International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Impact Factor (2012): 3.358

Prevalence of Anemia among Adolescent Girls Studying in Selected Schools

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Abstract: ***As per recent report from UNICEF more than half [59%] of adolescent girls in India are anemic as par with Congo and Guinea. Among adolescents, girls constitute vulnerable groups due to family with limited resources, female child is more likely to be neglected and another added burden is menstrual blood loss and also influences of traditional eating habits and fear of gaining wt etc. AIM; To find out the prevalence of anemia among adolescent girls. Methodology: In order to achieve the objectives of the study a descriptive exploratory research study was used. The data was collected and fallowed with hemoglobin test for assessing anemia among 300 adolescent girls of selected schools at Nidoni. Non probability Non probability in which convenient sampling was used for sample selection. Results: The result of the study reveals that the prevalence of anemia among adolescent girls was 80% , in that 48.75% were mild anemic,42.5% were moderate anemic and 8,75% had severe anemic. There was association between prevalence of anemia with selected demographic variable. i.e. among adolescents 14yr age girls had highest prevalence of anemia [42.5%]. 66.25% of prevalence of anemia was found in well nourished girls, 87.5% of prevalence was belongs to girls who had regular menstruation and 61.25% of prevalence was in adolescent girls who had bleeding for 5 days. Conclusion: Majority of the adolescents are having anemia. the result of the study reinforce that nutritional education should be given both parents and to children. Anemia should be treated before they enter into adolescent. Emphasizes are needed for corrective measures for anemia. It also needs proper monitoring for effective utilization of nutritional supplementation provided by GOVT by Anganawadi workers.***

Keywords: Prevalence, Anemia, Adolescent, Girls

1. Introduction

Anemia is a major public health problem worldwide and is often ignored in both developed and developing countries. Preschool children, pregnant women and adolescents constitute vulnerable group of anemia'

''The adolescent girl still remains young planet that neither gets light or water, she remains the flower that could have blossomed but did not''The word adolescent derived from the Latin word ''adolescere'' meaning 'to grow, to mature'[1]. 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[2]. There are about 1.2 billon 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[4].

India is the one of the fastest growing youth populations in the world with an estimate 190 millions adolescent in which 22% are girls. This is vulnerable period in the human life cycle for the development of nutritional anemia which affects both sexes and all age group[3]. Particularly in developing countries, among adolescents, girls constitute a vulnerable for anemia. The prevalence of anemia among adolescent is 27% in developing country and 6% in developed countries[1].

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. Which is one of the most wide spread public health problems, especially in developing countries like India and has important health and welfare and social and economic consequences, these includes repaired cognitive development, reduces physical work and in sever causes, increased risk of mortality particularly during the prenatal period. There is also evidence that anemia may result in reduced growth and increased morbidity[2].

As 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) [2].

The main causes are family with limited recourses; the female child is more likely to be neglected and the added burden is menstrual blood last [normal/abnormal] precipitates the crises too[3]. 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.

A recent report from UNICEF says more than half of adolescent girls in India are anemic. Malnourishment among India's as adolescent population is found to be higher than even some of the least developed countries Sub-Saharan Africa.

Karin Hulshof of United India said'' this is of concern as anemic girls being undernourished are the first to drop out of school and married of early''.

A study which was conducted in the rural areas of Tamilnadu revealed that the prevalence of anemia among the adolescent girls was 44.8% [11].

Another study which was conducted among the girls, who belonged to the low income families in Vadodara, revealed that 67% of the adolescent girls were anemic[12].

By looking at the magnitude of the problem, greater efforts are needed to develop and implement programs both to prevent and control anemia. Park [1998] suggested that iron deficiency anemia is a measure nutritional problem in India and in many other developing countries 22-40% of natural deaths are due to anemia during pregnancy.

This study was planned to assess the prevalence of anemia in adolescent's girls and its association with selected socio demographic factors.

1.1 Objectives of the Study

- To assess the Prevalence of Anemia among Adolescent girls.
- To find out association between prevalence of anemia with selected socio demographic variables

2. Methodology

Research methodology involves the systematic procedure by the researcher which starts from the initial identification of programme to its final conclusion [5].

2.1 Research approach

In a view of accomplishing the objectives, i.e. the prevalence of anemia among adolescent girls a descriptive exploratory approach was considered the best.

2.2 Research design

In this present study a descriptive research design is carried out to find out the prevalence of anemia among the adolescent girls by doing hemoglobin test. –

2.3 Research setting

It refers to the physical setting and conditions in which data collections takes place in study. The study is conducted in selected schools at Nidoni, Babaleshwar PHC Bijapur.

2.4 Population

Study consists of 300 adolescent girls of Nidoni

2.5 Sample and sampling technique

A sample consists of a subject of the units or subject that comprises the population. The sample selected for the study was 300 adolescent girls studying in the selected schools at Nidoni who met the inclusive criteria. Non probability sampling in which convenient sampling is used. In this sampling technique subject are selected because of this convenient accessibility and probability to the researcher. Subject is chosen because they are easy available to the researcher.

2.6 Sampling criteria

Samples were selected with the following predetermined set of criteria.

a) Inclusive criteria

- Adolescent girls at the age of 12-19
- Adolescent girls studying in 8^{th}, 9^{th} and 10^{th} STD
- Adolescent girls who were willing for their blood testing

b) **Exclusive criteria**

- Adolescent girls who were having menstrual flow at the time of blood testing
- Adolescent girls who were under treatment of anemia
- Adolescent girls who were terminally ill
- Adolescent girls who did not give consent to get their blood tested

2.7 Data collection instruments

Hemoglobin test is used to identify the levels of Hb% among adolescent girls studying in selected schools at Nidoni.

2.8 Description of tool

Tool had two parts

1) PART I
   It includes five items of demographic variables such as age, general appearance, diet, nature of bleeding, and duration of the bleeding.
2) PART II
   Result of the blood test [hemoglobin level]

2.9 Data collection process

A formal letter was sent to the headmasters of the school at Nidoni and a written permission was obtained to conduct the study. 300 samples were selected through non probability sampling. In order to obtain a correct result, the subjects were explained.

This study was planned to assume the prevalence of anemia among adolescent girls and its association with others socio-demographic features about the purpose and usefulness of the study and (for Hb estimation) capillary blood for over bleeding for hemoglobin estimation.

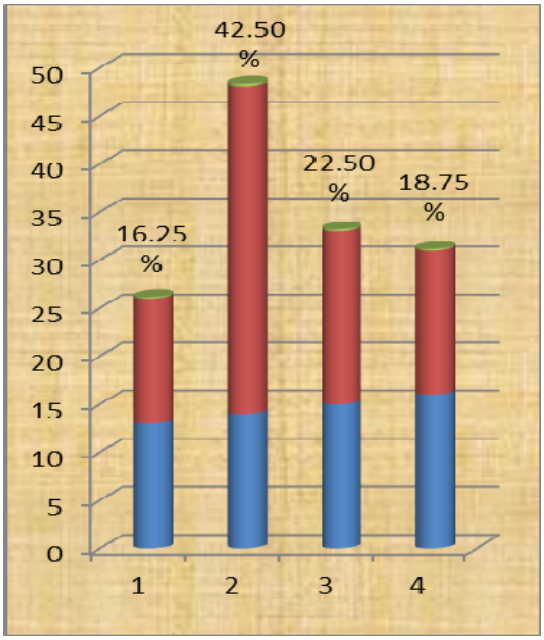
3. Results and Discussion

Table 1: Distribution of adolescent girls according to age

Age in years	*Frequency*	*Percentage*
13	39	16.25%
14	102	42.5%
15	54	22.5%
16	45	18.75%
Total	240	100

The above table reveals that out of 102[42.8%] of the adolescents girls were the age of 14 years,54[22.5%] were the age of 15 years,45[18.75%] were the age of 16 years and remaining39[16.25%] were the age of 13 years.

N=240



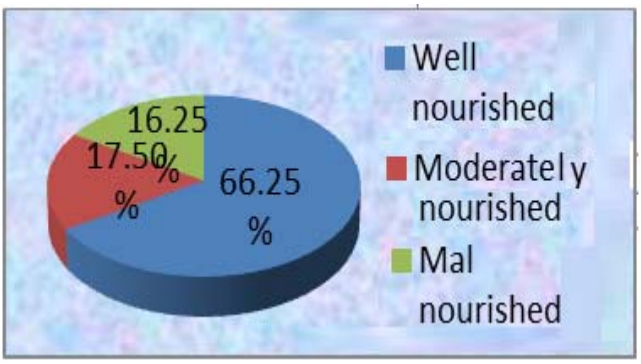
Graph 1: Distribution of adolescent girls according to age

Table 2: Distribution of adolescent girls according to general appearance

General appearance	Frequency	Percentage
Well nourished	159	66.25%
Moderately nourished	42	17.5%
Mal nourished	39	16.25%
Total	240	100

The above table reveals that out of 159[66.25%] of the adolescents girls were well nurshied, 42[17.5%] were moderately nourished and remaining 39 [16.25%] were malnourished.findigs were supported with study conducted by Bhudhagaonkar, J., & Shinde, M. (2014) [7].

N=80

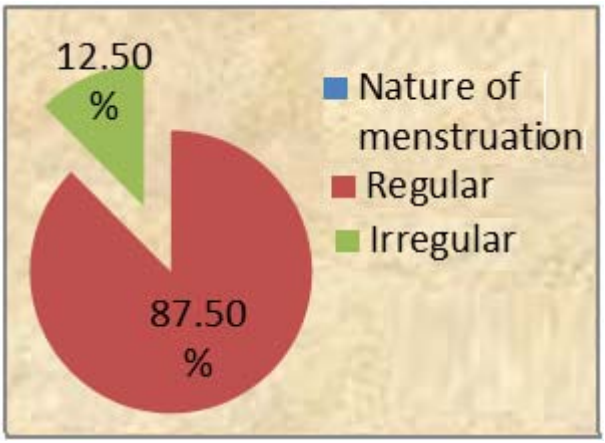


Graph 2: Distribution of adolescent girls according to the General appearance

Table 3: Distribution of adolescent girls according to nature of menstruation

Nature of menstruation	Frequency	Percentage
Regular	210	87.5%
Irregular	30	12.5%
Total	240	100

The above table reveals that out of 210[87.5%] of the adolescents girls had regular menstruation and remaining30 [12.5%] were had irregular menstruation.

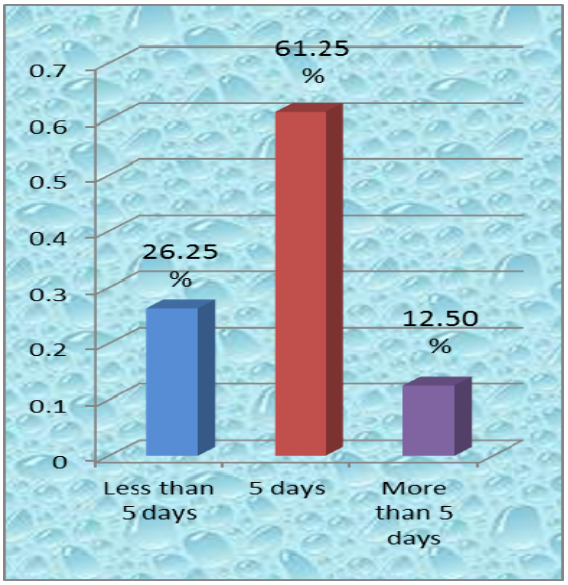


Graph 3: Distribution of adolescent girls according to Nature of menstruation

Table 4: Distribution of adolescent girls according to duration of bleeding

Duration of bleeding	Frequency	Percentage
Less than 5 days	63	26.25%
5 days	147	61.25%
More than 5 days	30	12.5%
Total	240	100

The above table reveals that out of 240,147[61.25%] of the adolescents girls had bleeding for 5 days, 63 [26.25%] had bleeding for less than 5 days and remaining30 [12.5%] girls had bleeding more than 5 days.

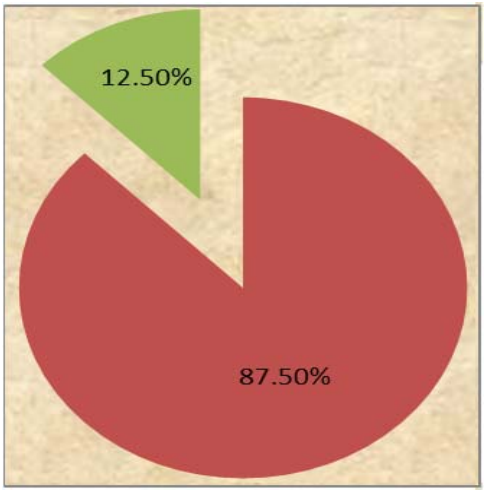


Graph 4: Distribution of adolescent girls according to the duration of the bleeding

Table 5: Distribution of adolescent girls according to type of diet

Type of diet	*Frequency*	*Percentage*
Vegetarian	210	87.5%
Non vegetarian	30	12.5%
Total	240	100

The above table reveals that out of 240,210[87.5%] of the adolescents girls belongs to vegetarian diet and remaining30 [12.5%] were belongs to non vegetarian diet.

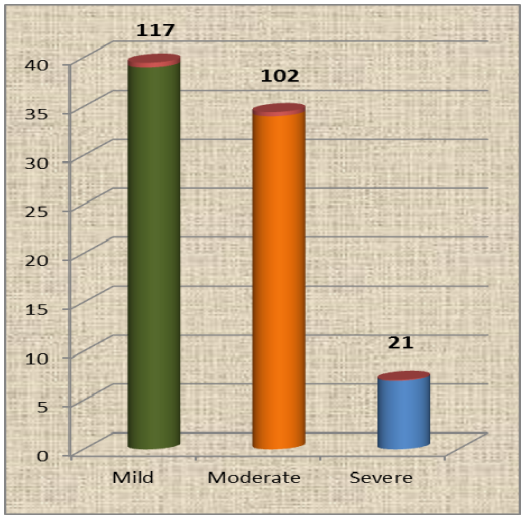


Graph 5: Distribution of adolescent girls according to Type of diet

Table 6: Prevalence of anemia among adolescent girls

Prevalence of Anaemia	*No. of Adolescent girls*	*Percentage*
Mild	117	48.75%
Moderate	102	42.5%
Severe	21	8.75%
Total	240	100

The above table reveals that out of 240,117[48.75%] of the adolescents girls were mild anaemic.102 [42.5%] were moderate anemic and remaining 21[8.75%] were sever anemic.



Graph 6: distribution of adolescent girls according to prevalence of anemia

The study by Kour et al on Epidemiological correlates of Nutritional Anemia in Adolescent girls of rural Wardha. the result was found that the prevalence of anemia was 59.8 %among adolescent girls[8]. The another study conducted by K.N Agrawal *et al* on Prevalence of anemia in pregnant and lactating women in India, the result shows that 84% pregnant and 92.2% lactating women were anemic with severe anemia is 9.2% and 7.3% respectively[9]

India has the world's highest prevalence of iron deficiency anemia among women, with 60 to 70 % of the adolescent girls being anemic.The study which was conducted on Prevalence of anemia among the adolescent girls of rural Tamil Nadu. The results highlighted that the prevalence of severe anemia was found to be 2%, that of moderate anemia was 6.3% and that of mild anemia was 36.5% [11].

Similar results were seen in a study which was conducted in three districts of Orissa to assess the hemoglobin status of non-school going adolescent girls, in which it was revealed that 96.5% of the subjects were anemic, of which, 45.2%, 46.9% and 4.4% were found to have mild, moderate and severe anemia respectively[10]. Another study which was conducted in rural Wardha showed the prevalence of severe, moderate and mild anemia to be 0.6%, 20.8% and 38.4% respectively [4].

3.1 Anemia with respect to age

Age	*Prevalance*		
	Mild	*Moderate*	*Severe*
13 yrs	18	21	0
14 yrs	54	36	12
15 yrs	24	27	3
16 yrs	21	36	6

In our study, we found that anemia was more prevalent in girls who were more than 14 years of age as compared to girls who were less than 14 years of age.

A study which was conducted in Haryana on 110 adolescent girls who belonged to low socio-economic groups, it was found that anemia was more prevalent in girls who were more than 14 years of age[13].

Thus, the high prevalence of anemia among girls who were more than 14 years of age could be related to menstrual loss. A study which was conducted among school going girls in Ahmadabad revealed that 55.2% were mildly anemic, 44.9% were moderately anemic and that 0.6% were severely anemic [14].

3.2 Anemia with respect to general appearance

General appearance	Prevalance		
	Mild	Modera	Severe
Well nourished	84	69	6
Moderately nourished	24	18	0
Malnourished	9	15	15

In our study, we found that anemia was more prevalent in well nourished girls. The reasons for the high incidence of anemia among the adolescent girls are:

- Increased iron requirements because of growth
- Menstrual loss
- Discrepancy between high iron need for hemoglobin 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[6]

3.3 Anemia with respect to nature of bleeding

Nature of bleeding	*Prevalance*		
	Mild	*Moderate*	*Severe*
Regular	108	81	21
Irregular	9	21	0

In our study, we found that anemia was more prevalent in the girls who had regular bleeding. The prevalence of anemia was high among girls who had attained menarche

3.4 Anemia with respect to duration of bleeding

Duration of bleeding	Prevalance		
	Mild	Moderate	Severe
Less than 5 days	36	21	6
5 Days	72	63	12
More than 5 Days	9	36	3

In our study, we found that anemia was more prevalent in the girls who had bleeding for 5 days. A study which was conducted in Haryana on 110 adolescent girls who belonged to low socio-economic groups, found that anemia was more prevalent in girls who were more than 14 years of age [13]. Thus, the high prevalence of anemia among girls who were more than 14 years of age could be related to menstrual loss [1].

Anemia with respect to nature of diet

Nature of diet	*Prevalance*		
	Mild	*Moderate*	*Severe*
vegetarian	108	81	21
Non vegetarian	9	21	0

In our study, we found that anemia was more prevalent in the girl who belongs to vegetarian diet. The World Health organization has proposed that if the prevalence of anemia in a region is between 5% and 20% appropriate interventions based on food diversification, food fortification, iron supplementation and controlling infectious disease should be considered [15].

In a study of adolescent girls prevalence of anemia was found to be 59.8 %.. In the study of pregnant and lactating women by K.N Agrawal *et al* it was found that 84% pregnant and 92.2% lactating women were anemic with severe anemia is 9.2% and 7.3% respectively [13].

Periodic de worming and oral iron supplementation are primary courses for prevention and cure of anemia on immediate measures. In the rural context strategies to reach large section of the women, children and adolescent population are only possible through community based health workers like female community health volunteers. The most appropriate strategies would be integrated community and school based approach to reach adolescent population for prevalence and control of iron deficiency anemia in rural area[3].

3.5 Association between prevalence of anemia with selected demographic variables

In our study there was no significant association between prevalence of anemia with selected demographic variables.

4. Conclusion

Adolescent girls are at a high risk for anemia and malnutrition. Inadequate nutrition during adolescence can have serious consequences throughout the reproductive years of life and beyond[16]. Very often, in India, girls get married and pregnant even before the growth period is over, thus doubling the risk for anemia [17].

The nutritional anemia 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 anemia in pregnant women can be more easily achieved if a satisfactory iron status can be ensured during adolescence[18]. About 43% of the adolescent deaths are related to pregnancy. Pregnancy during adolescence deprives the girls from achieving their full growth according to their genetic potential .

In conclusion, the present study revealed anemia to be a major health problem among the adolescent girls in rural areas.

- The prevalence of anemia was more among girls who were more than 14 years of age.
- There was a higher prevalence of mild anemia as compared to moderate and severe anemia.
- The prevalence of anemia was high among girls who had attained menarche.
- There was a higher prevalence of anemia among girls who belonged to the lower socio-economic groups.

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