

A Study on Iron Deficiency Anemia and Their Nutrient Intakes Status of Female Subjects

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ABSTRACT

Iron deficiency anemia is a serious and widespread public health concern in both developing and developed countries. Anaemia is the most common nutritional deficiency disorder in the world. It is a condition that occurs when the red blood cells do not carry enough oxygen to the tissues of the body. The present study is to assess the iron deficiency and nutrient intakes of female (adults). The data for the present study have been collected from 60 Female students, in the age group of 20-24 years. Hemoglobin levels were collected under Biochemical analysis. The study showed that there was lower consumption few nutrients intakes were compared to Recommended Dietary Allowances (RDA) of India, which may be reflected on their nutritional status and hemoglobin levels were also below the WHO standards.

Keywords: Hemoglobin levels, Nutrient Intakes, RDA.

INTRODUCTION

Oxygen is the most essential element required to sustain human life. If an adequate supply of oxygen is not circulated throughout the body to vital organs and tissues, brain damage, organ failure and death can result. Hemoglobin (Hb), the iron-containing respiratory protein in red blood cells, is responsible for transporting oxygen from the lungs to the rest of the body. Measured in grams per deciliter (g/dL), hemoglobin levels indicate the blood's ability to carry oxygen and iron. Too little iron interferes with vital functions and leads to morbidity and mortality. WHO classifies the countries with a prevalence of anaemia higher than 40 per cent as the countries where anaemia is a problem of public health significance (WHO, 2001).

Although anaemia has been recognized as a public health problem for many years, little progress has been made and the global prevalence of anaemia remains unacceptably high. WHO and UNICEF therefore reemphasize the urgent need to combat anaemia and stress the importance of recognizing its multi factorial aetiology for developing effective control programmes (WHO, 2004).

Iron deficiency anemia is a serious and widespread public health concern in both developing and developed countries. It affects

20-50% of the world's population and is common in young children (Saloojee and Pettifor, 2001). The prevalence of Iron deficiency anemia (IDA) is high in developing countries than in the developed countries due to poverty, inadequate diet, high incidence of communicable diseases, pregnancy/lactation and low immunity. In India, adolescent girls constitute a vulnerable group of iron deficiency anemia, resulting in a reduced physical work capacity and cognitive function, behavioral disturbances, co morbidity and delay in the onset of menarche which leads to cephalopelvic disproportion. Measuring hemoglobin (Hb) concentration is relatively easy and inexpensive, and this measurement is frequently used as a proxy indicator of iron deficiency anemia (DeBetonist *et al.*, 2008).

MATERIALS AND METHODS

The present study was carried out in Acharya Nagarjuna University, Guntur District, Andhra Pradesh, India. The data for the present study have been collected from 60 Female students, in the age group of 20-24 years belonging to university students from various departments. Diet survey was carried out by weighing method (Rao *et al.*, 1986). Quantitative dietary assessment was done through actual weighing

of raw food item. The average dietary intake of food per item was calculated and was compared with the RDA (Recommended Dietary Allowances) of India using the values as per 'Nutritive Value of Indian Food' (Gopalan *et al.*, 2006). Hemoglobin levels were taken by following shahlis Method (WHO,1982).

Table1 indicated the Mean Hemoglobin levels of females. The Mean Hemoglobin levels were 9.7 ± 10.4 mg/dl. The levels of hemoglobin levels were below the standards and the levels were compared with the WHO Standards. When compared with NIN (1986).The Hemoglobin colour scale with its new colour standards has been found to have a sensitivity in the range 80.0–95.2% and the positive predictive value of 63.0–98.5% (Stone, 1984).

Table 2 shows the mean nutrient intakes of females were presented mean iron values of females were 16.4 ± 6.4 mg and mean folic acid were 75.3 ± 2.41 µg. Mean values of Vitamin B₁₂ of female subjects were also inadequate than the standards. The Mean values of all the nutrients were below the standards. The

present study is in accordance with the studies The average daily intake of iron, folic acid and vitamin B12 were found to be inadequate as compared to recommended dietary allowances (ICMR, 1989). The inadequate intake of protein, iron, folic acid and vitamin B12 could be linked to high prevalence rate of anemia as these are the elements required for hemoglobin formation. Bains and Mann (2000) and Shekhar (2004) also reported lower intake of these nutrients.

CONCLUSION

The present study showed that the Hemoglobin levels and nutrient intakes of females (Adults) were below the WHO standards. So there is an urgent need for improving overall nutritional status of adults through nutrition education, community awareness and supplementation programmes.

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Table1: Mean Hemoglobin levels of Adults

S.no	Adults	Haemoglobin levels(mg/dl)	WHO Standards
1	Females	9.7 ± 10.4	>12.0

Table 2: Mean Nutrient intakes of Adults (Females)

S. No.	Nutrients	Mean values	RDA
1.	Iron (mg)	16.4 ± 6.4	21
2.	Folic acid ((µg)	75.3 ± 2.41	100
3.	Vitamin B ₁₂	0.81 ± 4.6	1.0

ICMR (1989)

REFERENCES

1. Bains K and Maan SK. Sub-clinical iron deficiency – A major factor in reducing physical fitness of young women. *Ind J Nutr Dietet.* 2000; 37: 296 – 300.
2. De Betonist B, McLean E, Egli I and Cogswell M. Worldwide prevalence of anemia 1993-2005: WHO global database on anemia, Geneva: World Health Organization. 2008.
3. Gopalan C, Ramsastri BV and Balasubramaniam S.C.: Nutritive value of Indian Food. Indian Institute of Nutrition, Hyderabad. 2006.
4. ICMR. Nutrient requirements and recommended dietary allowances for Indians. A report of expert group of Indian Council of Medical Research. 129. National Institute of Nutrition, Hyderabad, India. 1989.
5. ICMR. Nutrient requirements and recommended dietary allowances for Indians. A report of expert group of Indian Council of Medical Research. 129. National Institute of Nutrition, Hyderabad, India. 1989.
6. NIN. Anemia and endurance capacity. Annual Report. Indian Council of Medical Research. National Institute of Nutrition, Hyderabad, India. 1986.
7. Rao NF, Camnath T and Sastry JG. Diet and nutrition in urban areas. *Proc. Nutr. Soc.* 1986; 32: 91-99.

8. Saloojee H and Pettifor JM. Iron deficiency and impaired child development. *BMJ*. 2001; 323: 1377-1378.
9. Shekhar A. Current iron status of girls and its effect on work performance. XXXVII Annual National Convention. 103: Indian Dietetic Association, AIIMS, New Delhi, India. 2004.
10. Stone JE. An evaluation of methods for screening for anaemia. *Bulletin of the World Health Organization*. 1984; 62: 115–120.
11. UNICEF/United Nations University/WHO. Iron deficiency anaemia assessment, prevention and control. A guide for programme managers. Geneva: World Health Organization. 2001.
12. WHO, 1972. Nutritional anemias. *Tech. Rep. Ser.* 503: 21. World Health Organisation. Geneva.
13. WHO, Nutritional anemia, WHO Technical Report Series, WHO Chronical ,1982; 403: 23.
14. WHO, UNICEF, UNU. Iron deficiency anaemia: assessment, prevention and control, a guide for programme managers. Geneva, World Health Organization, 2001.
15. WHO/UNICEF. Focusing on anaemia. Towards an integrated approach for effective anaemia control; 2004.