



Prevalence Of Anaemia In Adolescent Girls Of Lower Socioeconomic Status

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Abstract

Anemia, one of the major public health problems worldwide is often ignored in both developed and developing countries. In developing countries, adolescent group remains largely neglected, difficult to measure and hard to reach population, among whom the needs of adolescent girls in particular are often ignored. A descriptive cross-sectional study was done to assess the prevalence and severity of anemia in adolescent girls of both rural and urban areas of Patiala, Punjab. Adolescent girls in age group (10-19years) were selected as samples for study with total sample size being 1000. Results showed 73.5% were anemic, with more prevalence in rural area. A statistically significant association of anemia was found with dietary habits, status of menarche and parent's educational status.

Keywords: NIL

Introduction

There are about 1.2 billion adolescents in the world, which is equal to 1/5th of the world's population and their numbers are increasing. Out of these, 5 million adolescents are living in developing countries. South Asia ranks among the regions, which have the highest prevalence of anaemia in the world.^[3] The estimated prevalence of anaemia in developing countries is 39% in children <5 years, 48% in children 5–14 years, 42% in women 15–59 years, 30% in men 15–59 years, and 45% in adults >60 years.⁵ In India, according to NFHS-4, the prevalence of anaemia is 58% in children <5 years, 53% in women 15–49 years, 23% in men 15-49 years. [4,5].

Anemia is defined as a condition of low hemoglobin concentration in circulation with 2 standard deviations below median of health population of same age, sex. [1]. It's a worldwide major public health problem, with its prevalence being disproportionately high in developing countries due to poverty, inadequate diet, worm infestations, early

pregnancy and poor access to health services.[2] Anaemia, which is manifested as frequent episodes of fatigue and decrease in working efficiency of an individual, is the most widely prevalent form of malnutrition among adolescents. Adolescent girls are more likely to be a victim, due to various reasons. In a family with limited resources, the girl child in a family is more likely to be neglected. The male child is looked upon as potential breadwinner and provider for the parents in their old age. The girl child, in this situation of weird priorities, is deprived of good food and education and is utilized as an extra working hand, under the guise that when she gets married, she will be required to carry out all the household chores; let her get used to them. Of course, the added burden of menstrual blood loss, normal or abnormal, precipitates the crisis too often.^[6]

Inadequate nutrition during adolescence can have serious consequences throughout the reproductive years of life and beyond. Very often, in India, girls get married and pregnant even before the growth period is over, thus doubling the risk for anaemia.

Thus, enumerating the reasons for the high incidence of anaemia among the adolescent girls

1. Increase iron requirements because of growth
2. Menstrual loss
3. Discrepancy between the high iron need for haemoglobin formation and low intake of iron containing foods
4. Erratic eating habits, dislike for foods which are rich in iron, like green leafy vegetables
5. Iron absorption inhibitors in food: phytates/tannins^[7]
6. Biases against females, especially in families with financial constraints, the female child is more likely to be neglected.
7. Infections like malaria and hookworm infestation.^[8]

Nutritional anemia attributes to irregular periods, miscarriage, high incidence of low-birth-weight babies, still births and high maternal mortality rate. This phase of life is important due to evidence that control of anemia in pregnancy can be more easily achieved if a satisfactory iron status be ensured during adolescence.

This study was designed with the objective to identify the prevalence of anemia among the adolescent population. This study was conducted in adolescent school going girls of government schools of both rural and urban areas of Patiala. In present study haemoglobin was estimated via automated haemoglobinometer and various risk factors were also assessed. As compared to the vast amount of work which has been done in pregnant mothers and young children early detection of anaemia in adolescent girls, and an accent on their proper nutrition is still a farfetched objective. However, with improvement in social factors and education, this goal will become easier.

Anaemia is one of the major indirect causes of maternal mortality. To have safe motherhood and decreased maternal mortality, it is better to catch them early in adolescence.

Aims And Objectives: To study the prevalence and severity of anemia in adolescent girls of both rural and urban areas of Patiala, Punjab.

Material And Methods: This descriptive cross-sectional study was conducted on 1000 adolescent

girls (10-19 years) attending selected Government Senior Secondary Schools of both rural and urban areas of Patiala District, Punjab.

Eligibility Criteria

All adolescent girls (10-19 years) of the government schools who were willing to take part in this study.

The study was approved by institutional ethics committee.

A total of 1000 adolescent girls were taken as study sample which comprised of 500 subjects from rural schools and 500 subjects from urban schools.

Method

A written permission from the principals of selected government senior secondary schools was taken. A detailed explanation about the study was given to the subjects and face to face interview was conducted with the participant by using a questionnaire designed for the purpose. A detailed history of symptoms like history of generalized weakness, fatiguability, dyspnoea, fever, cough with expectoration etc. was taken as per proforma. The haemoglobin level was estimated with the help of an automated haemoglobinometer and subjects with Hb<12gm% were included in the study. Subjects who had severe anaemia were advised further investigations and PBF was done to investigate the type of anaemia.

Results And Discussion: The study showed that out of 1000 adolescent girls, 73.5% were anemic while 26.5% were non anemic. The majority of cases were in age of 17years (n=213) followed by age of 16 years (n=185).

Out of the total anemic girls, 53.60% had mild anemia (hemoglobin 10-11.9), 44.62% had moderate anemia (hemoglobin 7-9.9) and 1.76% had severe anemia (hemoglobin less than 7). Out of severely anemic (total 13 girls in study) girls 12 had microcytic hypochromic anaemia and one had dimorphic anemia on peripheral blood film examination. It was also found that anemia was more in rural areas (38.90%) as compared to urban areas (34.60%). The following cutoff points which were suggested by the WHO were used to determine whether iron deficiency anaemia was a major problem among the general population:^[9]

Prevalence

Public Health Problem

<5%	Not a problem
5-14.9%	Low magnitude
15-33.9%	Moderate magnitude
40% and above	High magnitude

In the present study, it was found that out of 1000 adolescent girls, 735 (73.50%) were suffering from various degrees of anaemia and that 265 (26.50 %) were non-anemic. This indicated that it was a public health problem of high magnitude as per the WHO guidelines.

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%.^[10]

This study depicted significant association between status of menarche and anemia. 46.70% of anemic adolescent girls had attained menarche and 26.80% had not yet attained menarche.

A statistically highly significant association of anemia was found with the parent’s educational status (p=0.001). In present Study majority of anemic cases had mothers (36.90%) and fathers (37.60%) who were illiterate and as educational status of parent’s progressed, prevalence of anaemic cases decreased. Financial constraints were a reason for anemia as majority of fathers occupation was laborer. In a study conducted by Upadhye et al^[11] (2017) 56.67% mothers had primary education where anemia was seen in 95.88% girls. 26.67% mothers had education till middle school where anemia was seen in 91.25% girls. 10% mothers had education till 10th standard or more where anemia was seen in 53.33% girls. 6.67% mothers were illiterate where anemia was seen in 90% girls. 46.67% fathers had

education till middle school where 98.57% girls were anaemic, 33.3% fathers had education till 10th standard or more where 75% girls were anaemic, 16.67% fathers had education till primary school where 96% girls were anaemic, 3.33% fathers were illiterate where 90% girls were anaemic. This reflected better awareness among literate mothers as well as better socioeconomic conditions.

In a study conducted by Sekhar et al^[12] (2011), high prevalence of anaemia was observed in parents of labourer and driver families and which was significant (p<0.001). Father occupation was significantly associated with anaemic condition. Similar results were found in present study – 35.80% anaemic cases had father’s occupation as labourer followed by 17.80% as driver and statistically highly significant association was observed between father’s occupation and status of anaemia among cases (p=0.001). Study conducted by Bulliyy et al^[13] (2007) and Chaudhary et al^[14] (2008) also found significant association between anaemia and parents’ literacy & occupation. This suggests a need to develop strategies for intensive adult education and to improve socioeconomic status of the population.

Various signs and symptoms of anaemia include pallor, oedema, generalized weakness, difficulty in doing daily tasks a/w easy fatiguability, dyspnea, decreased appetite, decreased concentration, PICA etc. In present study majority of these symptoms were found in adolescent girls. 34.30% cases had pallor, 26.20% cases experienced generalized weakness, 46.40% cases felt fatigue early during routine work, 37.90% cases had PICA. On chi square test statistically highly, significant difference was observed among anaemic and non anaemic cases for symptoms of anemia. Similar results were found in study conducted by Sharma et al^[15] (2017) in urban area of Patiala.

Table 1. Distribution And Association Of Symptoms In Adolescent Girls

Symptoms of Anaemia	Anaemic (n=735)		Non-Anaemic (n=265)		Total (n=1000)	
	Cases	%Age	Cases	%Age	Cases	%Age
Pallor	343	46.60%	0	0.00%	343	34.30%

Pedal Oedema	7	0.95%	0	0.00%	7	0.70%
Generalized Weakness	262	35.64%	0	0.00%	262	26.20%
Easy Fatiguability	464	63.10%	0	0.00%	464	46.40%
Pica	379	51.56%	4	1.51%	383	38.30%
χ^2	42.067					
p value	0.001					

In our study majority of girls were vegetarian and almost all anaemic girls had predisposition for junk food. Relationship of anaemia with diet has been proven by various studies which delineated the preponderance of anaemia on vegetarians. Present study infers similar results i.e., chances of vegetarians being more anaemic because bioavailability of iron from cereals and vegetables is low because of presence of phytates, oxalates and tannates that react with iron to form insoluble compounds as compared to non-vegetarian diet associated with more nutrient absorption. Thus, study suggests that anaemia can also be a manifestation of overall dietary inadequacy and consequent under nutrition and thus dietary supplementation and proper dietary education to both girls and family can be helpful to improve the girls Hb level.

Female students who participated in the study were asked to describe a person with anaemia. Very few were aware of anaemia and what haemoglobin levels. In our study, 82.44% of cases were unaware of anaemia and only 17.55% were aware of what anaemia was. It was seen that girls of urban schools were more aware as compared to rural schools which may be a factor for less prevalence of anaemia in schools of urban area. Similar results were found in study conducted by Premalatha et al [16]. Since, majority of adolescent girls were unaware of causes

and symptoms of anaemia, this emphasized the need to focus on awareness programs before implementing any interventions.

Also, during the present study, it was found that the national programme which included WIFS, was implemented more meticulously in schools of rural areas of Patiala district. Total of 49.20% (rural and urban) received WIFS which suggests almost half of the cases were receiving WIFS. Although 30.7% cases were anaemic and 18.50% cases were non anaemic who were taking WIFS. This depicts there should be proper and regular counseling of adolescents on anaemia along with strict implementation of national programs. Regular supply of IFA tablets under WIFS program to all the adolescent girls especially those who have attained menarche should be provided. Deworming of the adolescent girls at regular intervals should be ensured.

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

Multivariate Logistic Regression Analysis Showing Odd's Ratio And Association Of Various Socio-Demographic Variables And Dietary Habits In Anaemic Adolescent Girls

	Odd's Ratio	95% Confidence Interval	p value	Sign.
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		Lower	Upper		
Mother's Edu	0.081	0.050	0.131	0.023	S
Father's Edu	0.049	0.028	0.088	0.021	S
Parent's Occupation	0.067	0.034	0.131	0.015	S
BMI	0.00	0.000	0.000	1.000	NS
Preference For Junk Food	8.485	5.877	12.252	0.026	S
Veg (1)/ non-Veg (2)	0.079	0.056	0.110	0.012	S
Fruits	0.034	0.023	0.050	0.029	S
Green Leafy Vegetables	0.037	0.025	0.054	0.029	S

Table 2. shows that after applying multivariate logistic regression all the variables had significant association with anaemia in adolescent girls except BMI.

Limitations Of This Study

1. The sample size in the present study is not representative of the whole population and the generalizability of the study findings is limited.
2. In our study only hemoglobin estimation was done whereas other haematological parameters could not be estimated due to economic constraints.
3. The study had cross-sectional research design and lacks follow-up analysis of the patients.
4. Anaemic status of adolescent girls could not be related to socioeconomic status of families as girls were not aware of exact income of their family.
5. The details regarding open defecation could not be extracted due to reponse bias among adolescent girls.

Recommendations

1. Periodic surveys should be done in schools for updating prevalence of anaemia, preferably in Co-education schools so that comparison of anaemic status can be done between girls and boys.

2. The order of birth of adolescents should also be enquired to find out existence of any relation with incidence of anaemia.
3. Since, our study showed lower prevalence of anaemia in participants whose mothers had higher level of literacy. Promoting awareness among homemakers will be helpful in overcoming this hurdle. Health programs should also focus on educating homemakers about utilization of easily available and affordable iron rich diet and forming kitchen garden etc.
4. In depth studies can be done on evaluation of causes and types of anaemia (on PBF), iron indicators and stool examination with large sample size. It should also include screening for thalassemia cases.
5. Counselling of adolescent girls for steps for prevention of anaemia during adolescence and menstrual hygiene should be done regularly in schools and detailed chapter on nutrition shall be added in the curriculum.
6. Regular supply of IFA and albendazole tablets under WIFS program to all adolescent girls should be continued by government and

compliance should be ensured by school authorities.

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