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# "A STUDY TO ASSESS THE PREVALENCE OF ANEMIA AND ITS ASSOCIATED FACTORS AMONG ADOLESCENT GIRLS AT GOVERNMENT GIRLS HIGHER SECONDARY SCHOOL GURUR CHHATTISGARH."

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## INTRODUCTION

**Background of the problem:-**

"The best women will never outrun the best men, physiological differences explain that men will always be faster: Women have smaller hearts, more fat to carry, less hemoglobin, less muscle mass."

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 has been defined by Who as the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19. It is the formative period of life where maximum amount of physical, psychological and behavioural changes takes place.

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 the vulnerable period in the human life cycle for the development of nutritional anemia which affects both sexes and all age group.

Anemia is one of the most common hematological abnormalities found in children. Anemia is defines as "the reduction in oxygen carrying capacity or as a reduction in the red cell mass of the body."

**Causes of Anemia :-**

There are mainly three groups

1. Anemia caused by blood loss- Blood loss can be rapid and chronic like surgery, childbirth or ruptured blood vessel, stomach ulcers, cancer or tumor.
2. Anemia caused by decreased or faulty red blood cells :- Lack of iron or vitamin rich foods, bone marrow can be affected by a number of diseases such as leukemia.
3. Anemia caused by the destruction of red blood cells :- Red blood cells typically have a life span of 120 days in the bloodstream, but they can be destroyed or removed beforehand.

**Sign and symptoms:** The most common symptom of anemia regardless of type, it's a feeling of fatigue and a lack of energy. Other common symptoms of anemia may include:

Paleness of skin

- Fast or irregular heartbeat
- Shortness of breath
- Chest pain
- Fever

**Diagnosis of Anemia;-** anemia is typically diagnosed on a complete blood count. Apart from reporting the number of red blood cells and the hemoglobin level the automatic counters also measure the size of the red blood cells by flow cytometry.

**Treatment :-** Treatments for anemia depend on cause and severity, vitamin supplements given orally (folic acid or vit B12) or in transmuscularly (vit B12) will replace specific deficiencies.

- **ORAL IRON :-** Mild to moderate iron deficiency anemia is treated by oral iron supplementation with ferrous sulphate ferrous fumerate or ferrous gluconate.
- **PARENTRAL IRON :-** In cases where oral iron has either proven ineffective, would be too slow or where absoption is impeded, parentral iron can be used. The body can absorb up to 6 mg iron daily from the gastrointestinal tract.
- **BLOOD TRANSFUSION:-** Blood transfusion in htose without symptoms is not recommended until the hemoglobin is below 60 to 80 g/L (6 to 8 g/dl)
- **ERYTHROPOIESIS :-** Stimulating agent-The motive for the administration of an erythropoiesis stimulating agent (ESA) is to maintain hemoglobin at the lowest level that both minimizes transfusions and meets the individual persons needs.
- **HYPERBARIC OXYGEN :-** The use of Hyperbaric oxygen is indicated when oxygen delivery to tissue is not sufficient in patients who cannot be given blood transfusions for medical or religious reasons.

**Need for the Study**

The study had revealed that anemia is more common in adolescent girls. The percentage is 16.66% mild anemia, 80% moderate anemia and 3.33% severe anemia. So this all data indicates the prevalence of anemia among adolescent girls. This information data conclude that the need for study regarding prevalence of anemia is an important aspect.

A study conducted in 1994 in rural Rajasthan among 941 adolescent girls in the age group 10-18 years. recorded a 73.7% prevalence of anemia. Mehta. found out an anemia prevalence of 63.8% in urban slums of Bombay among 10-18 years adolescent girls. Seshadri. recorded anemia prevalence in the same age group of girls in Bharuch district of Gujarat as 63%, 54% and 63% in villages covered by 3 Government PHCS, respectively. Agarwal. documented in the urban slums of North East Delhi, an anemia prevalence of 47.6% among adolescent girls of age group 10-19 years. All the above three studies were sponsored

by UNICEF and initiated in 1996. In the study sponsored by Mother Care project, USAID, Raina et al.. documented a prevalence of 85.3% (Hb <11 g/dl) in rural Haryana.

Agarwal had documented that the prevalence of anemia was 46.6% in premenarcheal girls as compared to 48.4% in post menarcheal girls in the urban slums of North East Delhi. Vasanthi observed a prevalence of 27% and 22% in the rural and urban premenarcheal girls and 24.2% and 27.8% in the rural and urban post menarcheal girls in the age group 11-16 years.

**Problem Statement :-**

**"A study to assess the prevalence of anemia and its associated factors among adolescent girls at Government Girls Higher Secondary School Gurur Chhattisgarh."**

**Objectives:-**

1. To assess the prevalence of anemia among adolescent girls.
2. To find out the relationship between selected socio demographic variables with prevalence of anemia.

**Hypothesis**

There is a relationship between selected socio demographic variables and prevalence of anemia.

## REVIEW OF LITERATURE

A literature review is a text of a scholarly paper, which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. Literature reviews use secondary sources, and do not report new or original experimental work.
Generally, the purpose of a review is to analyze critically a segment of a published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature, and theoretical articles.

1. **Sanjeev m chaudhary and Vasant R Dhage** conducted a cross-sectional survey in an urban area under Urban Health Training Center, Department of Preventive and Social Medicine, Government Medical College and Hospital, Nagpur. A total of 296 adolescent females (10-19 years old) were included in this study. The study took place from October 2002 to March 2003 (6 months). Statistical analyses were done using percentage, standard error of proportion, Chi-square test, and Student's 't' test.
2. **Premalatha T* Valarmathi S, Parameshwari Srijayanth, Jasmine S Sundar and Kalpana S** conducted A cross sectional study was executed in Chennai-India including 400 samples with an equal distribution of 200 each from both private and public schools. From each school fifty adolescent girl students between the age group of 13-17 who were eligible were selected by simple random sampling method and included for the study after obtaining their informed consent. The study stated that Prevalence of anemia in adolescent girls is alarmingly high (78.75%) even though the prevalence of anemia is high in underweight participants, this study also shows that the prevalence of anemia in preobese and obese (75%) participants which stresses the focus on inbuilt absorption of micronutrients.
3. **A Verma, VS Rawal, G Kedia, D Kumar, J Chauhan** conducted a cross sectional study among girls of school going age (6-18 years) residing in 15 randomly selected slums of the north zone of Ahmedabad city. The general information about age, height, body weight, haemoglobin level (Sahli's method), parent's education, parent's occupation, socioeconomic status, knowledge about anaemia, status of menstruation and regarding the consumption of various diets factors were recorded on a structured questionnaire. The prevalence of anaemia (81.8%) among the girls in this study was higher than that observed in the urban slums of north east Delhi5, which had reported 6.6 and 48.4% prevalence of anaemia in pre-menarchal and post-menarchal girls respectively.

4. **Shanti Devi, Vidya Deswal and *Ramesh Verma** conducted a desciptive study among school going adolescent girls study included 320 adolescent girls from selected Government Secondary Schools of district Rohtak (Haryana) and the study included the all adolescent girls of 9th and 10th class of selected school. A pre-tested semi-structured interview schedule was administered to the study subjects and the responses were recorded by the investigator himself. The questionnaire was including age, religion and family income, history of illness, type of family, food habits and health information such as clinical signs of anaemia, height and weight of subject. Hemoglobin estimation was done by cynmethaemoglobin method. The hemoglobin estimation was obtained by finger prick method using sterile needles. The study found that majority of subjects belonged to 14-15 years (51%) age group and followed by 16-17 years (45%).

5. **Md. Shamim Miah1, M. Nannur Rahman2, UK Prodhan2, MR Linkon2, Madumita4, Md. Sidur** conducted A cross sectional survey among adolescent girls selected purposively from different non government High School. Hematological parameters, Body Mass Index (BMI), Socioeconomic, demographic and related risk factors were obtained by a well defined questionnaire and appropriate biochemical method. A total number of 120 adolescent girls were selected. A questionnaire was developed containing both closed & open ended questions to obtain relevant information on anthropometric, socioeconomic, dietary condition of the adolescent girls. it was revealed that anemia is a major health problem among adolescents especially girls. Because of lack of proper information regarding dietary habits adolescents have a habit of skipping their meals because they are more conscious about their body structure. It has been found that result of heavy periods and reduced iron intake.

## METHODOLOGY

**Methodology** is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. on the other hand, research methodology is the way in which research problems are solved systematically. It is a science of studying how research is conducted scientifically.

**According to Polit and Bec**k Methodology means the steps procedure and strategies for gathering and analysis data in a research investigation.

This chaptr deals with the methodology adopted for the study. It include research approach, research design, setting of studystudy population, Sampling technique, sample size, selection and development of instrument, description of final tool, data collection process.

**Research approach**

**According to Burns and Nancy**-Research indicates the procedure for conducting the study. The word implies scrutining unknown regimen for purpose of discovery. The presnt study aims to assess the prevalence of anemia and its associated factors among adolescnt girls. A descriptive approach was adopted for the study.

**Research design** Kerlinger says that research design is the plan, structure and strategy of the investigation conceived to obtain answer to the research question. In this study research design used is univariant descriptive research design.

There are mainly two types of descriptive studies in epidemiology :-

1. Incidence studies
2. Prevalence studies

The basic purpose of the study is not only to describe the variables but also to establish the relationship between those variables.

**Study population-**

**Target population-according to Polit and Hungler**-State that the target Population is the entire aggregate generalization.

The target population in this study is adolescent girls age between 15 to 17 years. **Accessible population-**

Refer to the portion of target population which the researcher has reasonable access.
In the present study, the accessible population includes adolescent girls studying at government girls higher secondary school Gurur chhattisgarh.

**Setting of the study**

**According to Polit and Hungler 1999**- Setting is the physical location and condition in which data collection takes place in a study.
The setting for present study is Government girls higher secondary school Gurur Chhattisgarh.

**Sampling method**

**According to Burns and Groove-** The sampling is the process of selecting a group of people or other element with which to conduct the study.
In the present study non-probability convenient sampling technique is used.

**Sample size**

**According to Treece and Treece-** The sample size is determined by the researcher against a background of cost, time, number of available personnel, size of total population and purpose of the study.
The total sample size is 30 adolescent girls.

**Sample selection crieteria**

The samples were selected with the following predetermined set of crieteria-

**Inclusive crieteria**

1. Adolescent girls at the age of 15-17
2. Adolescent girls who were willing for their blood testing

**Exclusive crieteria**

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

**Selection and development of instrument**

The instrument selected in the research should be as for as possible the method that would be best for obtaining data for drawing conclusion which were pertinent to the study.

**The tool was developed on the basis of :-**

1. Reviewing the related literature
2. Past clinical experience of the investigator
3. The opinion of the subject expert in anemia

**Description of final tool**

The tool consists of 2 sections "A" and "B"

- **Section A-** Interview for demographic variables
- **Section B-** Result of the blood test (Hb level)

**Section A-** It includes seven items of demographic variables such as age, general appearance, diet, nature of bleeding, duration of bleeding, monthly family income and mothers literacy status.
**Section B-** Result of the blood test [hemoglobin level]

**Data collection process**

A formal letter was sent to the principal of the school at Gurur and a written permission was obtained to conduct the study. 30 samples were selected through non probability convenient 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 sociodemographic features about the purpose and usefulness of the study and (for Hb estimation) capillary blood for over bleeding for hemoglobin estimation.

**Plan for data analysis**

Data obtained was analysed in terms of objective and by using both descriptive and inferential statistics in the following manner:

- Organising data in a master sheet
- Frequency and percentage distribution of sample characteristics. chi square analysis to association selected demographic variables with prevalence of anaemia.

**Data analysis and Interpretation**

According to Polit and Hungler "Statistical procedure enable the researcher to reduce, summarize organize evaluate, interpret and communicate information."

Analysis is a method for rendering quantitative information meaningful and intelligible, without the aid statistic the quantitative data collected in a research project would be little more than chaotic mass of number.

This chapter deals with the analysis and interpretation of the data finding of the study.

**Objectives**

1. To assess the prevalence of anemia among adolescent girls in the age group of 15-17 years.
2. To find out the relationship between selected socio demographic factors with prevalence of anemia.

**Section A :-** Percentage analysis was carried for demographical variables and presented in form of table and graph.

**Section B:- :-** Result of hemoglobin test

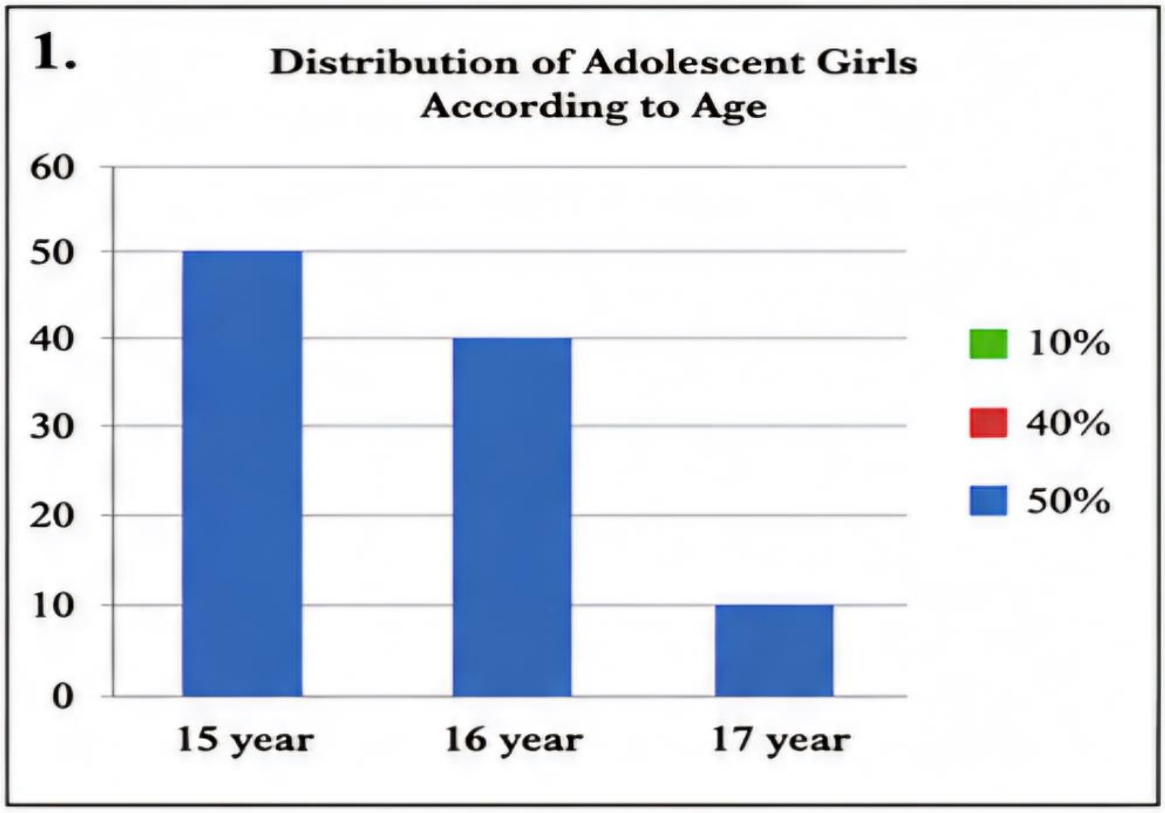
**Section C:-** Distribution of anemia among adolescent girls in respect to selected demographic variables

**Section D :-** Association between selected socio demographic variables with prevalence of anaemia.

**SECTION-A**

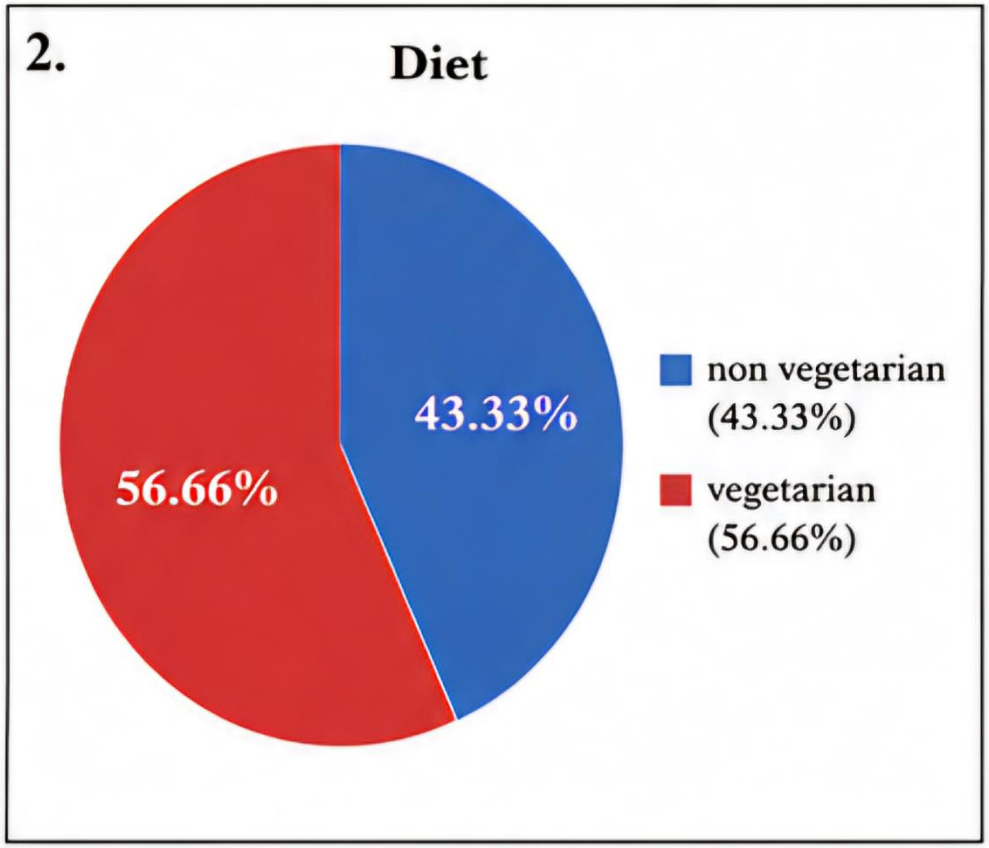
| S.No. | DEMOGRAPHIC VARIABLES | NO.OF ADOLESCENT GIRLS | PERCENTAGE |
|---|---|---|---|
| 1) | Age | | |
| | a) 15 years | 15 | 50% |
| | b) 16 years | 12 | 40% |
| | c) 17 years | 03 | 10% |
| 2) | Diet | | |
| | a) Vegetarian | 17 | 56.66% |
| | b) non vegetarian | 13 | 43.33% |
| 3) | General appearance | | |
| | a) Well nourished | 03 | 10% |
| | b) Moderately nourished | 24 | 80% |
| | c) Mal nourished | 03 | 10% |
| 4) | Nature of menstruation | | |
| | a) Regular | 20 | 66.66% |
| | b) Irregular | 10 | 33.33% |
| 5) | Duration of bleeding | | |
| | a) <5 days | 12 | 40% |
| | b) 5 days | 09 | 30% |
| | c) >5 days | 09 | 30% |
| 6) | Family's monthly income | | |
| | a) <5000 Rs. | 09 | 30% |
| | b) 5000-10000 Rs. | 17 | 56.66% |
| | c) >10000 Rs. | 04 | 13.33% |
| 7) | Mothers literacy status | | |
| | a) Illiterate | 06 | 20% |
| | b) Upto 5th standard | 02 | 6.66% |
| | c) 6th to 10th standard | 21 | 70% |
| | d) 11th and above | 01 | 3.33% |

**1) Distribution of adolescent girls according to age :-**



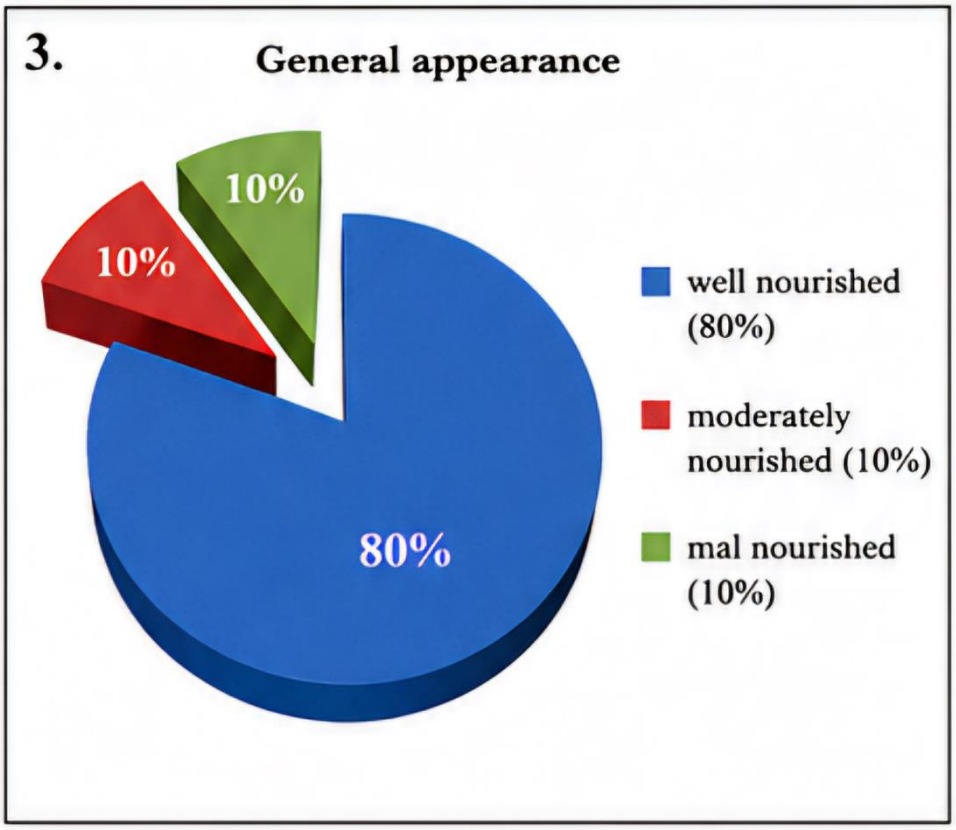

The above bar diagram reveals that 15 (50%) girls were 15 years of age, 12 (40%) girls were 16 years of age and 3 (10%) girls were 17 years of age.

**2) Distribution of adolescent girls according to Diet :-**



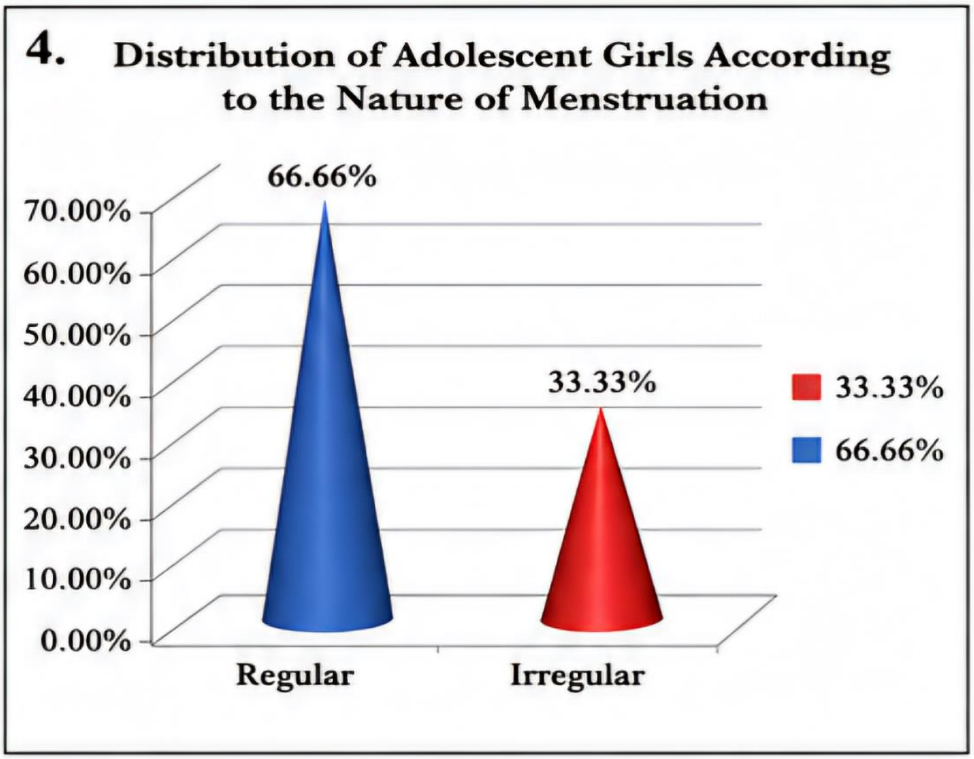
The above pie diagram reveals that out of 30,17(56.66%) girls were vegetarian and rest 13 (43.33%) girls were non vegetarian.

**3) Distribution of adolescent girls according to general appearance :-**



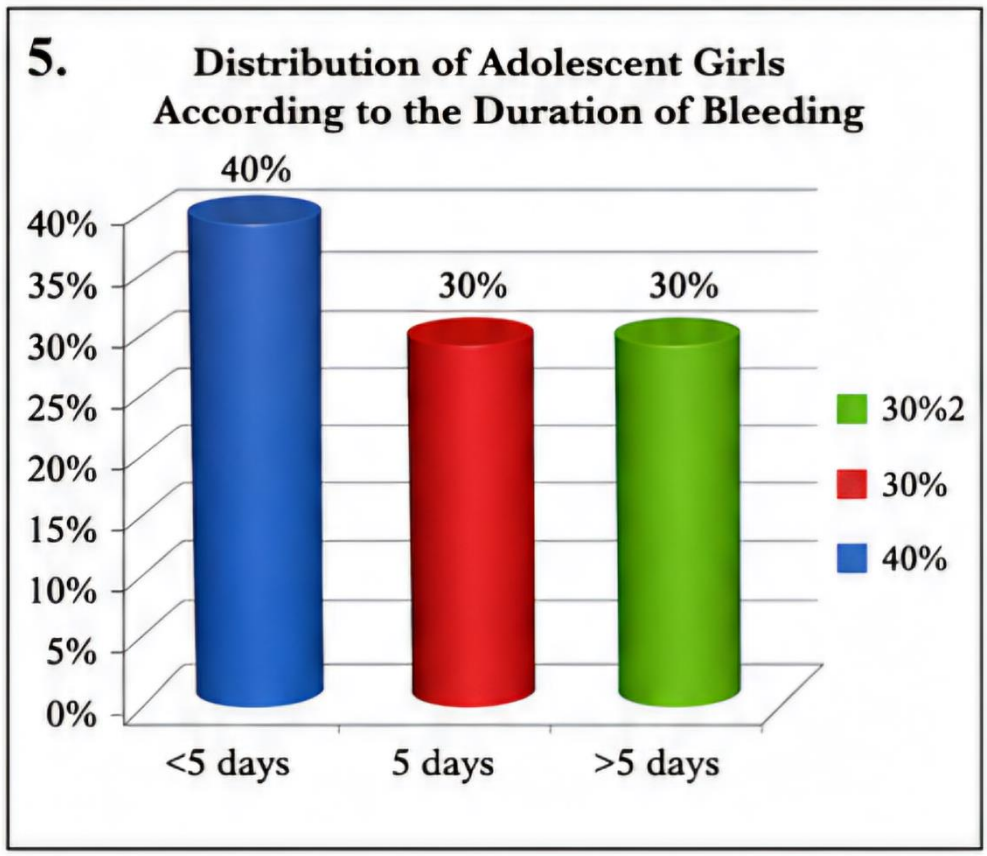

The above diagram reveals that out of 30, 24 (80%) girls were moderately nourished, 3 (10%) girls were well nourished and 10(10%) girls were mal nourished.

**4) Distribution of adolescent girls according to the nature of menstruation:**



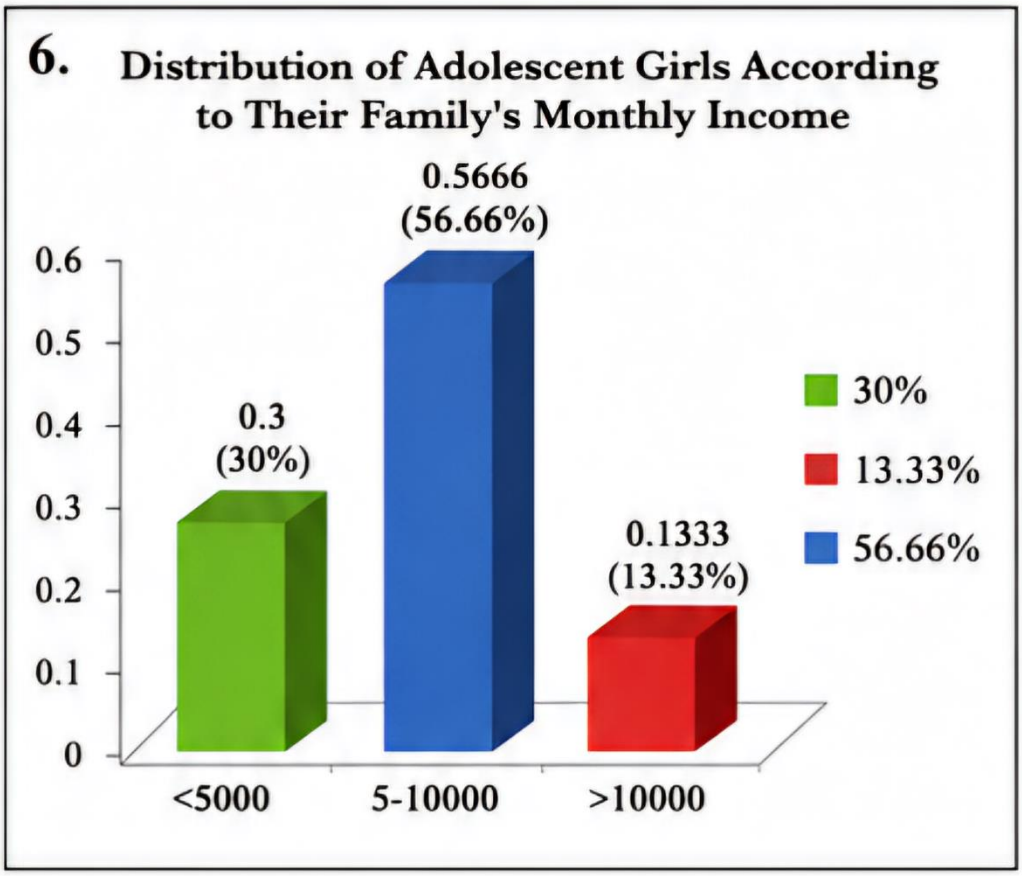
The above diagram reveals that out of 30, 20 (66.66%) of the adolescent girls had regular menstruation and remaining 10 (33.33%) were had irregular menstruation.

**5) Distribution of adolescent girls according to the duration of bleeding:**



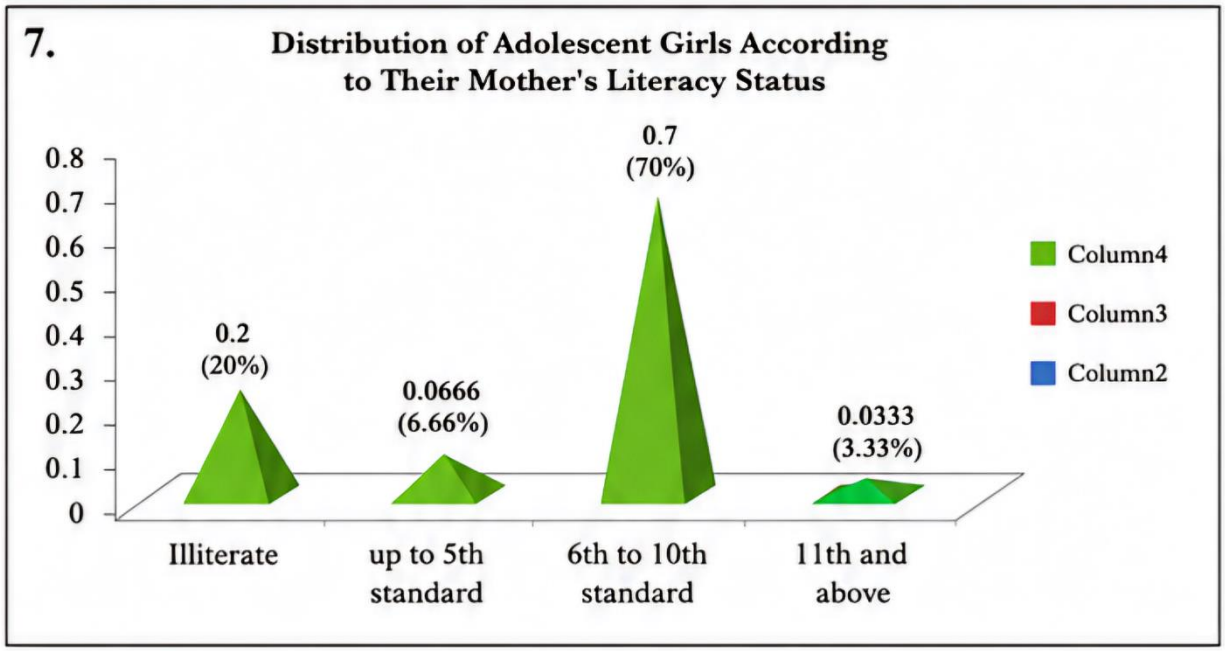

The above diagram reveals that out of 30, 12 (40%) girls had bleeding for <5 days 9(30%) girls had bleeding for 5 days and remaining 9 (30%) girls had bleeding more than 5 days.

**6) Distribution of adolescent girls according to their family's monthly income.**




The above diagram reveals that out of 30, 9 (30%) girls family's monthly income was <5000 Rs., 17 (56.66%) girls family's monthly income was between 5000-10000 Rs. And remaining 4 (13.33%) girls monthly family income was >1000 Rs.

**7) Distribution of adolescent girls according to their mother's literacy status:**



The above diagram reveals that out of 30, 6(20%) adolescent girls mother's were illiterate 2 (6.66%) girls mother's literacy status was upto 5th standard, 21 (70%) girls mothers literacy status was between 6th to 10th standard and remaining 1 (3.33%) mothers literacy status was above 10th standard.

## SECTION B

**Result of hemoglobin test**

**Prevalence of anemia among adolescent girls :-**

| Prevalence of anemia | No.of adolescent girls | Percentage |
|---|---|---|
| Mild (9.6-11 gm) | 05 | 16.66 |
| Moderate (7-9.5 gm) | 24 | 80 |
| Severe (<7 gm) | 01 | 3.33 |
| **Total** | **30** | **100** |

The above table reveals that out of 30, 5 (16.66%) adolescent girls were mild anemic 24 (80%) adolescent girls were moderate anemic and remaining 1 (3.33%) girls were severe anemic.

## SECTION C

**Distribution of anemia among adolescent girls in respect to selected demographic variables.**

**Anemia with respect to age :-**

| | Prevalence | | |
|---|---|---|---|
| Age | mild | moderate | severe |
| 15 year | 01 | 14 | |
| 16 year | 03 | 08 | 01 |
| 17 year | 01 | 02 | |

In my study I found that anemia was more prevalent in girls who were 15 years of age.

**Anemia with respect to diet :-**

| Diet | Prevalence | | |
|---|---|---|---|
| | mild | moderate | severe |
| Vegetarian | 03 | 14 | - |
| Non-vegetarian | 02 | 10 | 01 |

In my study I found that anemia is more prevalent in adolescent girls who are vegetarian than in non vegetarian girls.
0% vegetarian girls were mild anemic and 46.66% adolescent girls were moderately anemic.
In non vegetarian girls 6.66% were mild anemic and 33.33% were moderately anemic and 3.33% non vegetarian girls were severe anemic.

**Anemia with respect to general appearance :-**

| General appearance | Prevalence | | |
|---|---|---|---|
| | mild | moderate | severe |
| Well nourished | - | 03 | - |
| Moderately nourished | 05 | 18 | 01 |
| Mal nourished | - | 03 | - |

In my study I found that anemia was more prevalent in moderately nourished girls. 16.66% moderately nourished girls were mild anemic, 60% were moderately anemic and 3.33% moderately nourished girls were severe anemic.

**Anemia with respect to nature of menstruation :-**

| Nature of Menstruation | Prevalence | | |
|---|---|---|---|
| | mild | moderate | severe |
| Regular | 03 | 16 | 01 |
| Irregular | 02 | 08 | - |

In my study I found that anemia is more prevalent in adolescent girls who had regular bleeding. Here 10% girls who had regular bleeding were mild anemic 53.33% adolescent girls were moderately anemic and 3.33% girls were severe anemic.

**Anemia with respect to duration of bleeding :-**

| Duration of bleeding | Prevalence (mild) | Prevalence (moderate) | Prevalence (severe) |
|---|---|---|---|
| <5 days | 02 | 10 | |
| 5 days | 02 | 07 | |
| >5 days | 01 | 07 | 01 |

In my study I found that anemia is more prevalent in adolescent girls who had bleeding for less than 5 days.

**Anemia with respect to monthly family income :-**

| Monthly family income | Prevalence | | |
|---|---|---|---|
| | mild | moderate | severe |
| <5000 Rs. | 03 | 06 | - |
| 5000-10000 Rs. | 02 | 14 | 01 |
| >10000 RS. | - | 04 | - |

In my study I found that anemia is more prevalent in adolescent girls whose monthly family income was between 5000-10000 Rs. Out of them 6.66% adolescent girls were mild anemic, 46.66% moderately anemic and 3.33% were severe anemic.

**Anemia with respect to mothers literacy status :-**

| Mothers literacy status | Prevalence | | |
|---|---|---|---|
| | mild | moderate | severe |
| Illiterate | 02 | 04 | - |
| Up to 5th standard | 01 | 01 | - |
| 6th to 10th standard | 01 | 19 | 1 |
| 11th and above | 01 | - | - |

In my study I found that anemia is more prevalent in adolescent girls whose mothers education was between 6th to 10th standard. Out of them 3.33% adolescent girls were mild anemic, 63.33% girls were moderately anemic and 3.33% adolescent girls were severely anemic.

The world health organization has proposed that if the prevalence of anaemia 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.

In a study of adolescent girls prevalence of anaemia 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 anaemic with severe anaemia is 9.2% and 7.3% respectively.

Periodic de worming and oral iron supplementation are primary courses for prevention and cure of anaemia 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 anaemia in rural area.

## SECTION D

**Association between selected demographic variable with prevalence of anaemia**

| S.No. | DEMOGRAPHIC VARIABLE | $X^2$ | TABLE VALUE AT P= | SIGNIFICANCE |
|---|---|---|---|---|
| 1. | Age | 4.06 | 9.49 | Not significant |
| 2. | Diet | 10.35 | 5.99 | Significant |
| 3. | General appearance | 9.82 | 9.49 | Significant |
| 4. | Nature of menstruation | 7.59 | 5.99 | Significant |
| 5. | Duration of bleeding | 12.69 | 9.49 | Significant |
| 6. | Monthly family income | 8.58 | 9.49 | Not significant |
| 7. | Mothers literacy status | 20.52 | 12.59 | Significant |

## Discussion

This chapter deals with the discussion of the finding of the study to identify the prevalence of anemia among adolescent girls in govt.girls higher secondary school gurur Chhattisgarh. In order to achieve the objective of the study univariant descriptive research design was adopted. Non probability convenient sampling technique was used to select the sample. The data was collected from 30 adolescent girls studying in govt.girls higher secondary school gurur Chhattisgarh.

The finding of the study were discussed under the following heading:-

**SECTION A:-** Percentage analysis was carried for demographical variables and presented in form of table and graph.

**SECTION B:-** Result of Haemoglobin test

**SECTION C:-** Distribution of anemia among adolescent girls in respect to selected demographic variables.

**SECTION A:- Percentage analysis was carried for demographic variables and presented in form of table and graph.**

As per socio demographic variables depicts that 50% subjects belong to age group 15, 40% subjects belong to age group 16 and 10% subjects belong to age group 17. In relation to diet of the subjects 56.66% were vegetarian and 43.33% were non vegetarian. Distribution of subjects according to general appearance 10% were well nourished 80% were moderately nourished and 10% were mal nourished. In relation to nature of menstruation 66.66% had regular bleeding and 33.33% had irregular bleeding. Distribution of subjects according to duration of bleeding depicts that 40% had bleeding for less than 5 days 30% had bleeding for 5 days and 30% had bleeding for more than 5 days. In relation to monthly family income depicts that 30% subjects family income was less than 5000 rs. 56.66% subjects family income was between 5000-10000 rs. And 13.33% subjects monthly family income was more than 10000 rs. Distribution of subjects according to their mothers literacy status depicts that 20% were illiterate, 6.66% were educated up to 5th standard, 70% were between 6th to 10th standard and 3.33% were educated 11th standard and above.

**SECTION B:- Result of hemoglobin test**

Hemoglobin concentration was estimated by cyan method using haemoglobin analyzer. It is measured in terms of g/dl. Capillary blood was drawn by finger prick method. Cuvette tube was pre-filled manually with Cyanmethhemoglobin reagent. It was incubated for 5 minutes and finally readings were noted. For every sample a blank tube was placed in the machine to avoid the error or check the accuracy. Prevalence of anaemia was described in adolescent girls. It was described in mild anaemia ( hb 9.6-11 gm/dl), moderate anaemia (7-9.5 gm/dl), severe anaemia (<7 gm/dl). 16.66% (5) adolescent girls were having mild anaemia, 80% (24) adolescent girls were having moderately anaemia and 3.33% (1) adolescent girls were having severe anaemia.

**SECTION C:- Distribution of anemia among adolescent girls in respect to selected demographic variables.**

- In relation with age of adolescent girls anaemia was more prevalent in adolescent girls of 15 years of age.
- According to diet of adolescent girls we found that anaemia was more prevalent in vegetarian girls than non vegetarian girls. 10% vegetarian girls were mild anemic and 46.66% were moderately anaemic.
- According to general appearance we found that anaemia was more prevalent in moderately nourished girls.
- In relation to nature of bleeding anaemia was more prevalent in adolescent girls who had regular bleeding.
- According to duration of bleeding we found that anaemia was more prevalent in girls who had bleeding for less than 5 days.
- According to monthly family income Anaemia was more prevalent in adolescent girls whose monthly family income was between 5000-10000 rs.
- In relation to their mothers literacy status anaemia was more prevalent in adolescent girls whose mothers education was between 6th to 10th standard.

**SECTION D:- Association between selected socio demographic variables with prevalence of anaemia.** There is significant association between prevalence of anaemia with socio demographic variables. The finding is prevalence of anaemia is not significant with age (X2-4.06), significant with diet (X2-10.35), significant with general appearance (X2-9.82) significant with nature of menstruation ($X^2$-7.59), significant with duration of bleeding ($X^2$-12.69) not significant with monthly family income ($X^2$ 8.58), significant with mothers literacy status ( ($X^2$. 20.52).

## Summary, conclusion, Implications, Limitations and Recommendations

### SUMMARY

The purpose of the study was to assess the prevalence of anaemia and its associated factors among adolescent girls at government girls higher secondary school Gurur Chhattisgarh. A descriptive approach was undertaken for present study.

**The objectives of the study were as given below :-**

1. To assess the prevalence of anemia among adolescent girls.
2. To find out the relationship between selected socio demographic variables with prevalence of anemia.

Non probability convenient sampling was used to select a sample of 30 adolescent girls was conducted from Government girls higher secondary school Gurur Chhattisgarh.

The reliability was computed by Karl Pearson's formula and was found to be 0.9. Modification of the tool was done as per the findings of the study and suggestion of experts.

The final study was conducted in Government girls higher secondary school Gurur Chhattisgarh. For 18th January 2016 to25th January 2016.

### CONCLUSIONS

**Major findings of the study are following:-**

**Finding related socio demographic variables :-**

As per socio demographic variables depicts that 50% (15) subjects belonged to age group of 15 years. 40% (12) belonged to age group of 16 years and 10% (3) belonged to age group of 17 years. In relation to diet of the subjects depicts that 56.66% (17) subjects were vegetarian and 43.33% (13) subjects were non vegetarian. Distribution of subjects according to their general appearance depicts that 10% (3) subjects were well nourished, 80% (24) subjects were moderately nourished and remaining 10% (3) were mal nourished. In relation to nature of menstruation depicts that 66.66% (20) subjects had regular bleeding and remaining 33.33% (10) subjects had irregular bleeding. Distribution of subjects according to duration of bleeding depicts 40% (12) subjects had bleeding for less than 5 days, 30% (9) subjects had bleeding for 5 days and 30% (9) subjects had bleeding for more than 5 days. In relation to family monthly income 30% (9) subjects family monthly income was less than 5000 rs., 56.66% (17) subjects family monthly income was between 5000-10000 rs., and 13.33% (4) subjects monthly income was more than 10000 Rs. Distribution of subjects according to mothers literacy status 20% (6) subjects mothers were illiterate, 6.66% (2) subjects mothers education was up to 5th standard, 70% (21) subjects mothers education was between 6th to 10th standard and remaining 3.33% (1) subject's mothers education was 11th standard and above.

**Findings related to result of Hemoglobin test**

As per hemoglobin test of adolescent girls 16.66% (5) subjects were mild anemic, 80% (24) subjects were moderately anemic and remaining 3.33% (1) subject was severe anemic.

**Finding related to association between socio demographic variables and prevalence of anemia**

There is significant association between prevalence of anemia with socio demographic variables. The finding is prevalence of anemia is not significant6 with age, significant with diet, significant with general appearance, significant with nature of menstruation, significant with duration of bleeding, not significant with monthly family income, significant with mothers literacy status.

## IMPLICATION

A significant association of anemia with socio-economic status and parents' educational status suggests a need to develop strategies for intensive adult education and to improve the socio-economic status of the population through poverty alleviation programs. This should be supported by programs for the prevention of anemia among adolescent girls through nutrition education and anemia prophylaxis.

## LIMITATION

- This study is limited to adolescent girls who were studying at government girls higher secondary school Gurur Chhattisgarh.
- This research is limited to 30 samples, so the study is not generalized.

## RECOMMENDATIONS

1. A similar study may be replicated on larger sample, there by findings can be generalized for a large health personnel.
2. Similar studies can be undertaken in different settings and with antenatal mothers, children and adolescent boys.
3. This study reveals that anemia prevails irrespective of socioeconomic status which stresses the need to increase awareness of consequences of anemia in all strata of the society.
4. Periodic surveys should be done in schools on anemia for updating prevalence.
5. This study shows lower prevalence of anemia in participants whose mothers possess higher level of literacy. Promoting awareness among home makers will be helpful in overcoming this hurdle. Health programs for housewives on utilization of easily available and affordable iron rich diet and forming kitchen garden etc.
6. Educating parents and children about the importance of deworming and emphasize them to have dewormed once in six months. Parents as well as teachers should be sensitized on under nutrition, role of healthy diet and consequences of anemia.
7. In-depth studies can be done on evaluation of iron indicators like serum ferritin, serum transferrin etc. along with stool examination with wider samples.
8. Though initiation of Iron fortification had been done, it should be in commonly reachable vehicles like salt, sugar and available for all, which doesn't demand individual co-operation.
9. There is a need of conducting awareness programs in public schools.

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## APPENDICES

### Appendix A

**Socio demographic variables**

| S.No. | SOCIO DEMOGRAPHIC VARIABLES | |
|---|---|---|
| 1. | Age | a) 15 years<br>b) 16 years<br>c) 17 years |
| 2. | Food habits | a) Vegetarian<br>b) Non vegetarian |
| 3. | General appearance | a) Well nourished<br>b) Moderately nourished<br>c) Mal nourished |
| 4. | Nature of menstruation | a) Regular<br>b) Irregular |
| 5. | Duration of bleeding | a) <5 days<br>b) 5 days<br>c) >5 days |
| 6. | Monthly family income | a) <5000 rs.<br>b) 5000-1000 rs.<br>c) >10000 rs. |
| 7. | Mother's literacy status | a) Illiterate<br>b) Up to 5th standard<br>c) 6th to 10th standard<br>d) 11th standard and above |

**Appendix B**

**Consent form**

सहमति पत्र

मैं कुमारी----------कक्षा---------- स्कूल शास. उच्च.मा.विद्या. गुरूर में विषय की छात्रा हूँ।
मैं अपना हीमोग्लोबिन टेस्ट करवाने के लिये अपनी सहमति देती हूं ।

हस्ताक्षर------- दिनांक-----