# A STUDY TO ASSESS THE OCCURRENCE AND CORRELATION OF ANEMIA WITH DIETARY PRACTICES AMONG ADOLESCENT GIRLS AT SELECTED SCHOOL, AGARTALA, TRIPURA (W)

**Name of the candidate:**
**Snigdha Deb[1], Minnerva Yembem[2]**

Assistant Professor, Shovarani Nursing College, Kolkata,
Associate Professor, Institute of Nursing Science, Agartala, India

***Abstract:***

**A co relational survey study with quantitative study design was conducted to assess the occurrence and correlation of anemia with dietary practices among adolescent girls in selected schools , Agartala, Tripura. The objectives of the study was to determine the occurrence of anemia , to identify the dietary practices , to assess the correlation between anemia and dietary practices and to determine the association between occurrence of anemia among adolescent girls with their selected demographic variables. 100 numbers of adolescent girls were selected by using simple random sampling technique. Conceptual framework was used based on Health Belief Model. Data was collected by using valid and reliable demographic proforma, dietary practice checklist and Hemometer. The tool was validated by 7 experts and the reliability of the tool was 0.71(r). Pre- testing of the tool was conducted among adolescent girls to know the feasibility, ambiguity and clarity of items, pilot study was conducted among 10 students who fulfilled the sampling criteria in a selected school in Jiraniya, Choudhurybari girls‟ H.S. school. Data for the main study was collected from Bodhjung Girls‟ H.S. school with sample size 100 students from 8th May to 8th June 2019. Descriptive and inferential statistics were used to analyze the data. The analysis revealed that 64 percent of the adolescents have poor dietary practices and 36 percent of the adolescent girls have moderate dietary practice. Statistical analysis was done by chi square test and yate's continuity correction to assess the association between the occurrence of anemia among adolescent girls with their selected demographic variables, which shows significant association at 0.05 level of significance. Study has implications on Clinical Nursing practices and nursing research. This study can be repeated with a larger sample in another setting with other teaching strategies.**

INTRODUCTION:

Adolescence has been defined by the World Health Organization as the period of life spanning the ages between 10 to 19 years. This is the formative period of life when the maximum amount of physical, psychological and behavioural changes take place. This is a vulnerable period in human life cycle for the development of nutritional anemia due to various reasons in a family with limited resources. In addition the female child is more likely to be neglected in male dominated society across the world. She is deprived of good food and education, but is utilized as an extra working hand to carry out household chores. The added burdens are normal or abnormal menstrual blood loss which precipitates the crisis too often.

**Globally,** anaemia affects 1.62 billion people (95% CI: 1.50–1.74 billion), which corresponds to 24.8% of the population (95% CI: 22.9–26.7%). The global anemia prevalence in 2010 was 32.9%, resulting in 68.4 million years lived with disability (YLD). The results emphasize the important contribution made by anemia to the overall global burden of disease and should help focus attention and resources toward this problem.

Several previous efforts have summarized the global prevalence and impact of anemia. In 1985, the World Health Organization (WHO) estimated that about 30% of the world population was anemic. In 1992, the WHO estimated that 37% of all women were anemic. A 2008 WHO analysis reported that anemia affected 24.8% of the world‟s population, including 42% of pregnant women, 30% of nonpregnant women, and 47% of preschool children. Most recently, global anemia prevalence was estimated at 29% in pregnant women, 38% in nonpregnant women, and 43% in children, with reductions since 1995 in each group.

METHODS:

**Setting of the study :**

- **Pilot study-** Chaudhurybari girls‟ H.S. school, Agartala, Tripura
- **Main study-** Bodhjung girls‟ H.S. school, Agartala, Tripura

**Criteria for selecting setting is as follows:**

- Availability of the study samples
- Feasibility of conducting the study
- Cooperation and administrative approval for conducting the study

**Research approach:** Quantitative research approach

**Research design:** Correlational survey research design

**Population:** School going adolescent girls
**Sample and sampling techniques:**

- **Sample size:** -100 for main study

  -10 for pilot study

**Time Frame to address the study:**

July 2018 to June 2019

**Sampling Criteria:**

Inclusion criteria:

1. Adolescent girls within the age group of 12-15 years.
2. Girls with apparently normal physical appearance.
3. Girls of class VI,VII.VIII,IX.
4. Adolescent girls who are willing to participate in the study.

Exclusion criteria:

1. Girls who are already taking iron or any other multivitamin supplements.
2. Girls who have other associated systemic disease conditions.

METHODOLOGY:

- **Establishment of content validity:**

Content validity of the total tool has been obtained by submitting the tool along with the content to 9 experts to obtain their opinion and suggestions. They recommended for modification in few items.
The English version of demographic questionnaire and checklist was prepared and language validity was established by retranslating it to Bengali with the help of language experts.

- **Reliability testing:**

- The reliability of the tool was measured by using Karl Pearson Correlation Coefficient.
- Reliability of the tool was 0.71 (r).

*Analysis and Interpretation:*
The result was computed using descriptive and inferential statistics based on the hypothesis and objectives of the study.
Analysis of data based on the objective of the study.
**Objectives of the study:**
1. To determine the occurrence of anaemia among adolescent girls
2. To identify the dietary practices of adolescent girls
3. To assess the correlation between anaemia with dietary practices among adolescent girls
4. To determine the association between occurrence of anaemia among adolescent girls with their selected demographic variables

The summary of the analysis was under the following sections:
Section I: Description of demographic variables with frequency percentage distribution .
Section II: Description of occurrence of anaemia among adolescent girls
Section III: Classification of respondents dietary practice
**Section I: Description of demographic variables with frequency percentage distribution**
This section describes the demographic variables of the adolescent girls based on the age, religion, educational qualification, monthly income, food habit, menarche, duration of menstrual period, history of menstrual bleeding, information about anemia, source of information regarding anemia.

| Sl. No | Variables | Categories | Frequency | Percentage |
|---|---|---|---|---|
| | Age | 12-13 years | 50 | 50 |
| | | 14-15 years | 50 | 50 |
| | Religion | Hindu | 89 | 89 |

| | | | |
|---|---|---|---|
| | Muslim | 4 | 4 |
| | Christian | 7 | 7 |
| Educational qualification | Class VI | 25 | 25 |
| | Class VII | 25 | 25 |
| | Class VIII | 25 | 25 |
| | Class XI | 25 | 25 |
| Monthly Income | 15000-20000 | 93 | 93 |
| | >20001 | 7 | 7 |
| Food Habit | Vegetarian | 0 | 0 |
| | Non Vegetarian | 100 | 100 |
| Menarche (among 100 students, 86 students have attained menarche) | 12-13 years | 49 | 57 |
| | 14-15 years | 37 | 43 |
| Menstrual cycle | | | |
| | 3-5 days | 69 | 80 |
| | 5-10 days | 12 | 14 |
| History of menstrual bleeding | >10 days | 5 | 6 |
| | Normal and regular | | |
| | Excessive and painful | 81 | 94 |
| Information regarding anemia | Yes | 5 | 6 |
| | No | 75 | 75 |
| Source of information | | 25 | 25 |
| | Family and friends | | |
| | Media | | |
| | Health worker | 25 | 33 |
| | | 15 | 20 |
| | | 35 | 47 |

**Section II: Description of occurrence of anemia among adolescent girls**

Total number of detected anemic adolescents- 47 nos

Total number of adolescents of geographic area of that school- 250 nos

The occurrence of anemia among adolescent girls= (47/250)X100

= 18.8

**Section III: Classification of dietary practice**

| Dietary Intake | Category | Respondents | |
|---|---|---|---|
| | | N | Percentage(%) |
| Inadequate | Below 15 mg/day | 64 | 64 |
| Moderate | 15-26 mg/day | 36 | 36 |
| Adequate | More than 26 mg/day | 0 | 00 |
| Total | | 100 | 100 |

**Section IV: Calculated chi square value, df, tabulated chi square value**

| Sl No | Demographic Variables | Calculated chi square value | Degree of freedom (df) | Tabulated Value |
|---|---|---|---|---|
| 1. | Age | 8.31* | 1 | 3.84 |
| 2. | Education | 5.31* | | |
| 3. | Duration of menstruation | 4.76* | | |
| 4. | Menarche | 4.68* | | |
| 5. | Information of anemia | 1.41 | | |
| 6. | Source of information | 0.38 | | |

In terms of demographic variables, at 0.05 level of significance, Age (8.31),Educational qualification(5.31), Duration of menstruation(4.76), Menarche(4.68) shows significant association with Occurrence of anemia. Information of Anemia(1.41) and the Source of information(0.38) does not show significant association with the occurrence of anemia with degree of freedom (df) 1.

**Calculated Yate's Correction value, df , tabulated value**

| Sl no. | Demographic Variables | Calculated chi square value | Degree of freedom (df) | Tabulated Value |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1. | Religion | 1.22 | 1 | 3.84 |
| 2. | Monthly Income | 0.016 | | |
| 3. | History of menstrual bleeding | 0.26 | | |

In terms of these demographic variables such as Religion (1.22), Monthly Income (0.016) and the History of Menstrual bleeding (0.26) does not show any significant association with the occurrence of anemia with degree of freedom (df=1),at 0.05 level of significance.

**Discussions:**

**Major findings of the study:**

**Section I: Findings related to the demographic variables of the adolescent girls.**

- In terms of age, 50 students (50%) belonged to the age group of 12-13 years and 50 students (50%) of them belongs to the age group of 13-14 years.
- In terms of religion, 89 students (89%) were Hindu, 4 students (4%) were Muslim, 7 students (7%) were Christian.
- Regarding educational qualification, 25 students (25%) belonged to class VI, 25 students (25%) belonged to class VII, 25 students (25%) belonged class VIII, and rest 25 students ( 25%) belonged to class IX.
- Regarding food habits, all the students that is 100 students(100%) are Non- vegetarian.
- In terms of menarchy, 86 students had attained their menarchy and among them 49 students(57%) had attained their menarchy on the age group of 12-13 years and 37 students( 43%) of them had attained their menarchy on the age group of 14-15years.
- In terms of duration of menstrual period, 12 students(14%) had their duration within 3-5 days, 62 students ( 80%) had their duration within 5-10 days, and 5 students(6%) had their duration >10 days.
- Regarding the menstrual bleeding, 81 students(96%) had normal and regular menstrual bleeding and 5 students(4%) students are had excessive and painful bleeding.
- Regarding the information about anemia, 75 students (75%) knew about anemia and 25 students (25%) did not have any idea about anemia.
- In terms of source of information, 25 students(25%) had their knowledge from family and friends, 15 students(15%) had their knowledge from the Media and 35 students(35%) had their knowledge from the Health Workers.

**Section II: Description of occurrence of Anemia among adolescent girls**

According to the operational definition, in this study occurrence refers to the total number of detected anemic adolescents divided by the total number of adolescents of the selected geographic area of that school X 100.

According to this study total number of detected anemic adolescents were 47. Total number of adolescents in geographic area of that school were 250 nos. So according to the operational definition of the study the occurrence of anemia among adolescent girls is- 18.8

**Section III: Classification of respondent's dietary practice.**

According to WHO, average recommendation of daily iron intake for the adolescent girls is 28 mg/day.

According to this study, 64 students (64%) had inadequate dietary practices that is below 15 mg/day. 36 students (36%) had moderate level of dietary practices. None of those students had adequate intake of iron that is more than 26 mg/day.**Section IV:**

**Description of calculated chi square value, df, tabulated chi square value.**

In terms of demographic variables, at 0.05 level of significance,Age (8.31),Educational qualification(5.31), Duration of menstruation(4.76), Menarche(4.68) shows significant association with Occurrence of anemia. Religion(1.22), Family monthly income(0.01), History of menstrual bleeding(0.26), Information of Anemia(1.41) and the Source of information(0.38), does not show significant association with the occurrence of anemia with degree of freedom (df) 1.

This study is supported by Tesfaye M.,Yemane T., Adisu W.1**.** conducted a cross-sectional among 408 school adolescents in Bonga Town, southwest Ethiopia, from March 15, 2014 to May 25, 2014. An interviewer-administered questionnaire was used to collect sociodemographic and other data. A total of 7 mL of venous blood were collected from each study participant. Blood samples were analyzed for hematological and parasitological analyses, respectively. Data were analyzed using SPSS Version 20 software for Windows.The overall prevalence of anemia was 15.2% (62/408), of which 83.9% comprised mild anemia. The proportion of microcytic, hypochromic anemia was 53% (33/62). This study showed that anemia was a mild public health problem in this population. School-based interventions on identified associated factors are important to reduce the burden of anemia among school adolescents.

This study is supported by Talpur A., Ahmed A., Zulfiqar A.2 Conducted a cross sectional study among total 150 adolescent girls .Seventy-five (75) girls were aged 17–19 years and 75 girls ranged 14–16 years. Haemoglobin was measured using Sahii"s method. RBC count was done using haemocytometer. Out of 75 girls (17–19 years), 60% were anaemic, out of these 55.55% had mild anaemia (<12 mg/dl), 22.22% had moderate anaemia (8–10 gm/dl), and an equal percentage (22.22%) of had severe anaemic (<8 gm/dl). In second category 75 females were included aged between 14–16 years. Prevalence of anaemia was the highest (93.33%) in this age group. Out of these, 57.14% were found to have mild anaemia, 14.28% had moderate anaemia and 28.57%

had severe anaemia. We also found an association of severe anaemia with decreased BMI; all of those suffering from severe anaemia had BMI (<17). However, it has been found the association of anaemia with dietary patterns; all these females were unaware about taking iron containing diet. This study is supported by Addisu W, Feyisso Shaka M. (2018) A school based cross-sectional study was conducted among 443 randomly selected school adolescents across 15 schools (2 secondary schools and 13 primary schools) in the district. Hemoglobin concentration from a capillary blood sample was determined by portable hemoglobin meter (HemoCue). Descriptive statistics were computed for prevalence of anemia, anthropometric measurements, socio-economic and socio-demographic variables. A hierarchical multivariable logistic regression analysis was done to identify determinants of anemia among adolescents. The prevalence of anemia among adolescents in the study area was 22%. The prevalence of anemia in this population is of moderate public health concern, adolescents of both sexes are among groups at risk for the development of anemia.

This study is supported by Haji K., Din M., Siddiqui A., Naveed K. (2012**)** A cross sectional study was conducted among the sample of 357 patients .A detailed clinical history including diet, socioeconomic status and bleeding were enquired, followed by general physical and systemic examination. The complete blood counts were performed on Sysmex KX 21 haematology analyzer. Serum ferritin and TIBC were performed by Kit method. Serum ferritin level of <18 □g/dl was taken as diagnostic of iron deficiency anaemia. The data was analysed on SPSS version 16.0 for Windows (Chicago, IL, USA), using appropriate statistical tests. Out of 357 subjects, 139 were male and 218 were female of age 38±14.12 years. Anaemia was noted in 69.74% (n=248). The haemoglobin and haematocrit levels as low as 2 g/dl and <20% were seen. A history of bleeding per rectum and menorrhagia were noted in 3.08% (n=11) and 5.88% (n=21) of male and female respectively. Malnourishment and insufficient dietary intakes were prevalent because of low income. Iron deficiency anaemia is prevalent in our rural population. Measures should be taken to overcome this problem

**CONCLUSION**:

According to the operational definition, in this study occurrence refers to the total number of detected anemic adolescents divided by the total number of adolescents of the selected geographic area of that school X 100. The total number of detected anemic adolescents were 47. Total number of adolescents in geographic area of that school were 250 nos. So according to the operational definition of the study the occurrence of anemia among adolescent girls is- 18.8. 64 students (64%) had inadequate dietary practices that is below 15 mg/day. 36 students (36%) had moderate level of dietary practices. None of those students had adequate intake of iron that is more than 26 mg/day.The study shows co-relation co-efficient value(r) 0.71 which shows good relationship of Anemia with Dietary practices.

**REFERENCES**:


7. The journal of anemia and the adolescents and the consequences faced by the family memners ( online) is available from the website https://www.ncbi.nlm.nih.gov.
8. Cross sectional study by Talpur and Ahmmed on anemia among adolescent girls (online) is available from https://www.ncbi.nlm.nih.gov
9. The adolescent women their less haemoglobin level with below iron intake (online) is available from https://www.redalyc.org/
10. The journal on the world wide prevalence of anemia by Dr. K.K. Thakral, Sagar Khand et al is available from https://www.orgresearch.anemia/pdf/1350/00006784.pdf
11. Hazi K. Din , et al research article on anemia among unmarried women (Online) available from http://www.researchgate/anemia3/aabroo/articles/gov.in
12. Samudre Majusha , Prashanth K. S. Willimas journal on amemia And the causes ( online ) available from http://axisjournals.com/index.php/ijmsrp/article/view/109
13. Synopsis Study on anmeia and iron deficiency among adolescent children in rural areas and urban area (online) available from http://www.viewresearch/adolescentanemia/altafahmmed/synopsis/gov.in
14. India and anemia, problems in india (online) Available from http://www.bloodjournal.org/
15. Management of anemia among the adolsent school going girls in Jaipur, Rajasthan (online) is available from https://www.hospitalmanagement.net/comment/anemia-prevalence-nears-40-india/
16. Meenal Vinay Kulkarni, P M Durge , N B Kasturwar , Salve Institute of Medical sciences research study on anemia and adolescent girls (online) available from https://innovareacademics.in/journal/ijpps/Vol3Issue1/863.pdf
17. Suzan mohammed omar mousa , iron deficiency anemia in adolescents( onliine) is available from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2763695
18. Iron deficiency anemia amon the adolescent children among hospitals (online) is available from https://www.hindawi.com/journals/anemia/2019/1097547/
19. Mittal M. Bhanushali , Abhay Shirode iron deficiency anemia among adolecnt girls and their consequences (online) is available from http://www.searo.who.int/entity/child_adolescent
20. Kumar Rajesh. Nursing Research & Statistics. New Delhi; Jaypee Brothers Medical Publishers (P) Ltd, 2016; P. 77-90
21. Sharma K Suresh. Nursing Research & Statistics. India; Elsevier, 2013; P. 146-161, 288-296
22. Anemia and iron deficiency anemia among school adolescents burden severity a peer review (online) is available from https://www.dovepress.com/anemia-and-iron-deficiency-among-school-adolescents-burden-severity-an-peer-reviewed-fulltext-article-AHMT

23. K P baral and S R Onta research review on adolescent anmeia (online) is available from https://www.ijpediatrics.com/index.php/ijcp/article/viewFile/857/712
24. YAsmin B, et al population study on pediatric OPD , a research on iron deficiency anmeia among adolescent girls is available from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3448219/
25. Siti patimmah, Ira Roydani an article on the attitude of adolescent girls and the correlation among the dietary practices is available from http://www.alliedacademies.org/articles/knowledge-attitude-and-practice-of-balanced-diet-and-correlation-with-hypochromic-microcytic-anemia-among-adolescent-school-girls-in-maros-district-so.html
26. Maltaf Tagori, et al ; an article among the adolsecnt girl and the lack of balanced diet is available from http://www.ncbi.nim.nnh.gov/researchgate-adolescent-anemia-balanced-diet-school-girls/html
27. Rabeena Mahmood, ruksana Khan a research on balanced diet and the correlation with the hychromic microcytic anemia http://pjp.pps.org.pk/index.php/PJP/article/view/166
28. Casteo De, Nadya C. Iron deficiency anemia in adolescent anemia =a literature review https://www.researchgate.net/publication/264634811_Iron_deficiency_anemia_in_adolescents_a_literature_review
29. JP NAdda and literature review on iron deficiency anemia among adolescent girls in ruralmareas http://njcmindia.org/uploads/3-1_108-111.pdf
30. Strong dietary practices and the deficient iron intake among adolscent girls in aurban area is available from http://www.journalrepository.org/media/journals/IBRR_28/2016/May/Mousa542016IBRR25826.pdf
31. Kumar Rajesh. Nursing Research & Statistics. New Delhi; Jaypee Brothers Medical Publishers (P) Ltd, 2016; P. 77-90
32. Williams & Wilkins Lippincott. Fundamentals Of Nursing. The Art and Science Of Nursing Care. Vol-1. New Delhi; Wolters Kluwer India Pvt. Ltd, 2010; P-520
33. Swaminathan M. Advanced Textbook on Food and Nutrition. 2nd ed. Vol 2. Bangalore; The Bangalore Printing and Publishing Co. Ltd; 1985; P. 300.