Prevalence of anaemia in urban college going girl students.

Gurpreet Singh[1], Kuldip Singh[2*]

[1]Medical Officer, Indian Institute of Science Education and Research, Sector-81, Mohali, Punjab, India

[2]Department of Biochemistry, Government Medical College, Patiala, Punjab, India

Abstract

Background: Anaemia is the most common nutritional deficiency disorder in the world. The prevalence of anaemia is alarmingly high in India. Major work regarding prevalence of anaemia has been done in pregnant females, adolescents and young children. There are relatively few limited studies in college going youth population in developing countries like India.

Objective: The objective for conducting the present study was to determine the prevalence of anaemia in urban, educated, young, unmarried, college going girl students.

Material and methods: A cross-sectional study was conducted among the 74 urban, college going girl students in age group of 18-28 years. The haemoglobin was estimated by "Compolab", based on broad spectrum photometric measurement of haemoglobin in unaltered whole capillary blood.

Results: The prevalence of anaemia was found 36.49% in the present study. Out of the 36.49% anaemics, 35.14% were mildly anaemic that is Hb was in range of 10-11.99 gm% and only 1.35% was moderately anaemic that is Hb was in range of 7-9.99 gm%. In the present study, no subject was severely found anaemic.

Conclusions: Anaemia is a multifactorial disorder. It requires a multipronged strategy for its prevention and management. The results in our study suggested that innovative strategies like good education, improving health and hygiene awareness and up liftment in socioeconomic status might be helpful in reducing the prevalence of anaemia.

Introduction

Anaemia is the most common nutritional deficiency disorder in the world. About one third population of the world is anaemic [1]. Out of the entire world prevalence of anaemia in the South Asian countries is highest. According to World Health Organization (WHO), out of the South Asian countries prevalence of anaemia is highest in India [2]. Moreover, prevalence of anaemia is high in all the states of India [3]. The prevalence of anaemia is alarmingly high in India due to (I) low dietary intake of iron (less than 20 mg/day) and folic acid intake (less than 70 mg/day); (II) poor bioavailability of iron (3-4% only) in phytate and fibre-rich Indian diet; and (III) chronic blood loss due to infection such as malaria and hookworm infestations [4,5]. Anaemia has major detrimental effects on the health of community. Apart from this, it takes its toll on the socio-economic development of the nation. The consequences of anaemia for women and neonates include increased risk of low birth weight or prematurity, prenatal and neonatal mortality, inadequate iron stores for the new-born, increased risk of maternal morbidity and mortality, and lowered physical activity, mental concentration, and productivity. Women with even mild anaemia may experience fatigue and have reduced work capacity [6-9]. Five major surveys namely National Family Health Survey (NFHS) 2 and 3, District Level Household Survey 2 (DLHS), Indian Council of Medical Research (ICMR), Micronutrient Survey and Micronutrient Survey conducted by National Nutrition Monitoring Bureau (NNMB) were undertaken to estimate prevalence of anaemia in India [3-5,10,11] Results of these surveys were dismal. As per NFHS 3 survey, about 55% of Indian women are anaemic. Indian government has been taking steps from time to time to tackle the problem of anaemia in community. National programme for prevention of nutritional anaemia was launched by government during the 4th five year plan. The programme consisted of distribution of Iron and Folic acid tablets to pregnant women and young children in age group 1-12 years. Apart from this, other causes of malaria like malnutrition, hookworm infestation, malaria, are also being dealt with various national programmes. Still the prevalence of anaemia is high as indicated by above cited national surveys and various researchers. Major work regarding prevalence of anaemia has been done in pregnant females, adolescents and young children. There are relatively few studies in college going youth population of our country. So in present study we

determined the prevalence of anaemia in urban, educated, young, unmarried, girl students in age group 18-28 years.

Material and Methods

The cross-sectional study was carried out on 74 urban, college going young, unmarried girl students in age group range of 18-28 years, having body weight more than 45 kg, who volunteered for blood donation in blood donation camp organized in IISER campus-Mohali. The subject was made to sit comfortably and under all aseptic precautions capillary blood sample was taken. After pricking fingertip with lancet, two drops of blood were discarded to ensure pure fresh capillary blood sample. Then one drop of blood was placed in the cuvette for haemoglobin measurement. The haemoglobin levels were analysed by "Compolab" (Fresenius Kabi Deutschland GmbH Borkenberg 14D-61440 Oberursel-Germany), based on broad spectrum photometric measurement of haemoglobin in unaltered whole capillary blood.

All the data thus collected was compiled, tabulated and analysed statistically. The WHO classification of anaemia was used for classifying the subjects according to severity of anaemia [12] as shown in Table 1.

Table 1. World health organization criteria for the classification of anaemia.

Grading of anaemia	Non pregnant females
No anaemia	>12 g/dl
Mild anaemia	10-11.99 g/dl
Moderate anaemia	7-9.99 g/dl
Severe anaemia	<7 g/dl

Table 2. Classification of subjects as per world health organization' classification of anaemia.

WHO classification of anaemia	No. of subjects (Total subjects=74)
No anaemia (Hb: >12 g/dl)	47
Mild anaemia (Hb: 10-11.99 g/dl)	26
Moderate anaemia (Hb: 7-9.99 g/dl	1
Severe anaemia (Hb: <7 g/dl)	Nil

Results

The prevalence of anaemia in our urban, educated, young, unmarried college going girl students, with body weight more than 45 kg, in age group 18-28 years was 36.49%. Out of the 36.49% anaemics, 35.14% were mildly anaemic i.e. Hb was in range of 10-11.99 gm% and only 1.35% were moderately anaemic i.e. Hb was in range of 7-9.99 gm% summarised in Table 2 and Figure 1. No subject was found severely anaemic. The lowest Hb recorded was 8.4 gm%. The highest Hb recorded was 15.3 gm%.
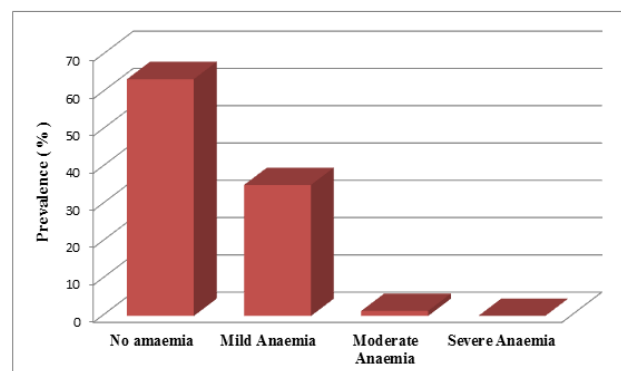

Figure 1. Distribution of study subjects in relation to the severity of anaemia.

Discussion

According to NFHS-3 2005-2006 data, prevalence of anaemia in women of reproductive age group was 55.3%. Out of these 39% were mildly anaemic, 15% moderately anaemic and 2% severely anaemic [11]. Dey et al., analysed the NFHS-3 2005-2006 data for the state of Meghalaya and found that prevalence of anaemia in women of reproductive age group was 49.6% [13]. They found that the women of age group 20-24 years were at high risk of anaemia. In age group 20-24 years prevalence of anaemia was 65.8% while in age group 25-29 years it was 47.2%. It is higher than the prevalence in our study. Our study shows prevalence of anaemia in urban educated young, unmarried girl students, with body weight more than 45 kg, in age group 18-30 years is 36.49%. This difference may be due to the fact that subjects studied by Dey et al., were almost 50% urban and 50% rural residents. Whereas all subjects in our study were urban residents with good education background, good health and hygiene awareness and medium to high socioeconomic status. Study by Verma et al., had shown prevalence of anaemia in young college going female rural population (15-24 years) as 60.96% [14]. Out of the 187 girls, 83 (44.38%) were mildly anaemic, 26 (13.9%) were moderately anaemic and 5 (2.67%) were severely anaemic. Out of the 187 girls, majority of girls i.e. 115 girls (61.49%) were in the in the age group of 20-24 years and rest were in late adolescence period (15-19 years). The prevalence of anaemia was more among 20-24 years of age. The prevalence of anaemia among the late adolescents was 55.8%, whereas, it was 65.1% among 20-24 years of age. There is significantly less prevalence of anaemia in our study. In another study by Verma et al., the prevalence of anaemia among rural young girls in age group 20-24 years and 25-29 years was 55.7% and 52.7% respectively [15]. This is again significantly higher than our study. Bentley and Griffith analysed data from 2nd Indian National Family Health Survey 1998/1999 for women of reproductive age group for state of Andhra Pradesh. They found about 40% of women in the highest socioeconomic group were anaemic. On the other hand 54% of rural poor women were anaemic [16]. Our subjects also show similar anaemia prevalence as in the subjects of highest socioeconomic status in the above mentioned study. Contrary

to the findings of above cited studies and our study, Thankachan et al., reported 39% anaemia prevalence in young females in age group 18-35 years of low socioeconomic status in urban area Bangalore [17]. Iron supplementation programmes have not been effective in reducing anaemia prevalence due to various causes [18,19]. Overall, the majority of the above cited studies support the fact that the factors like area of residence i.e. rural or urban, socioeconomic status and level of education has effect on prevalence of anaemia in the community. Prevalence of anaemia is low in educated, urban and high socioeconomic status subjects [9,20-22]. In 1993, World Bank report has stated that improving the income and overall nutrition will have greatest impact on reducing anaemia in India [23]. In Conclusion, high prevalence of anaemia in the young female population of India is a threat to the economic development of the country. Hence, there is need of multipronged new and innovative strategies like good education, improving health and hygiene awareness and upliftment in socioeconomic status for improving the overall health and nutritional status of the young females to build young healthy India. A large comprehensive study including data on anthropometry details, biochemical profile, pattern of dietary intake in young women may give a better insight into the situation.

Acknowledgement

References

1. Assessing Iron Status of Populations. Report of Joint World Health Organization/Centres for Disease Control and Prevention Technical Consultation on the Assessment of Iron Status at the Population Level. WHO Publ 2005.

2. Ezzati M, Lopus AD, Dogers A, Vander HS, Murray C. Selected major risk factors and global and regional burden of disease. Lancet 2002; 360: 1347-1360.

3. DLHS on RCH. Nutritional status of children and prevalence of anaemia among children, adolescent girls and pregnant women 2002-2004.

4. Toteja GS, Singh P. Micronutrient profile of Indian population. India Conc Med Res 2004.

5. NNMB Micronutrient survey. Hyderabad-Nat Inst Nutr 2002.

6. Gillespie S, Johnston J. Expert Consultation on Anaemia Determinants and Interventions. Ottawa-Micronutrient Initiative 1998.

7. Stoltzfus RJ. Rethinking anaemia surveillance. Lancet 1997; 349: 1764-1766.

8. Allen L. Pregnancy and iron deficiency: unresolved issues. Nutr Rev 1997; 55: 91-101.

9. Gillespie S. Major issues in the control of iron deficiency. Ottawa-The Micronutrient Initiative 1998.

10. IIPS National Family Health Survey 1998-1999.

11. IIPS. National Family Health Survey 2005-2006

12. Report of WHO group of experts on nutritional anaemia. Technical report series Geneva WHO 1972.

13. Dey S, Goswami S, Goswami M. Prevalence of anaemia in women of reproductive age in Meghalaya: a logistic regression analysis. Turk J Med Sci 2010; 40: 783-789.

14. Verma R, Deswal S, Kamboj R, Arora V, Kharb M. Prevalence of anaemia in college going youths in a rural block of Haryana. Ind J Comm Health 2014; 26: 298-302.

15. Verma R, Kharb M, Deswal S, Arora V, Kamboj R. Prevalence of anaemia among women of reproductive age group in a rural block of Northern India. Indian J Comm Health 2014; 26: 359-364.

16. Bentley ME, Griffiths PL. The burden of anemia among women in India. Eur J Clin Nutr 2003; 57: 52-60.

17. Thankachan P, Muthayya S, Walczyk T, Kurpad AV, Hurrell RF. An analysis of the etiology of anaemia and iron deficiency in young women of low socioeconomic status in Bangalore, India. Food Nutr Bull 2007; 28: 328-336.

18. Galloway R, McGuire J. Determinants of compliance with iron supplementation: supplies, side effect, or psychology. Soc Sci Med 1994; 39: 381-390.

19. Vijayaraghavan K, Brahmam GNV, Nair KM, Akbar D, Praalhad RN. Evaluation of National Nutritional Anemia Prophylaxis Programme. Ind J Pediatr 1990; 57: 183- 90.

20. Kurz KM, Johnson-Welch C. The nutrition and lives of girls in developing countries: findings from the nutrition of adolescent girls research program. Int Res Women 1994.

21. Kanani SJ, Poojara RH. Supplementation with iron and folic acid enhances growth in adolescent Indian girls. J Nutr 2000; 130: 452-455.

22. Creed-Kanashiro HM, Uribe TG, Bartolini RM, Fukumoto MN, Lopez TT, Zavaleta NM,Bentley ME. Improving dietary intake to prevent anemia in adolescent girls through community kitchens in a periurban population of Lima, Peru. J Nutr 2000; 130: 459-261.

23. Invest in Health. World Development Report World Bank 1993.

*Correspondence to

Dr. Kuldip Singh

Department of Biochemistry

Government Medical College

Patiala, Punjab

India