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ASSESSMENT OF ANAEMIC STATUS AND KNOWLEDGE REGARDING ANAEMIA AND ITS PREVENTION AMONG ADOLESCENT GIRLS IN SELECTED SCHOOLS OF WEST BENGAL

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ABSTRACT

Anaemia is a prevalent public health problem among adolescent girls in West Bengal, mainly caused by poor dietary habits, menstrual issues, and lack of awareness regarding prevention. A quantitative non-experimental descriptive study was conducted among 150 adolescent girls selected through purposive sampling from two schools in Darjeeling district between January 2024 and July 2025. Data were collected using demographic questionnaires, structured knowledge assessments, and haemoglobin estimation. Results revealed a high prevalence of anaemia among the participants, with 52% having mild anaemia and 43% moderate anaemia, while only 5% had normal haemoglobin levels (mean Hb = 10.09 ± 1.27 g/dL). Knowledge assessment (mean = 11.9 ± 2.87) indicated that most participants had average or inadequate knowledge regarding anaemia and its prevention. Knowledge was not significantly correlated with haemoglobin levels, but showed significant association with education, menstrual disorders, and parental education. The study emphasizes the need for improved health education and nutritional interventions in schools.

Key Words: *Knowledge, Anaemic status, Adolescent girls, Prevention of anaemia, Iron–folic acid supplementation.*

INTRODUCTION

Anaemia is a major global nutritional problem, particularly in developing countries where poverty and limited healthcare services increase its prevalence. Adolescents are highly vulnerable due to rapid growth, increased physical activity, menstrual blood loss, and inadequate dietary intake, which adversely affect their physical, cognitive, and emotional health.[1] In India, anaemia among women remains a serious public health concern from adolescence onward, with the National Family Health Survey (NFHS-5) reporting a prevalence of 57% among women aged 15–49 years.[2] West Bengal, being a densely populated state, also reflects this burden. Adequate knowledge regarding anaemia and its prevention is essential for early detection and management; however, many adolescents lack proper awareness about its causes, effects, and preventive measures. This study aims to assess the prevalence of anaemia and knowledge regarding its prevention among adolescent girls in selected schools of West Bengal to support targeted educational and preventive interventions.

BACKGROUND OF THE STUDY

Adolescence, derived from the Latin word *Adolescere* meaning "to grow or mature," is the transitional period from childhood to adulthood beginning with puberty. In India, adolescents constituted nearly 250.8 million of the population in 2023.[3]

Anaemia is a condition characterized by reduced functional red blood cells and haemoglobin levels below 12 g/dL, leading to inadequate oxygen supply to body tissues. Iron is essential for haemoglobin formation, with 60–70% of body iron circulating in blood and the remainder stored in tissues.

In developing countries, anaemia is aggravated by malaria, worm infestations, and poor nutrition. Globally, over 30% of the population suffers from anaemia, mainly due to iron deficiency. Adolescent girls require increased iron intake, with ICMR recommending 28 mg/day for 13–15 years and 30 mg/day for 16–18 years.[4]

This study aims to assess anaemia prevalence and knowledge regarding its prevention among adolescent girls. To combat nutritional anaemia, the Government of India launched *Anaemia Mukt Bharat* in 2018. NFHS-5 (2019–21) reported anaemia prevalence of 25% among men, 57% among women, 31.1% among adolescent boys, and 59.1% among adolescent girls.[2]

Despite its high prevalence, awareness regarding anaemia and its prevention remains inadequate among adolescent girls. A 2022 study conducted in Jhansi, Uttar Pradesh, found that among 100 adolescent girls, 12% had inadequate knowledge, 85% had moderate knowledge, and only 3% had adequate knowledge regarding anaemia prevention.[4] This highlights the need to assess anaemia status and related knowledge among adolescent girls in West Bengal schools.

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OBJECTIVES

1. To assess the anaemic status among adolescent girls.
2. To assess the knowledge regarding anaemia and its prevention among adolescent girls.
3. To determine relationship between knowledge regarding anaemia and its prevention and anaemic status (haemoglobin level) among adolescent girls.
4. To find out association between anaemic status (haemoglobin level) with selected demographic variables among adolescent girls.
5. To find out association between knowledge regarding anaemia and its prevention with selected demographic variables among adolescent girls.

RESEARCH METHODOLOGY

Research Approach: Quantitative Research Approach is considered as suitable in order to achieve the objectives of the study.

Research Design: A Non Experimental Descriptive Survey design was adopted for this study.

Population and Sample: The study population included adolescent girls from West Bengal, with a sample of 150 participants selected from Siliguri Girls' High School and Atharakhai Balika Vidyalaya in Darjeeling district.

Data Collection Tools & Techniques:

Tool-I :

Section A- Structured Demographic Questionnaire.

Section B- Use of Quick Check Plus Haemoglobinometer.

Tool-II : Structured Knowledge Questionnaire.

Technique : Pen and paper method and In-vitro bio physical method.

RESULT

Table-1 : Frequency & percentage distribution of selected demographic variables among adolescent girls of selected schools. **n = 150**

Demographic Information	Category	Frequency	Percentage
Age in year	13-15	123	82%
	>15-18	27	18%
Residence	Municipality	95	63%
	Panchayat	55	37%
Education	VIII-IX	108	72%
	X-XI	42	28%
Total Family Income	≤10702/-	46	31%
	10703-31977/-	87	58%
	31978-53360/-	13	8%
	53361-80109/-	03	2%
	≥80110/-	01	1%
Religion	Hindu	147	98%
	Muslim	03	2%
Age of Menarche	Not Started Yet	05	3%
	9-11 Years	59	40%
	12-14 Years	83	55%
	≥15 Years	03	2%
Menstrual Disorder	Present	61	41%
	Absent	84	56%
	Not Started yet	05	3%

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Demographic Information	Category	Frequency	Percentage
Education of Mother	No Formal Education	06	4%
	Up to Primary	07	5%
	Above Primary to Secondary	79	53%
	Higher Secondary	32	22%
	Graduation	18	12%
	Post Graduation	06	4%
Education of Father	No Formal Education	02	1%
	Up to Primary	05	4%
	Above Primary to Secondary	63	43%
	Higher Secondary	44	30%
	Graduation	25	17%
	Post Graduation	07	5%
Occupation of Mother	Housewife	118	80%
	Business	09	6%
	Service	17	10%
	Self Employed	02	2%
	Daily Wages	02	2%
Occupation of Father	Unemployed	01	1%
	Business	58	40%
	Service	22	15%
	Self Employed	33	22%
	Daily Wages	32	22%
No of Siblings	Nil	41	27%
	≤2	102	68%
	>2	07	5%
Dietary Habit	Non-Veg	142	95%
	Veg	08	5%
Type of Family	Nuclear	114	76%
	Joint	36	24%
Beneficiary of Weekly Iron Folic Acid Supplementation	Yes	60	40%
	No	90	60%
Any Blood Disorder in family	Yes	02	1%
	No	148	99%

NB: For data regarding Parents, n (Father) = 146 and n (mother) = 148, as Fathers of 4 respondents and mothers of 2 respondents have been demised.

Data presented in Table 1 depicts that most participants (82%) were aged 13–15 years, while 18% were in the >15–18 years age group. The majority lived in municipalities (63%), and 37% were from panchayat areas. Most participants studied in classes VIII–IX (72%), with 28% in classes X–XI. Over half of the families (58%) had a monthly income of ₹10,703–31,977, whereas 31% earned ≤₹10,702. Nearly all participants were Hindu (98%).

Regarding menstrual history, 55% attained menarche at 12–14 years, 40% at 9–11 years, and 3% had not yet started menstruation. Menstrual disorders were absent in 56% of participants, present in 41%, and 3% had not attained menarche.

Parental education was mostly above primary to secondary level among mothers (53%) and fathers (43%). Most mothers were housewives (80%), while fathers were mainly engaged in business (40%). Most participants had ≤2 siblings (68%), consumed a non-vegetarian diet (95%), and belonged to nuclear families (76%). Only 40%

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received weekly iron and folic acid supplementation, and almost all participants (99%) reported no family history of blood disorders.

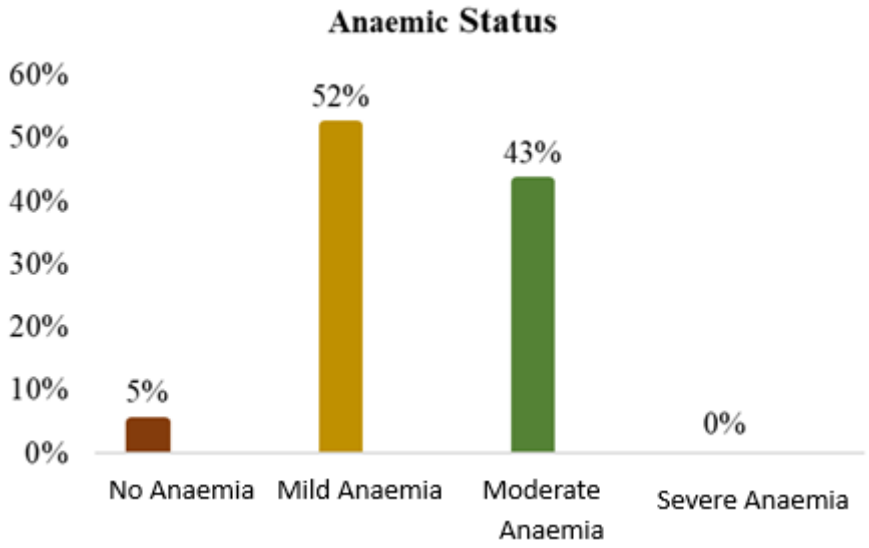

Figure-1: Bar diagram showing percentage distributions of anaemic status (haemoglobin level) of adolescent girls of selected schools. n= 150

The data presented in figure 1 reveals that majority of respondents had mild anaemia (52%; haemoglobin 10–11.9 gm/dL), followed by moderate anaemia (43%; haemoglobin 7–9.9 gm/dL). Only 5% had normal haemoglobin levels (≥12 gm/dL), and none had severe anaemia (<7 gm/dL).

Mean obtained score regarding Anaemic status (haemoglobin level) of adolescent girls was 10.09 (±1.27), and Median score was 10.15. Range of obtained score was 7-13.8.

Table 2: Frequency and percentage distribution of knowledge score regarding anaemia & its prevention among adolescent girls of selected schools n=150

Level of knowledge score	Score	Frequency(f)	Percentage (%)
Adequate	>75%	3	2 %
Average	>50-75%	77	51 %
Inadequate	up to 50%	70	47%

The data presented in table 2 reveals that majority 51% adolescent girls are having average knowledge, 47% adolescent girls are having inadequate knowledge, and 2% adolescent girls are having adequate knowledge regarding anaemia & its prevention.

The Mean obtained score of knowledge regarding anaemia & its prevention among adolescent girls was 11.9 (±2.87), and the Median score was 12. Range of obtained score was 4-19, and Range of minimum to maximum possible score was 0-23.

Table 3 : Correlation between knowledge regarding anaemia and its prevention and anaemic status (haemoglobin level) among adolescent girls of selected schools. n=150

Variable	Mean	r value	Calculated t value
Knowledge regarding anaemia and its prevention	11.9	0.022	.267
Anaemic status	10.09		

t value df(148)=1.96, p<0.05

Table 3 shows that the correlation between knowledge regarding anaemia and its prevention and anaemic status among adolescent girls was r = 0.022, indicating a negligible and very weak positive linear relationship. The calculated t value (0.267) was lower than the tabulated value (1.96) at df = 148 and 0.05 significance level, showing that the correlation was not statistically significant.

Therefore, no significant relationship was found between knowledge regarding anaemia and its prevention and anaemic status among adolescent girls.

Table 4 : Association between anaemic status (haemoglobin level) with selected demographic variables among adolescent girls of selected schools n=150

Demographic Information	Chi Square Value(χ^2)	Result
Age in year	0.0105	No Significant association
Residence	2.99	No Significant association
Education	0	No Significant association
Total Family Income	0	No Significant association
Age of Menarche	.035	No Significant association
Menstrual Disorder	1.352	No Significant association
Education of Mother	1.838 (n=148)	No Significant association
Education of Father	0.253 (n=146)	No Significant association
Occupation of Mother	0.167 (n=148)	No Significant association
Occupation of Father	2.288 (n=146)	No Significant association
No of Siblings	2.398 (Yates' Correction)	No Significant association
Dietary Habit	.676 (Yates' Correction)	No Significant association
Type of Family	1.059	No Significant association
Beneficiary of Weekly Iron Folic Acid Supplementation	3.029	No Significant association
Any Blood Disorder in family	0.178 (Yates' Correction)	No Significant association

The data presented in table 4 shows that, the computed chi-square (χ^2) values were lower than the tabulated value at $p<0.05$, indicating no significant association between anaemic status (haemoglobin level) and selected demographic variables such as age, residence, education, family income, age at menarche, menstrual disorder, parents' education and occupation, number of siblings, dietary habits, type of family, weekly iron–folic acid supplementation status, and family history of blood disorders among adolescent girls. Therefore, the null hypothesis was accepted and the research hypothesis was rejected.

Table 5 : Association between knowledge regarding anaemia and its prevention with selected demographic variables among adolescent girls of selected schools. n=150

Demographic Information	Chi Square Value(χ^2)	Result
Age in year	2.096	No Significant association
Residence	**7.085***	Significant association
Education	**3.87***	Significant association
Total Family Income	0.808	No Significant association
Age of Menarche	0.161 (Yates' Correction)	No Significant association
Menstrual Disorder	**6.189***	Significant association
Education of Mother	**6.911**** (n=148)	Significant association
Education of Father	**5.25*** (n=146)	Significant association
Occupation of Mother	1.498 (n=148)	No Significant association
Occupation of Father	0.362 (n=146)	No Significant association
No of Siblings	0.916 (Yates' Correction)	No Significant association
Dietary Habit	0.038 (Yates' Correction)	No Significant association
Type of Family	1.502	No Significant association
Beneficiary of Weekly Iron Folic Acid Supplementation	0	No Significant association
Any Blood Disorder in family	0.219 (Yates' Correction)	No Significant association

The data presented in table 5 show that, the computed chi-square (χ^2) values found more than tabulated value, revealed a statistically significant association between knowledge scores with residence and education of

mother at p<0.01 *[df(1)=6.63]*, and menstrual disorder at p<0.02 *[df(1)=5.41]*. Education and education of father showed a significant association at p<0.05 *[df(1)=3.84]*.

However, no significant association was found between knowledge regarding anaemia and its prevention with other demographic variables such as age, total family income, age of menarche, occupation of mother and father, number of siblings, dietary habit, type of family, beneficiary status of weekly iron folic acid supplementation, and family history of blood disorder among adolescent girls at p<0.05 *[df(1)=3.84]* level of significance.

Thus, the null hypothesis (H_o) was rejected and research hypothesis (H_1) was accepted for demographic variables showing significant association, whereas the null hypothesis (H_o) was accepted for variables showing no significant association.

DISCUSSION

The findings of the study revealed that anaemia was highly prevalent among adolescent girls, with most participants having mild to moderate anaemia and inadequate to average knowledge regarding anaemia and its prevention. The study further showed that there was no statistically significant relationship between knowledge regarding anaemia and haemoglobin level. No significant association was found between anaemic status and selected demographic variables. However, knowledge regarding anaemia and its prevention showed significant association with residence, educational status, menstrual disorder, and parental education. These findings highlight the importance of strengthening health education and awareness programs for adolescent girls to improve preventive practices related to anaemia.

RECOMMENDATIONS

- Future studies should include serum ferritin and vitamin B12 assessments along with haemoglobin estimation to better identify nutritional deficiencies associated with anaemia.
- Anthropometric measurements such as BMI, height, and weight should be incorporated to assess nutritional status and its relationship with anaemia.
- Comparative studies between adolescent boys and girls are recommended to understand gender differences in anaemia prevalence and causes.
- Further research is needed to explore factors contributing to anaemia among adolescents.

CONCLUSION

This study emphasizes the need for targeted interventions to reduce anaemia among adolescent girls, with nurses playing a key role. It supports the implementation of school health programs and nutritional policies in nursing administration, highlights the inclusion of adolescent health and preventive care in nursing education, and encourages further research on culturally appropriate and sustainable interventions. These measures can help reduce anaemia prevalence and improve adolescent health outcomes.

REFERENCES

1. Chandrakumari, A. S., & Sinha, P. (2019). Prevalence of anaemia among adolescent girls in a rural area of Tamil Nadu, India. *Journal of Clinical and Diagnostic Research, 13*(4), LC04–LC06. https://doi.org/10.7860/JCDR/2019/40866.12819
2. Ministry of Health and Family Welfare. (2022). *Anaemia Mukt Bharat*. Government of India. Retrieved July 4, 2025, from https://pib.gov.in/PressReleasePage.aspx?PRID=1795421
3. Santhya, K. G. (2023). *How far have we come in promoting sexual and reproductive health and rights of adolescents?* The India Forum. Retrieved July 4, 2025, from https://www.theindiaforum.in
4. UNICEF Ghana. (2017). *Iron & folic acid (IFA) supplementation for adolescent girls and women*. Retrieved July 4, 2025, from https://www.unicef.org/ghana
5. National Health Mission. (2024). *Weekly Iron Folic Acid Supplementation (WIFS)*. Ministry of Health and Family Welfare, Government of India. Retrieved July 4, 2025, from https://nhm.gov.in
6. Kori, P., Mandloi, S., Vamne, A., & Mandloi, S. (2024). Assessment of status of anaemia among school-going adolescents in Bhopal, Madhya Pradesh. *Journal of Cardiovascular Disease Research, 15*(1), e-pub before print.
7. Ragini, D. E., Waghray, K., Sriswan, R., et al. (2023). Evaluation of prevalence and knowledge about anaemia and their determinants among adolescent girls. *International Journal of Health Sciences and Research, 13*(2), 138–148. https://doi.org/10.52403/ijhsr.20230220

8. Rodrigues, J. P. S., & Nair, U. R. (2023). A descriptive study to assess the knowledge and prevalence of nutritional anaemia among adolescent girls aged 14–18 years in a selected educational institution at Mangalore. *International Journal of Nursing Research, 8*(1), 32–36. https://doi.org/10.31690/ijnr.2022.v08i01.007
9. Sharif, N., Das, B., & Alam, A. (2023). Prevalence of anaemia among reproductive women in different social groups in India: A cross-sectional study using nationally representative data. *PLOS ONE, 18*(2), e0281015. https://doi.org/10.1371/journal.pone.0281015
10. Verma, K., & Baniya, G. C. (2022). Prevalence, knowledge, and related factors of anaemia among school-going adolescent girls in a remote area of western Rajasthan. *Journal of Family Medicine and Primary Care, 11*(4), 1474–1481. https://doi.org/10.4103/jfmpc.jfmpc_2059_21

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