hospitals.

Conclusion

The survey was carried out from Nov.2010 to Jan. 2011. A complete data set of age group: - (0-10; 11-20; 21- 30; 31-40; 41-50; 51-60; 61-70; 71-80) was studied. The percentage of anaemia is more in women compared to men. In all of 500 women were studied, mild anaemic are 156, moderate anaemic are 226, severe anaemic are 118. The commonest age group affected by anaemia was found from 21-30.

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