

Intervention of Iron-folic Acid in School children

Bharat H. Patel¹, Deepak Saxena², Deepika Singhal¹, Vipul Keerti Sharma³,
R. S. Maheshwari⁴ and M. M. Prakash⁵

1. Department of Community Medicine, Government Medical College, Surat, Gujarat, India

2. Department of Ophthalmology, Smimer, Surat 395001, Gujarat, India

E-mail: ddeepak72@yahoo.com

3. Post Graduate Department of Zoology, P. M. B. Gujarati Science College,
Indore 452 001, Madhya Pradesh, India

E-mail: vipulkeerti@yahoo.com

4. Department of Biochemistry, Government Holkar Science College, Indore 452 017
Madhya Pradesh, India

5. Department of Zoology, Government Holkar Science College, Indore 452 017
Madhya Pradesh, India

KEYWORDS Iron Deficiency Anaemia (IDA). Iron-Folic Acid Supplementation (IFAS). Anaemia

ABSTRACT Iron and folate deficiency is an important cause of anaemia among young children. Folate is necessary for the production and maintenance of new cells. This is especially important during periods of rapid cell division and growth such as infancy and pregnancy. The aim of this study was to estimate the magnitude of iron deficiency and the improvement in the Hb level by alternate day IFA supplementation. It was observed that amongst 65 students, 63% were found to be anaemic. After alternate day IFA supplementation for 1 month the prevalence decreased to 48.4% with overall increase in mean Hb of 0.59 gm%, from 11.29 to 11.88.

INTRODUCTION

Adolescence is a significant period of human growth and maturation, unique changes occur in many adult patterns are established. Following early childhood (<2 yr), during the adolescent growth spurt, the risk of iron deficiency and anaemia reappears (Dallman et al. 1980). Iron deficiency affects the ability of adolescents to read, write and learn also. The USAID/OMNI/PCD consultation concluded, "iron supplementation resulted in significant improvement in school measurements of verbal and other measurable skills among primary school children and adolescents" (Draper 1997). The present study was conducted to estimate the magnitude of anaemia and to see the impact of IFA supplementation on prevalence of it.

MATERIALS AND METHODS

After getting permission from the authority of Sarvodaya School, Bhatar Road, Surat, Hb estimation of the students was done using Sahli's acid hematin method. The principle in Sahli's method involves the conversion of haemoglobin to acid hematin and comparing visually the colour developed with that of standard tinted glass.

Haemoglobin value is directly read from the graduated haemoglobin tube. Then the data was analyzed and students were grouped into Anaemic (<12 gm%) and Non-anaemic categories as per WHO classification. After that, supervised administration of Iron-Folic acid tablet (each containing 100 mg of elemental Iron and 0.5 mg of Folic acid) was given to each anaemic student in the afternoon, after meal, every second day for a month. A session was arranged for all the students including non-anaemic students, their parents and teachers to make them aware about various aspects of anaemia and its prevention using charts, posters and brochures.

After intervention, again Hb was estimated. The data were analyzed using epi-info version 6 programme.

RESULTS AND DISCUSSION

Of the total 65 students, 43 (66.2%) were boys and 22 (33.8%) were girls. 49.2% students had more than one sibling. Looking at mother's education; from 18 students, whose mother studied up to primary level, 72.2% were anaemic, whereas prevalence was 62.9% for those whose mother studied above primary level. Diet-wise, 60% students were vegetarian; of them, 61.5% of

Table 1: Comparison of anaemia status before and after intervention

Hb (gm%)	No. of Students	
	Before intervention	After intervention
≥12(Normal)	24(36.9%)	31(51.7%)
10 - 11.9(Mild anemia)	34(52.3%)	28(46.7%)
7 - 9.9(Moderate anemia)	07(10.8%)	01(1.7%)
<7 (Severe anemia)	00(0.0%)	00(0.0%)
Total	65(100%)	60(100%)

Table 2: Comparison of mean Hb level before and after intervention

Hb (gm%)	Mean Hb (gm%)		p value
	Before intervention	After intervention	
≥12 (Normal)	12.8 ± 1.04	12.7 ± 0.78	0.68
10 – 11.9 (Mild anemia)	10.7 ± 0.49	11.1 ± 0.39	0.0008
7 – 9.9 (Moderate anemia)	09.0 ± 0.29	09.5 ± 0.00	Not applicable
Total	11.29 ± 1.45	11.88 ± 1.04	0.01

students were anaemic as compared to 64% who consume mixed diet (Table 1).

Sex-wise, 67.4% boys were found anaemic before intervention as compared to 54.5% girls. Prevalence of anaemia was decreased from 63.1% before intervention to 48.4% after intervention, showing 14.7% decrease.

As far as mean Hb was concerned; in anaemic students it was 10.42 ± 0.81 gm% before intervention which was increased to 11.41 ± 0.71 gm% with a 0.99 gm% improvement after intervention. And overall mean Hb was 11.29 ± 1.45 gm% before intervention, which was increased to 11.88 ± 1.04 gm% with a 0.59 gm% improvement after intervention (Table 2).

The compliance was found to be almost 100% with only 3 students had experienced side effects comprising of nausea, abdominal discomfort and diarrhoea once.

The total prevalence of anaemia was found to be 63%. In the same manner, the prevalence of anaemia up to 26% in Ludhiana city and 25% in rural school children in Kerala was also reported (Longfils et al. 2005 and Gangadharan et al. 1997). In this study prevalence of anaemia among girls was found to be 54% against reported the prevalence of 60% in rural school girls in one study (Sheshadri 1999). Another study reported 37.6% girls to be anaemic in urban school of Surat and 40% in urban slums of Baroda (Basu 2003 and Shankar 2001). It indicates that adolescent's need special attention, particularly girls, as they will play a very important role for the health of their family in future. After the intervention, there was 14.8% decrease in the prevalence of anaemia and 0.99 gm% increase in mean Hb in anaemic students. Study conducted in Vadodara has

reported 20.5% decrease in prevalence of anaemia and 0.64 gm% improvement in mean Hb level after IFA supplementation once a week for 17 months in adolescent girls (Kotecha et al. 2002).

Compliance with IFA tablet was almost 100% with almost nil side effects as the tablet was given after meal in afternoon on alternate days.

This signifies that with periodical administration of IFA tablet, there is definite improvement in Hb level and very good compliance.

REFERENCES

- Basu, Mausumi 2003. *Health Profile of Students in a Girl's School in Surat City with Emphasis on Ophthalmic Morbidities*. A dissertation for the degree of M.D. (P.S.M.), P. 66.
- Dallman PR, Simes MA, Stekel A 1980. Iron deficiency in infancy and childhood. *Am J Clin Nutr*, 33: 86-118
- Draper A. 1997. *Child Development and Iron Deficiency: The Oxford Brief*. United States Agency for International Development and Opportunities for Micronutrient. Oxford, U K.
- Gangadharan M 1997. School health service programme in Kerala, A rural study. *Indian Pediatrics*, 14: 603-13.
- Karkar PD, Kotecha PV 2004. Prevalence of anemia among students of Nursing School of Vadodara. *Nurs J India*, 95: 257-258.
- Longfils P, Heang UK, Soeng H, Sinuon M 2005. Weekly iron and folic acid supplementation as a tool to reduce anemia among primary school children in Cambodia. *Nutr Rev*, 63: S139-45.
- Seshadri S 1999. A database on Iron Deficiency Anaemia in India: Prevalence, an etiology, consequences and strategies for control. Western India. *J. Assoc. Physicians*, 11: 969-973.
- Shankar P 2001. *Weekly vs. Daily Oral Iron Supplementation in Urban Adolescent Girls: Effect on Hb and Serum Ferritin*, Master's dissertation, M. S. University, Baroda.