SHORT ARTICLE

Prevalence of anaemia in college going youths in a rural block of Haryana

Ramesh Verma[1], Shelja Deswal[2], Renu Kamboj[3], Varun Arora[4], Meenakshi Kharb[5]

[1]Assistant Professor, Department of Community Medicine BPSGMC for Women, Khanpur Kalan Sonepat,[2]Post Graduate, Department of Physiology PGIMS Rohtak ,[3]ARSH Co-ordinator NRHM, Civil Surgeon Office Rohtak, [4]Assistant Professor, Department of Community Medicine PGIMS Rohtak, [5]Quality Monitoring Officer, Rohtak (NHM Panchkula)

Abstract	Introduction	Methodology	Results	Conclusion	References	Citation	Tables / Figures

Corresponding Author

Address for Correspondence: Dr Ramesh Verma, Assistant Professor, Department of Community Medicine BPSGMC for Women, Khanpur Kalan Sonepat
E Mail ID:rameshvermamd@gmail.com

Citation

Article Cycle

Abstract

Research Question: What is the prevalence of Anaemia in college going youths in a rural block of Haryana? **Objectives**: To determine prevalence of Anaemia in college going youths in rural block of Haryana. **Methodology**: Cross-sectional, descriptive at Government College for women in rural block, Lakhanmajra, Dist. Rohtak among 187 college going young women of age group 15 to 24 years.**Results:**The overall prevalence of anaemia was 60.96%. 114 out of 187 young women had varying severity of anaemia while anaemia was absent in 39.04% of the girls.Out of the 187 girls, 83 (44.38%) were mildly anaemic, 26(13.9%) were moderately anaemic and 5(2.67%) were severely anaemic. **Conclusion:** The present study revealed anaemia to be a major health problem among the college going girls in rural areas in Haryana.

Key Words

Prevalence; Anaemia; Youth

Introduction

Anaemia is the most prevalent nutritional problem worldwide and it is mainly caused due to iron deficiency. Its prevalence is highest among young children and women of childbearing age; particularly in pregnant women [1]. The prevalence of anaemia is disproportionately high in the developing countries, due to poverty, inadequate diet, worm infestations, pregnancy/lactation and poor access to the health services [2].

The world's adolescent population is facing a series of serious nutritional challenges which are not only affecting their growth and development but also their livelihood as adults. Yet, adolescents remain a largely neglected, difficult- to- measure and hard -to-reach population, in which the needs of adolescent girls in particular, are often ignored [3].

Adolescent girls are at a high risk for anaemia and malnutrition. Inadequate nutrition during adolescence can have serious consequences throughout the reproductive years of life and beyond [4]. Very often, in India, girls get married and pregnant even before the growth period is over, thus doubling the risk for anaemia [5].

The National Family Health Survey-3 (NFHS-3) data suggests that anaemia is widely prevalent among all age groups. The prevalence of anaemia among girls (Hb <12 gm %) is alarmingly high as per the reports of NFHS-3 and the National Nutrition Monitoring Bureau Survey (NNMBS). Percentage prevalence of anaemia among adolescent girls in the age group 15–19 years and in the older age group 20–29 years remains almost stagnant at 55.8 per cent and 56.1 per cent respectively [6].

The nutritional anaemia in adolescent girls attributes to the high maternal mortality rate, the high incidence of low birth weight babies, high perinatal mortality and the consequent high fertility rates. This phase of life is also important due to the ever-increasing evidence that the control of anaemia in pregnant women can be more easily achieved if a satisfactory iron status can be ensured during adolescence [2].

Anaemia is said to be present when the haemoglobin level in the blood is below the lower extreme of the normal range for the age and sex of the individual [7]. According to the WHO criteria, the cut off level of the haemoglobin concentration in blood for the diagnosis of anaemia is less than 12 gm/dl for non-pregnant women and less than 13 gm/dl for adult males [8, 9].

As compared to the vast amount of work which has been done in pregnant mothers and young children, there are relatively few published studies on the prevalence of anaemia among college going young women. The data pertaining to prevalence of anaemia among those having rural background is scarce, particularly in a rural community setup. Meaningful programmes cannot be implemented without sufficient data.

Aims & Objectives

The present study was undertaken to assess the prevalence of anaemia among college going young women who belonged to the rural communities.

Material and Methods

The present cross-sectional study was conducted in Government College for women block Lakhanmajra which is the field practice area under the Department of Community Medicine, PGIMS Rohtak. The study period was from March 2012 to April 2012.*Inclusion criteria:* College going girls of the age group of 15-24 years. All the young women of the age group, 15-24 years, who attended the government college in the study area, were included in the study. The participants were informed about the study and informed consent was obtained from the heads of the college authorities as well as the participants. A pre-designed and pre-tested proforma was used to collect the information about the participants. A brief, relevant clinical examination was also done. Taking P = 0.56 [6], allowable error (d) = 15% of P, and using this in the formula of sample size n = Z 21-α P (1- P) /d 2, sample size was estimated to be 139. [10] Thus all the college going women [except pregnant women (n=5)] enrolled under the study (n=187).

Test Principle: The International Committee for Standardization in Hematology (ICSH) recommends the cyanmethoglobin (CMG) method as a standard method for estimation of Hemoglobin. This method is simple, rapid and reliable and measures all types of hemoglobin except sulfhemoglobin [11]. The cyanmethoglobin standard complies with the specification defined by ICHS which is based on

molecular weight of Hb (64,458 daltons) and a millimolar extinction coefficient of 44. Cyanmethoglobin Standard is used for direct comparison with blood. Drabkin's solution on mixing with whole blood converts Hemoglobin to Cyanmethoglobin is proportional to the Hemoglobin concentration [12, 13].Collection of the blood samples: 0.02 ml of capillary blood was drawn by puncture in micropipette under aseptic precautions and it was collected in dry test tube containing Drabkin's solution (5.0 ml). The collected blood sample was mixed well and kept for 5 minutes and analyzed by expert technicians.The samples were analyzed by using photoelectric colorimeter (Digital). Chi-square test was used for the statistical analysis. The differences were considered as significant at a p value of <0.05.

Results

The overall prevalence of anaemia was 60.96%. 114 out of 187 young women had varying severity of anaemia while anaemia was absent in 39.04% of the girls.Out of the 187 girls, 83 (44.38%) were mildly anaemic, 26(13.9%) were moderately anaemic and 5(2.67%) were severely anaemic.The range of haemoglobin among the participants was 5.6-14.4 gms/dl with mean haemoglobin level of 9.9+1.09 gms/dl among anaemic and 11.80+.5gms/dl among non-anaemic girls.

Out of the 187 girls, majority of girls [n=115 (61.49%)] were in the in the age group of 20-24 years and rest [n=72 (38.51%)] 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. This was found to be statistically significant.Thus, the prevalence of anaemia was high among the youths of 20 to 24 years of age as compared to late adolescents (15-19yrs).

Discussion

Anaemia is a major public health concern in pre-school children and pregnant women in the developing world. While many studies have examined these two at-risk groups, there is a paucity of data on anaemia among adolescents who were living in developing countries, in the complex ecologic context of poverty and malnutrition [15]. It is becoming increasingly evident that the control of anaemia in pregnant women can be more easily achieved if a satisfactory iron status can be ensured in the adolescent females prior to marriage [16].

The reasons for the high incidence of anaemia among the adolescent girls are: Increased iron requirements because of growth, Menstrual loss, discrepancy between high iron need for haemoglobin formation and low intake of iron containing foods, Erratic eating habits, dislike for foods which are rich in iron, like green leafy vegetables, Iron absorption inhibitors in food: phytates/tannins [5]

In the present study, it was found that out of 187 girls, 114 (60.96%) were suffering from various degrees of anaemia and that 73 (39.04%) were non-anaemic. This indicated that it was a public health problem of high magnitude as per the WHO guidelines [5]. In a multi-country study on the nutritional status of adolescents, which was carried out by the International Centre for Research on Women (ICRW), anaemia was found to be the most widespread nutritional problem and its prevalence ranged from 32-55% [17]. A study which was conducted in the rural areas of Tamil Nadu revealed that the prevalence of anaemia among the adolescent girls was 44.8% [18].

Studies which were conducted in rural Wardha and Lucknow to estimate the prevalence of anaemia among adolescent girls, found that the prevalence of anaemia in those areas was 59.8% and 56% respectively [19].

Verma R, Govila V.K, Kuldeep, Kharb M (2013) conducted a study on "Prevalence of anemia in college going youths in rural blocks of a dist. of northern India" found that overall prevalence of anemia was 43.76% [20].

Thus, the results of various studies which have been mentioned above, demonstrated that the prevalence of anaemia in this study was high as in other parts of the country. This indicated the importance of including adolescents in the risk group to improve their iron status and the need for planning intervention programs that would increase the haemoglobin levels among the adolescent girls through prophylaxis treatment, dietary modification and helminth control.

In our study, the prevalence of severe anaemia was 2.67%, that of moderate anaemia was 13.9% and that of mild anaemia was 44.38%.

In a study which was conducted in rural Tamil Nadu, the prevalence of severe anaemia was found to be 2%, that of moderate anaemia was 6.3% and that of mild anaemia was 36.5% [18].

Verma R, Govila V.K, Kuldeep, Kharb M (2013) conducted a study on "Prevalence of anemia in college going youths in rural blocks of a dist. of northern India" found that prevalence of severe anemia was found to be 3.58%, that of moderate anemia was 11.16% and that of mild anemia was 29% [20].

Another study which was conducted in rural Wardha showed the prevalence of severe, moderate and mild anaemia to be 0.6%, 20.8% and 38.4% respectively [1].

A study which was conducted among school going girls in Ahmedabad revealed that 55.2% were mildly anaemic, 44.9% were moderately anaemic and that 0.6% were severely anaemic [21]

The high prevalence of mild and moderate anaemia demands due emphasis on iron and folic acid supplementation and health education on the consumption of iron rich foods, so as to bring down the total prevalence of anaemia among the adolescent girls.

In the present study, anaemia was more prevalent in youths of 20-24 years of age. A study which was conducted in rural Tamil Nadu to assess the prevalence of anaemia among adolescent girls, found that there was reduction in the mean Hb as the age increased. Similarly the decreasing trend of haemoglobin with increasing age was seen in our study [18].

In our study, we found that anaemia was more prevalent in youths having age group 20-24 years (65.15%) as compared to late adolescents (55.81%),

A study which was conducted in Haryana on 110 adolescent girls found that anaemia was more prevalent in girls who were more than 14 years of age [22].

Thus, the high prevalence of anaemia among girls who were more than 14 years of age could be related to menstrual loss but as per our study anaemia was more in youths (20-24 years) due to child bearing age.

Conclusion

In conclusion, the present study revealed anaemia to be a major health problem among the college going girls in rural areas. The prevalence of anaemia was more among youths who were 20-24 years of age (child bearing age).

There was a higher prevalence of mild anaemia as compared to moderate and severe anaemia.

Information Communication Technology (ICT) to create knowledge and awareness among people and basically to adolescent girls and mother on various

health and hygiene issue. This program should have integrated approach to combat anaemia.

Recommendation

There is need to include iron rich food in the diet of adolescent girls. Grams, maize, Mustard leaf, powder milk and red meat has high iron component so at least once in a week girls should eat rich food to get recommended iron per day to gain normal body mass index.

We can go for policy advocacy because government have special program of ICDS to give enhanced ration to adolescent girls. Other than ICDS, Nutrition program for underweight adolescent girls, Kishori Shakti Yojana, WIFS (weekly iron folic acid supplementation) for non- school going adolescent girls

Monitoring and evaluation of government program like ICDS Supplementary Nutritional Program should be strengthened. Effectively monitoring of these programs is required.

Hence, improvement in dietary habits related to consumption of green leafy vegetables should be included in diet plan. Health education, seminars on menstrual hygiene should be conducted at regular interval.

Limitation of the study

As we had done this study among college going youths it could not be generalized to whole population where this situation may be worse than the figures shown.

Relevance of the study

To assess the prevalence of anaemia in rural population especially among college going youths gives the ground reality and attention of the policy makers to review the gaps for correcting anaemia.

Authors Contribution

RV: Designing and manuscript writing, SD: Activity execution in area,RK: Coordinated the activity and necessary arrangements, VA: Review the article, MK: Monitoring and supervision of the activity and advisor.

Acknowledgement

References

1. Shah BK, Gupta P. Weekly vs daily iron and folic acid supplementation in adolescent Nepalese girls. Arch Pediatr Adolesc. Med. 2002 Feb;156(2):131-5. PubMed PMID: 11814373. [PubMed]
2. Kaur S, Deshmukh PR, Garg BS. Epidemiological correlates of nutritional anaemia in adolescent girls of rural Wardha. Indian J Community Med. 2006;31:255-58.
3. Chatterjee, R. Nutritional needs of adolescents. Paediatrics Today. 2008;3:110-14. [Google Scholars]
4. Nayar PD, Mehta R. Child Health. In: Gupta P, Ghai OP, Editors. Textbook of Preventive and Social Medicine. 2nded. New Delhi: CBS Publishers and Distributors. 2007;428-37.
5. WHO: de Benoist B et al., eds. worldwide prevalence of anaemia 1993-2005. WHO Global Database on Anaemia Geneva, World Health Organization, 2008.
6. National Nutrition Monitoring Bureau, Diet and Nutritional Status of Rural Population and Prevalence of Hypertension among adults in Rural Areas, NNMB Technical Report No.24, 2006, NNMB, NIN, Hyderabad.
7. Firkin.F, Chesterman.C, Penington.D, Rush.B. Editors.de Gruchy's Clinical Haematology in Medical Practice. 5thed Oxford: Blackwell Science Ltd.1989;17-36.
8. Bell. A. Introduction to the Anemias: Approach to Diagnosis. In: Rodak BF. Editor. Diagnostic Haematology. Philadelphia: W.B. Saunders Company. 1995;170-80.
9. Dhaar GM, Rabbani I. Editors. Foundations of Community Medicine. 2nd ed New Delhi:Elsevier India; 2008; 272-76.
10. World Health Organisation. In: Lwanga SK, Lemeshow S, editors. Sample size determination in health: A practical manual. 1991
11. ICHS Committee. J. of Clin. Path. 1978;31:139
12. Drabkin, D.L.,J.Biol. Chem.1932;98:719
13. Alan, H. Gowenlock, (1988), Varley's Practical Clinical Biochemistry, 6th edition, 664
14. Lal S, Pankaj A. Editors. Textbook of Community Medicine (Preventive and Social Medicine). 1sted. New Delhi: CBS Publishers and Distributors. 2007;166-68.
15. Kara B, Cal S, Aydoğan A, Sarper N. The prevalence of anemia in adolescents: a study from Turkey. J Pediatr Hematol Oncol. 2006 May;28(5):316-21. PubMed PMID: 16772884.[PubMed]
16. Shekhar A. The iron status of adolescents girls and its effect on their physical fitness. Indian J Nutr Diet. 2005;42(10):451-45.
17. Basu S, Basu S, Hazarika R, Parmar V. Prevalence of anemia among school going adolescents of Chandigarh. Indian Pediatr. 2005 Jun;42(6):593-7. PubMed PMID: 15995276.[PubMed]
18. Rajaratnam J, Abel R, Asokan JS, Jonathan P. Prevalence of anemia among adolescent girls of rural Tamilnadu. Indian Pediatr. 2000 May;37(5):532-6. PubMed PMID: 10820547. [PubMed]
19. Singh J, Singh JV, Srivastava AK, Suryakant. Health status of the adolescent girls in the slums of Lucknow. Indian J Community Med 2006;31(2):102-03.
20. Verma R, Govila V.K, Kuldeep, Kharb M. Prevalence of anemia in college going youths in rural blocks of a dist. of northern India. EXCEL International Journal of Multidisciplinary Management Studies.2013;3(2):15-22.
21. Verma A, Rawal VS, Kedia G, Kumar D, Chauhan J. Factors which influenced anaemia among girls of the school going age (6-18 years) from the slum of Ahmedabad city. Indian J Community Med 2004; 29(1):25-26.
22. Gupta N, Kochar G. Pervasiveness of anaemia in adolescent girls of the lower socio-economic groups of the district of

Kurukshetra (Haryana). The Internet Journal of Nutrition and Wellness 2009[Serial online];[cited 2012Nov 30];7(1)

---------------------------x--------------------------

Tables

TABLE 1 DISTRIBUTION OF STUDY PARTICIPANTS IN RELATION TO ANEMIA

Anemia	Study participants	
	Number	Percentage
Anemic	114	60.96
Non-anemic	73	39.04
Total	187	100

TABLE 2 DISTRIBUTION OF STUDY PARTICIPANTS IN RELATION TO THE SEVERITY OF THE ANEMIA

Mild Anaemia	Moderate Anaemia	Severe Anaemia
44.38%	13.9%	2.67%

Figures

FIGURE 1 DISTRIBUTION OF STUDY PARTICIPANTS IN RELATION TO ANEMIA
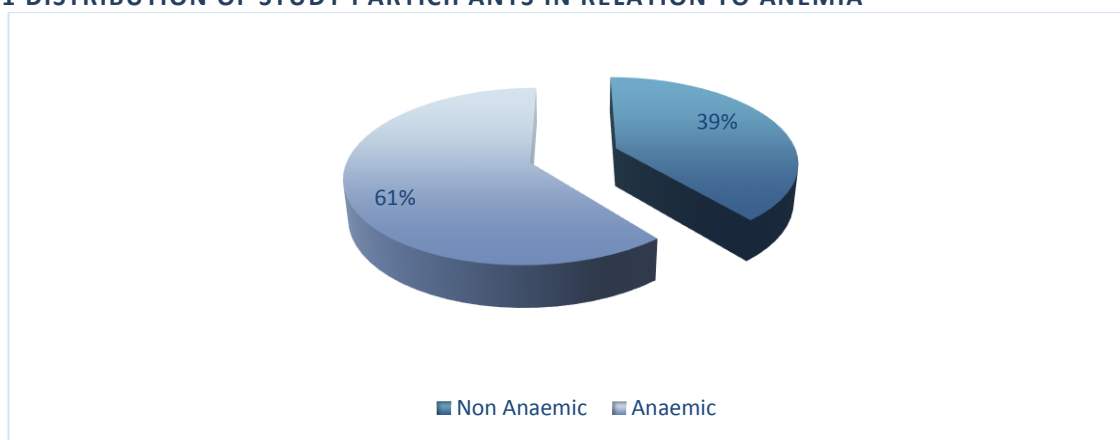

FIGURE 2 DISTRIBUTION OF STUDY PARTICIPANTS IN RELATION TO THE SEVERITY OF THE ANEMIA