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

Ramesh Verma, Shelja Deswal, Renu Kamboj, Varun Arora, Meenakshi Kharb

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

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, Lakhnamajra, 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 \( n = Z^2 \cdot \alpha \cdot P \cdot (1 - P) / d^2 \), 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 preschool 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 prevalence of severe anaemia was found to be 3.58%, that of moderate anaemia was 11.16% and that of mild anaemia 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%).

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**

My sincere thanks to Dist. health authority Rohtak specially, Dr. Vinay Govila, Dr Amarjeet Rathi, Dr Kuldeep Sir, Mr Parmod and the study participants for giving me the opportunity for being the part of this study.

**References**

22. Gupta N, Kochar G. Pervasiveness of anaemia in adolescent girls of the lower socio-economic groups of the district of...
Tables

<table>
<thead>
<tr>
<th>Anemia</th>
<th>Study participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>Anemic</td>
<td>114</td>
</tr>
<tr>
<td>Non-anemic</td>
<td>73</td>
</tr>
<tr>
<td>Total</td>
<td>187</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Mild Anaemia</th>
<th>Moderate Anaemia</th>
<th>Severe Anaemia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44.38%</td>
<td>13.9%</td>
<td>2.67%</td>
</tr>
</tbody>
</table>

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