



A Study of Prevalence of Anemia in the School Going Girls of Rural Nayagarh District of Odisha

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Abstract

Introduction: India's population has reached the 1 billion mark, out of which 21% are adolescents⁽¹⁾. India has the largest population of adolescents (243 million)⁽²⁾The nutritional and the health needs of the adolescents are also more because of the growth spurt and the increase in physical activity in them.⁽³⁾ In a family with limited resource the female child is more likely to be neglected. She is deprived of good food and education and is utilized as an extra working hand to carry out the household works. The added burden of menstrual blood loss, normal or abnormal precipitates the anaemia too often.

Methods: This was a community-based Cross-Sectional descriptive Study conducted in the schools of rural area surrounding Bhubaneswar, Odisha between from November 2016 to October 2018 over a period of two years.

Results: The prevalence of anemia was found to be a whopping 61.6% most profound (71.4% of the girls) in the age group of 13-16yrs. Age was significantly associated with anaemia. Occupation, religion, marital status, diet pattern and BMI did not show any significance with anaemia. Father's education, occupation, mother's occupation, type of family and birth order revealed no significance with anaemia.

Conclusion: Burden of anemia continues to be a problem in the school going population of girls despite the various prophylactic programmes being conducted.

Keywords: Anemia, Prevalence, Burden, Awareness, Education.

Introduction

The word adolescence is derived from the Latin word, 'adolescere'; meaning "to grow, to mature"⁽⁴⁾. Adolescent has been defined by WHO as the period of life spanning the ages between 10-19. It is the formative period of life where maximum amount of physical, psychological and behavioral changes takes place.⁽⁵⁾ There are about 1.2 billion adolescents in the world, which is equal

to 1/5th of the world population and their numbers are increasing out of these 5 million adolescents are living in developing countries. Particularly in developing countries, among adolescents, girls constitute a vulnerable for anemia. Adolescents (10-19 years) in Odisha constitute 22% of population. As per Census 2011, there are estimated 37, 75, 262 adolescent girls in the State.

The prevalence of anemia among adolescent is 27% in developing country and 6% in developed countries. Anemia is one of the most common hematological abnormalities found in children. It can be defined as the reduction in oxygen-carrying capacity or as a reduction in the red cell mass of the body.

Anemia is classified into three degree according to WHO: mild, moderate and severe. Hb cut-off values of anemia were 10.0-11.9 g/dl (mild), 7.0-9.9 g/dl (moderate) and <7.0g/dl (severe).

Adolescent iron requirements are even higher in developing countries because of infectious diseases and parasitic infections cause iron loss.⁽⁶⁾

The main causes are family with limited recourses; the female child is more likely to be neglected and the added burden is menstrual blood loss [normal/abnormal] precipitates the crises too. Other associated risk factors for anemia are low intake of meat [fortified food with iron], frequent dieting, vegetarian eating styles, meals skipping, significant weight loss, heavy menstrual period, rapid growth, participation in endurance sports and intensive physical training. There are various reasons for the high incidence of anemia particularly in the adolescent girls such as increased iron requirements because of growth, Menstrual blood loss, Discrepancy between the 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).⁽⁷⁾

Anemic children are at risk of compromised physical and mental functions.

In Odisha, the data were limited. So this present study was carried out to assess the magnitude of problem of anaemia in school going children and its association with other socio demographic factors in a rural area of Nayagarh district of Odisha. As there are not many types of study which take school going children into account for the prevalence of anemia this study was planned to to detect the prevalence of anemia amongst the

school going children in rural nayagarh district of Odisha.

Materials and Methods

This was a community-based Cross-Sectional descriptive Study conducted in the schools of rural area surrounding Bhubaneswar, Odisha between from November 2016 to October 2018

The cases of adolescent population of age group between ten to sixteen years, in a high school situated in the Nayagarh rural area surrounding Bhubaneswar, Odisha were taken as the study population.

A pretested interview schedule according to socio demographic profile was prepared. At the start of interview, Pre explained informed written consent was obtained from all participants of the study in their local language and the information obtained is kept confidential. Few students as per their request, were interviewed at their houses. Clinical examination was done initially to rule out cardiac problems, history of bleeding tendencies and any other associated illness. The students were informed of the checkups and were provided with the curative services if needed. Height and weight measurements were included. After written consent, with the help of sterile needle finger prick was made. Hb estimation was done at the Hospital laboratory with the help of lab technician.

Exclusion Criteria

- Students having any major physical illness will be excluded from study.
- Students having any diagnosed psychiatric illness will be excluded from the study (Information obtained from teachers and the students)
- Absentees on the date of study

Data entry was made in the excel software in codes and Analysis was done with SPSS-10 computer package. Prevalence was expressed in percentage and associations with the factors were tested for significance using chi square test and odds ratio.

Results and Discussion

The number of girls of the study population were more in the late adolescent category. 55% of the girls were in the age group 13-16 yrs and 166 girls were in the age group between 10-12 years. 21 (5.6%) of them. The mean age of the study population was 13 (\pm) 1.665. Majority of the girls were Hindus 320 (86.6%). Others were Christians 49 (13.4%). 153 girls were of birth order one and 151 were of two. Birth order of more than 3 still prevails. Highest was 6 and was seen among 4 girls.

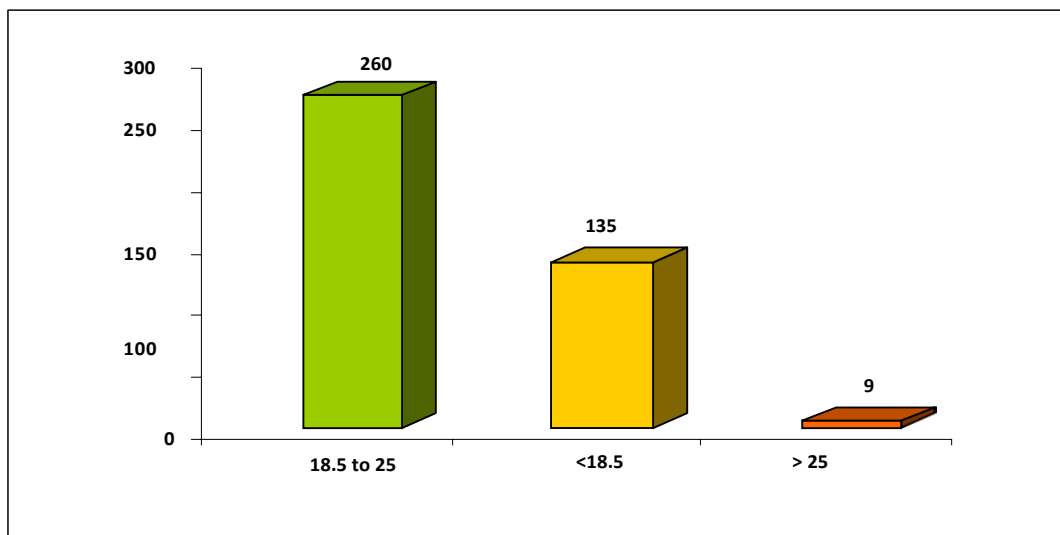
88 of the girls had not attained menarche and 281 had attained menarche (76%). Mean age of attaining menarche was 13.49yrs (standard deviation-1.36). 64 of the girls (17.3%) had Menstrual problems. 9 of them had dysmenorrhoea, 24 of them had menorrhagia and 31 of them had irregular bleeding cycles.

152 of the girls' fathers were illiterate. 86 of them had only completed their primary education. 105 fathers had studied middle school. 22 of them had studied till high school. Only 4 of them had gone

for higher education. 345 (93.5%) of the girls fathers were engaged in agriculture as labourers. 24 (6.5%) were employed in other settings. 249 (67.5%) of mothers were illiterate. 79,34 mothers have stopped education after primary and middle school respectively. No mothers had studied beyond high school. 265 mothers (71.8%) of were agricultural laborers. 104 (28.2%) of them were stay at home mothers.

145 girls of the study had a family percapita income between 36000-70000. Majority 203 of them were between 21,000-35,000 incomes. Most of them belonged to social class 2 and 3. 217 (58.8%) girls lived in nuclear family and Others 152 (41.2 %) were in the joint family. 118 (32%) of them lived in kutcha houses and 251 (68%) lived in pucca houses. 361 (98%) of the girls were using constructed latrines. Only 7 (2%) were practicing open air defecation. Solid wastes were disposed in the open space. There was no organized method of disposal of wastes and girls expressed no particular importance for proper disposal.

Chart: BMI distribution of study population



260 girls were under nourished and nine were overweight.

358 (97%) consumed mixed diet. Most of them consumed whatever was available in the house. No nutritional supplementaries were provided for

them. Drinking water supply was through the public taps. Storage of water at home was mostly in mud or plastic pots. Custom of boiling drinking water was absent except in very few houses.

Table: Other Clinical examination Findings

FINDINGS	NUMBER
Upper respiratory infection	22
Impetigo	13
Angular stomatitis	15
Ear discharge	4
Dental caries	16
Bitot's spots	2
Phrenoderma	11
Fungal infection	10
Total	93

The prevalence of anaemia in this study was 61.6%. Confidence interval (56.91-66.29) Prevalence of severe anaemia was 15.3 %. NFHS

III (2005-2006) showed a prevalence of 56% of anaemia.

Table: Distribution of level of anaemia by age

Age	Normal No/(%)	Mild anaemia No/(%)	Moderate anaemia No/(%)	Severe anaemia No/(%)	Total No/(%)
10-12 yrs	89 (53.6%)	20 (12.5%)	39(23.5%)	18 (10.4%)	166 (100%)
13-16 yrs	63 (31.1%)	24 (11.9%)	80 (39.4%)	36 (17.6%)	203 (100%)
Total	152 (41.2%)	44 (12%)	119 (32.2%)	54 (14.6%)	369 (100%)

Chi-square value= 28.491
P= 0.006

53.6% of the girls of the age group 10-12 yrs were not anemic. Age had significant association with the level of anemia. The level of anemia increased with age. Chances of having anaemia is 2.6 times higher for the girls in the age group of 13-16 years, compared to girls of age group 10-12 years. 71.4% of girls who had completed primary school were anaemic. 58.3% from the middle school were anaemic. Education had a significant association with the prevalence of anaemia. Study showed no significant difference between anaemia and religion. Girls belonging to both religions had a prevalence of around 60%. P value = 0.925.

This study showed a significant association between anaemia and menstrual status. (P = 0.002). 68.7% of the girls who had attained menarche were anaemic. 87.5% of the girls who had menstrual problems were anaemic. Girls who had menstrual problems had moderate (51.6%) and severe (28.7%) anaemia. Chances of having anaemia is 1.5 times higher for the girls who had attained menarche compared to girls who had not attained [OR1.49]. 46% of the girls who had

menorrhagia were severely anaemic. 90% of the girls with irregular cycles were anaemic. Girls with menorrhagia had 18.4 times higher risk of developing anaemia compared to girls who had dysmenorrhoea [OR 18.4]. Girls with irregular cycles had 7.5 times higher risk of developing anaemia [OR 7.47].

There was no association between father's education (P value = 0.663), occupation (P value =0.667) and anaemia.

345 of them were engaged in agriculture and 177 were illiterate. 65% of the girls were anaemic among girls who had illiterate fathers. 30.4% of the girls had moderate anaemia and 16% of the girls had severe anaemia whose fathers were engaged in agriculture.

63 % of the girls were anaemic had illiterate mothers. Mothers education had been significantly associated with prevalence and severity of anaemia. (P value = 0.036) 16.4% of severe and 30.5% of moderately anaemic girls had illiterate mothers. No mothers had gone beyond high school.

The type of family had no significant finding.

Anaemia was significantly associated with per capita income of the family. Girls of social class 4 were 3 times more prone for anaemia compared to girls belonging to social class 2 [OR3.12]. Girls of social class 3 were 2 times more prone for anaemia compared to girls of social class 2 [OR 2.68].

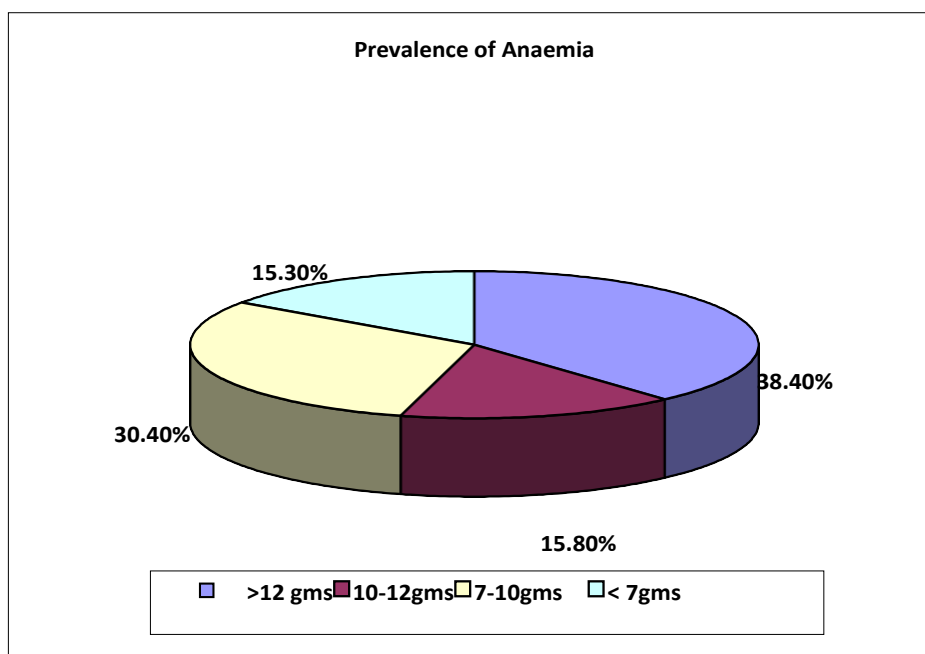
Among the girls who lived in the kutcha houses, 72% of the girls were anaemic. They had 2.2 times more risk of developing anemia than girls who lived in pucca houses. Girls who practiced open air defaecation had 2 times higher risk of developing anaemia [OR2.06].

BMI did not show any significant association with anaemia.

Table: Distribution of Anemia According to Variables in Study

VARIABLES	NO OF GIRLS		CHI SQUARE	P-VALUE	ODDS RATIO (95% C.I)
	ANAEMIC	NORMAL			
Type of house			11.3	<0.001	2.2(1.3-3.05)
Kutcha	126	52			
pucca	127	106			
Per capita income	38	14	23.8	<0.001	3.12(1.57-6.23)
a. 150-299					
b. 300-499	142	61			
c. 500-999	72	83			
BMI			0.114	0.945	0.95 (0.685-1.604)
a. <18.5	165	105			
b. Normal	84	51			
c. >25	4	2			

Chart: Prevalence of Anaemia in the study population



Conclusion

Despite the availability and implementation of various programmes for prophylaxis of anaemia, the prevalence of 61.6% of anaemia is quiet high which indicates the need for effective implementation for prevention of anaemia at

adolescence. More awareness should be spread regarding the respective factors resulting in anemic conditions in this age group and socioeconomic and sanitary conditions should be promoted.

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