PREVALENCE OF ANAEMIA AMONG ADOLESCENT GIRLS OF HILLY AREAS

*Bandana & **Shama Lohumi

***Lecturer, Sister Nivedita Government Nursing College, IGMC- Shimla, Himachal Pradesh, India.**

****Principal, Shivalik College of Nursing, Shimla, Himachal Pradesh, India.**

ABSTRACT

Adolescence is known as the period of life spanning the ages between 10 and 19 years. Because of the rapid growth; adolescents are especially vulnerable to anaemia. Proper nutrition, including adequate iron intake, plays an important part in a teenager's growth and development. Iron deficiency and anaemia are associated with impaired cognitive functioning, lower school achievement and, most likely, lower physical work capacity. Girls' iron requirements increase dramatically during adolescence as a result of the expansion of the lean body mass, total blood volume and the onset of menstruation; these changes make adolescent girls more susceptible to anaemia, which has lasting negative consequences for them and for the survival, growth, development of their children, later in life. The study was carried out in Government Schools of Rural and Urban areas of District Shimla, Himachal Pradesh to find out the prevalence of anaemia using Sahli's apparatus. Total 200 adolescent girls (13-18 years) of which 100 were from the schools in rural and 100 from the schools in urban areas, were selected by random sampling technique. These girls were assessed for anaemia clinically with the help of observation-check-list and physical examination. Out of 200 study subjects 120 were found clinically anaemic. These 120 i.e. 60 from schools of rural area and 60 from schools of urban area were assessed with laboratory method (**Sahli's Method of Haemoglobin test**). The data was analysed using descriptive and inferential statistics.

Key Words: Adolescent girls, Anaemia, Prevalence.

About the Authors

The author Ms Bandana is Lecturer at Sister Nivedita Government Nursing College, IGMC- Shimla, Himachal Pradesh, India. She has 21 years teaching experience in health and family welfare department of Himachal Pradesh.

The author Dr Shama Lohumi is Principal at Shivalik College of Nursing, Shimla, Himachal Pradesh, India.

INTRODUCTION

Adolescence has been defined by the WHO as the period of life spanning the ages between 10 and 19 years. [1] This is the formative period of life when the maximum amount of physical, psychological, and behavioural changes take place. During this time, 20% of final adult height and 50% of adult weight are attained[2]. Because of this rapid growth, adolescents are especially vulnerable to anaemia. Proper nutrition, including adequate iron intake, plays an important part in a teenager's growth and development. Iron deficiency and anaemia are associated with impaired cognitive functioning, lower school achievements and, most likely, lower physical work capacity.[3] Girls' iron requirements increase dramatically during adolescence as a result of the expansion of the lean body mass, total blood volume and the onset of menstruation; these changes make adolescent girls more susceptible to anaemia, which has lasting negative consequences for them and for the survival, growth and development of their children later in life[4]. India is home to nearly 113 million adolescent girls and has the world's highest prevalence of iron deficiency anaemia among women, with 60 to 70 percent of the adolescent girls being anemic.[5] Prevention of anaemia is effective when the strategy is focussed right from adolescence for their future reproductive life and this will contribute to achieve Millennium Development Goals (MDG). Anaemia is an indicator of both poor health and poor nutrition[6]. Interventions for anaemic adolescent girls should raise their iron stores and sustain their Haemoglobin at normal levels. This will not only improve their physical and mental capacity, but also subsequently help in reducing the incidence of low birth weight of infants and maternal mortality rates. Anaemia is a global public health problem. This study is planned to highlight the problem of anaemia in adolescent females.

RESEARCH OBJECTIVES

1. To assess the prevalence and the severity of anaemia among adolescent girls in schools of rural and urban areas.
2. To study the association of anaemia with respect to the age of the participants.

MATERIALS AND METHODS

The study was carried out in government schools of rural and urban areas of the district of Shimla, Himachal Pradesh in two phases during the month of February 2014. The students of these schools belonged to rich, upper-middle class, lower middle class and low economic backgrounds. There were around 40-60 students from every class and section from different schools. Stratified random sampling was used to select the schools and adolescent girls. 200 subjects in total were screened clinically for anaemia. Out of 200 subjects, 120 students were found clinically anaemic and of these 120 subjects screened with laboratory method (Sahli's apparatus), 60 subjects were from schools of urban areas and 60 were from schools of rural areas. The Inclusion Criteria for Sampling was all those Girls attending the high schools of District Shimla, between the age group of 13-18 years, co-operative and willing to participate in the studies. The exclusion Criteria for Sampling was the adolescent girls with history of any other illness (e.g. Blood, renal or bone disorders etc). In first phase all the adolescent girls between 13-18 years from different classes were briefed in detail about the nature of the study and consents of the school authorities, parents and students were taken. The detailed socio-demographic data of all these girls was assessed. Then their total physical examination was done .These girls were screened for anaemia clinically with the help of the clinical examination and observation check list. Those girls who were found anaemic clinically were screened for Hb estimation with **Sahli's Method of Haemoglobin test** in the second phase. The haemoglobin level was assessed by Sahli's method by taking a drop of blood, pricked through a sterile stillet/ needle/ blade after cleaning the tip of the left hand's ring finger with spirit swabs. It was compared with the colour of the kit and haemoglobin was assessed and categorised. Data analysis was done with the help of descriptive and inferential statistics.

RESULTS

In the present study total 120 subjects were assessed. Table - 1 depicts the age variations of the subjects. The study revealed that Maximum 90 (75.83%) adolescent girls were in age group 15-16 years, 28 (23.33%) adolescent girls were in the age group of 13-14 years and only 2 (1.66%) girls were in the age group of 17-18 years.

Table 1: Distribution of subjects according to age variation

Age group	Frequency (%)
13-14 years	28(23.33%)
15-16 years	90(75.83%)
17-18 years	2(1.66%)

Table - 2 depicts the distribution of dietary habits of adolescent girls. Maximum 108 (90%) adolescent girls were vegetarian and only 12 (10 %) adolescent girls were non vegetarians.

Table 2: Distribution of dietary habits of adolescent girls

Dietary habits	Frequency (%)
Vegetarian	108(90%)
Non vegetarian	12(10%)

Figure 1 depicts the distribution of subjects in various categories of Anaemia. Majority 95 (79.15%) adolescent girls were suffering from moderate anaemia, 20 (16.66%) adolescent girls were suffering from mild anaemia and 3 (2.50%) adolescent girls were suffering from severe anaemia. Only 2 (1.66 %) girls were having normal Haemoglobin and hence had no anaemia.

Figure -1 Distribution of subjects in various categories of Anaemia

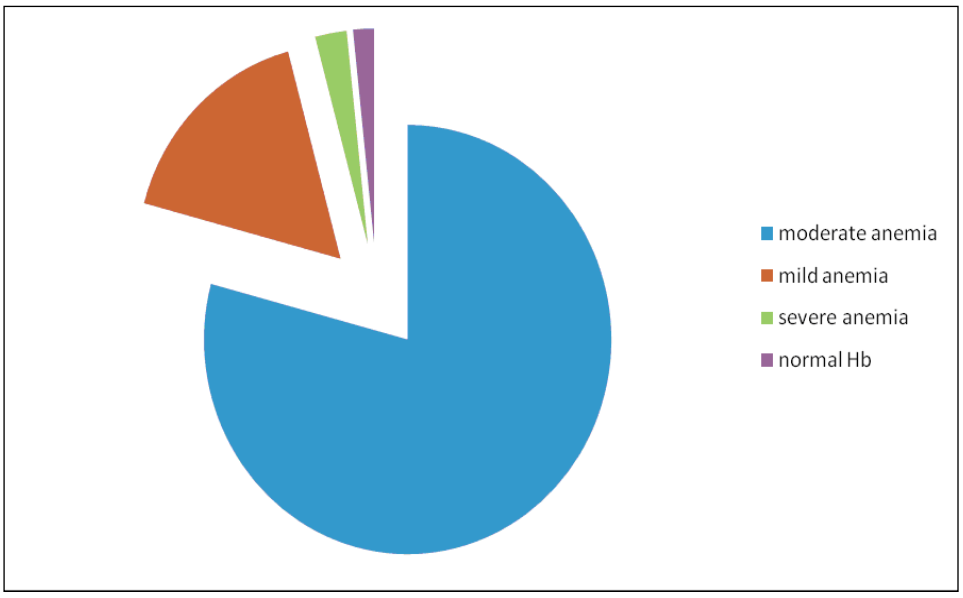
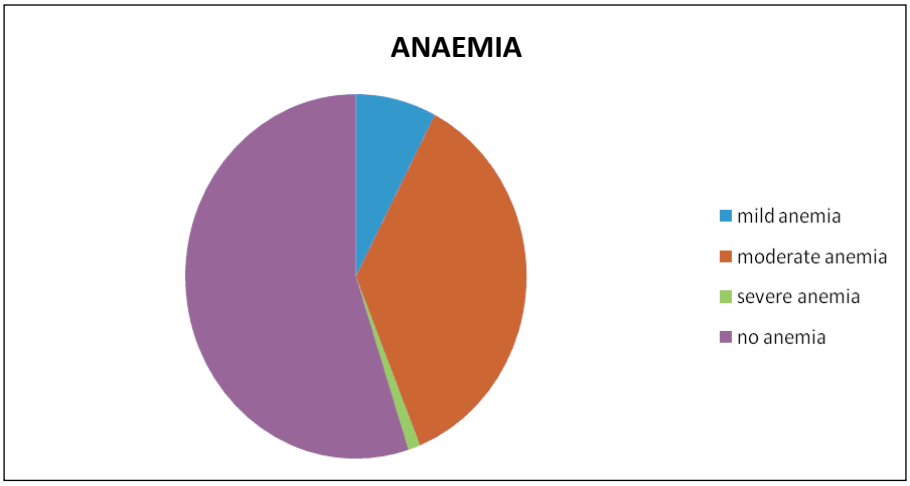


Figure 2: Distributions of subjects in various categories of Anaemia



DISCUSSION

The overall prevalence of anaemia was found to be 60 % clinically. It was confirmed with laboratory method that 59 % of all subjects were anaemic. The co-relation of anaemia was assessed with age group, rural Vs urban (residential area of the student) and dietary habits of the subjects. Maximum 90 (75.83%) girls were in age group 15-16 years. Maximum of 110 (91.66 %) girls were residing in rural areas. Maximum of 108 (90%) girls were vegetarian. Maximum of 95 (79.15%) adolescent girls were suffering from moderate anaemia, 20 (16.66%) adolescent girls were suffering from mild anaemia and 3 (2.50%) adolescent girls were suffering from severe anaemia. Only 2 (1.66 %) adolescent girls were having normal Haemoglobin and hence had no anaemia. Similar prevalence is reported by CMS Rawat *et al.*[6] at Meerut. A higher prevalence was noted by J.Rajaratnam *et al.*[7] in Tamil Nadu. Toteja G.S. *et al.*[8] found 90.1% prevalence of anaemia among adolescent girls from 16 districts of India, with 7.1% having severe anaemia. A significant association of the prevalence of anaemia with educational status of parents reflects better awareness among literate mothers, as well as better socio-economic conditions. Bulliyy *et al.* [9] found 96.5% prevalence among non school going adolescent girls in three districts of Odisha, of which, 45.2%, 46.9%, and 4.4% had mild, moderate, and severe anaemia respectively. They found significant association between haemoglobin concentration and the educational level of girls, their parents' family income, and body mass index. In the present study, mean height and mean weight of subjects with anaemia was significantly less than subjects without anaemia. This suggests that anaemia affects the overall growth of adolescents.[10] A cross sectional community based study was conducted on prevalence of anaemia amongst adolescents in Nepal.[11] The study concluded that the overall prevalence of iron deficiency anaemia among adolescent population was 65.6% with the distribution of rural 62.4%, urban 70.0%, male 52.3% and female 78.3%. Sufficiency or deficiency of iron makes the living of adolescents different as it affects their growth requirement and cognitive performance.

CONCLUSION AND RECOMMENDATIONS

The overall prevalence of anaemia among adolescent females was found to be 59%. It is seen that anaemia affects the overall nutritional status of adolescent females. A significant association of anaemia with socio-economic status suggests a need to develop strategies for intensive adult education in rural areas to improve the dietary habits of rural community. This should be supported by programmes for the prevention of anaemia among adolescent girls through nutrition education and anaemia prophylaxis. We recommend that adolescents be screened periodically for anaemia and multi-sectoral, community-based approach be adopted to combat this serious public health issue.

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