iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** VII **Month of publication:** July 2026

DOI: https://doi.org/10.22214/ijraset.2026.84159

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue VII July 2026- Available at www.ijraset.com

Awareness of Anaemia among Female Adolescent Students in Selected Institutes, Aizawl, Mizoram

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Abstract: ***Background: Anaemia remains a significant public health problem among adolescent girls. Adequate awareness regarding causes, symptoms, prevention, and management of anaemia is essential for adopting healthy behaviour and reducing the burden of the disease. Objectives: To assess the awareness of anaemia among female adolescent students and to determine its association with selected sociodemographic variables.***
Methods: A quantitative non-experimental descriptive study was conducted among 120 female adolescent students selected through non-probability purposive sampling. Data were collected using a self-structured awareness questionnaire consisting of 20 items. Awareness levels were classified according to Bloom's cut-off criteria. Statistical analysis included frequency, percentage, and Chi-square test. Results: Among the participants, 53 (44.2%) demonstrated moderate awareness, 46 (38.3%) had high awareness, and 21 (17.5%) had low awareness. Significant associations were found between awareness level and age (χ^2=24.63, p<0.01), class (χ^2=47.98, p<0.01), type of school (χ^2=14.79, p<0.01), and family income (χ^2=9.67, p=0.045). No significant association was observed between awareness level and food preference (χ^2=0.184, p=0.937). Conclusion: Most participants demonstrated moderate to high awareness regarding anaemia. However, awareness levels varied according to age, educational status, type of school, and family income, highlighting the need for targeted health education interventions.
Keywords: Anaemia, Awareness, Adolescent Girls, Sociodemographic Variables.

I. INTRODUCTION

Anaemia is a significant public health problem among adolescent girls and is commonly caused by iron deficiency. Lack of awareness regarding the causes, symptoms, prevention, and treatment of anaemia contributes to its high prevalence. Adequate knowledge helps adolescents adopt healthy dietary practices, seek timely treatment, and prevent complications associated with anaemia. Several studies have highlighted the importance of awareness in reducing the burden of anaemia. Neha Rathi (2024) reported that although many adolescent girls had heard about anaemia, gaps in knowledge regarding its prevention and management still existed. Similarly, Kaur et al. (2023) found that awareness levels were associated with educational status and access to health information. Bronwen Gillespie (2023) also emphasized that improving awareness through health education can promote positive health behaviours and reduce the risk of anaemia among adolescents. Therefore, assessing the awareness of anaemia among female adolescent students is essential for identifying knowledge gaps and planning effective educational interventions to improve their health and well-being.

II. OBJECTIVES

1) To evaluate the awareness of anemia among female adolescence students.
2) To determine the association between the awareness of anemia among female adolescence with their social demographic variables.

III. REVIEW OF LITERATURE

A. Review of Literature Related to Awareness of Anemia

Bayen et al. (2026) conducted a cross-sectional study on anemia-related knowledge and practices among 464 mid-adolescents in government schools of Nadia district, West Bengal. The mean knowledge score was low (3.61 ± 2.04), with only 55.6% demonstrating good knowledge; adherence to weekly iron-folic acid supplementation was 42.5% and deworming was only 11%. Good practices were reported by 72.8%, but significant gaps remained. The study concluded that maternal education and student knowledge strongly influence practices, recommending strengthened school-based nutrition education to address these deficiencies.

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IV. RESEARCH METHODOLOGY

1) *Research approach:* A quantitative non-experimental research approach is adopted in the present study which aimed to assess the awareness of anemia among female adolescence as this approach was suitable for the study to collect accurate data.
2) *Research design:* In present study, the research design adopted was a descriptive research design since the major objectives of the study was to assess the awareness of anemia among female adolescence school students and its association with selected socio-demographic variables.
3) *The research variables:* In present study include the level of awareness regarding anemia.
4) *The Demographic variables:* In present study include selected socio-demographic factors such as age, class or grade of study, type of school, food preference and family income which may influence the awareness of anemia.

A. Setting of the Study

Present study, was conducted in following Institutes:

1) Government Schools

a. Govt. Zemabawk Higher Secondary School Aizawl Mizoram

Govt. Zemabawk Higher Secondary School was established around the year 2000 by the Government of Mizoram to provide higher secondary education. It is located in Zemabawk, on the eastern side of Aizawl in North-East India. The school offers Classes XI and XII and has a student strength of approximately 300–370 students.

b. Govt. Zemabawk, High School Aizawl Mizoram

Govt. High School Zemabawk was established in 1968 by the Government of Mizoram to provide secondary education. It is located in Zemabawk, on the eastern side of Aizawl in North-East India. The school offers Classes VI to X and has an approximate student strength of around 400–500 students.

2) Private School

a). Eben-Ezer Boarding School Zemabawk, Aizawl Mizoram.

Eben-Ezer Boarding School is a private co-educational school established in 1991. It is located in Zemabawk, on the eastern side of Aizawl in North-East India. The school offers Classes III to X and has a student strength of around 80 students, providing education in English medium.

B. Population

In the present study the population consists of 120 adolescence female school students age between 10-19 years.

C. Target Population

In this study, the target population includes the female adolescence, Aizawl Mizoram.

D. Accessible Population

In this study accessible populations are the female adolescence students in selected institutes Aizawl, Mizoram.

E. Sample and Sample Size

In the present study, the sample consists of female adolescence in selected institutes, Aizawl Mizoram.

In the present study, the sample size was 120. The sample size was calculated using Raosoft sample size calculator with 7% margin of error, 95% confidence level and response distribution of 50%.

F. Sampling Criteria

Sampling criteria is that which specifies the characteristics that the sample in the population must possess.
The following criteria were used in the present study to select samples.

Inclusion criteria

- Female adolescence age group between 10-19 years of age who are able to read and write English and Mizo Language.
- Female adolescence who are willing to participate.

Exclusion criteria

- That female adolescence who is not available during sample collection.

G. Description of the Tools

The tools used for the study consists of the following:
Tool I: Self-structured questionnaire to obtain the demographic variables of study participants. It consists of socio-demographic variables, they are- age, class/grade, type of school, food preference and family monthly income.
Tool III: Self-structured checklist to assess the awareness of anemia.
It consists of 20 checklist question related to definition, causes and risk factor, symptoms, prevention and gaps in knowledge regarding anemia.
Each correct answer was awarded 1 mark, and each incorrect answer received 0, giving a total possible score of 20.
The level of awareness was classified using Bloom's cut-off criteria, as follows:

- High awareness: >80% of the total score (16-20)
- Moderate awareness: 60% -79% of the total score (12-15)
- Low awareness: < 60% of the total score (< 11)

H. Content Validity of the tool

To establish the content validity of the tool, consultation was made with the co- guide, guide, and a self-structure questionnaire was submitted to seven subject experts for critical review. Among them, five experts were from Obstetrics and Gynecology department including Nursing Department, one expert each from General Medicine and Pediatric Department.
The final tool was created by altering, eliminating, and rearranging items based on the experts' views and recommendations.

I. Reliability of the Tool

The internal consistency of the awareness questionnaire was assessed using Cronbach's Alpha. The tool demonstrated good internal consistency, with a Cronbach's alpha coefficient of 0.801 for the overall questionnaire. The standardized Cronbach's alpha was 0.793, indicating a consistent level of reliability across the 12 items included in the scale.

J. Ethical Consideration

Permission was obtained from:

1) Institutional Ethics Committee (IEC), RIPANS
2) Permission obtained from school Principals and Headmaster.
3) The nature of the study and purpose was explained to the selected participants.
4) Informed consent was obtained from the parents/guardian, participants.
5) Privacy and confidentiality of the study participants was maintained.

K. Pilot study

The pilot study was conducted at PM Shri Kendriya Vidyalaya, Zemabawk, Aizawl, Mizoram, on 2 April 2026. After a brief explanation of the study and obtaining informed consent from the participants, data were collected from 12 female adolescent students aged 10–19 years selected using a non-probability purposive sampling technique. The pilot study was undertaken to assess the feasibility, clarity, and reliability of the research instruments and data collection procedure. The findings confirmed the feasibility of the study, and the awareness checklist demonstrated good reliability with a Cronbach's alpha value of 0.801.

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ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue VII July 2026- Available at www.ijraset.com

L. Main Study

The data was collected starting from 7th April 2026 to 20th April 2026. from 120 subject using non-probability purposive sampling technique.

V. RESULTS

Table 1
Frequency and percentage distribution of sociodemographic variables among the female adolescence (n=120)

Variable	Frequency (n)	Percentage (%)
Age		
10–12 years	10	8.3
	47	39.2
13–15 years	63	52.5
16–19 years		
Class		
VI–VIII	24	20.0
IX-X	48	40.0
	48	40.0
XI-XII		
Type of school		
Private	41	34.2
Government	7	65.8
Food preference		
Vegetarian	14	11.7
	106	88.3
Non-vegetarian		
Monthly income of		
family (in INR)	23	19.2
<10,000	18	15.0
10,000–30,000	79	65.8
>30,000		

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Table 3
Frequency and percentage distribution of awareness regarding anaemia among female adolescence (n=120)

S.no	Description	Yes		No	
		n	%	n	%
1	Anaemia is a condition characterized by a decrease in hemoglobin level in the blood.	90	75.0	30	25.0
2	A hemoglobin level below 12 g/dl in females indicates anaemia.	106	88.3	14	11.7
3	Anaemia is common among adolescence female.	109	90.8	11	9.2
4	Anaemia does not only occur in older age groups.	101	84.2	19	15.8
5	Anaemia can be prevented.	97	80.8	23	19.2
6	Inadequate consumptions of iron-rich foods may result in anaemia.	94	78.3	26	21.7
7	Heavy menstrual bleeding increases the risk of developing anaemia.	92	76.7	28	23.3
8	Parasitic infections such as worm infestation can contribute to anaemia.	87	72.5	33	27.5
9	Repeated pregnancies without adequate spacing may lead to anaemia.	77	64.2	43	35.8
10	Poor dietary habits during adolescence can increase anaemia risk.	90	75.0	30	25.0
11	Lack of awareness in society contribute to anaemia.	89	74.2	31	25.8
12	Shortness of breath during mild activity can be associated with anaemia.	89	74.2	31	25.8
13	Frequent headaches and dizziness may occur in anaemia.	83	69.2	37	30.8
14	Iron supplements are not only useful during pregnancy.	80	66.7	40	33.3
15	Iron supplements used to prevent anaemia.	90	75.0	30	25.0
16	Regular health checkup is important for early detection of anaemia.	92	76.7	28	23.3
17	The government nutrition programs can reduce anaemia in society.	84	70.0	36	30.0
18	Iron supplement is necessary for adolescence.	82	68.3	38	31.7
19	Medical attention is not necessary for excessive menstrual bleeding	51	42.5	69	57.5
20	Anaemia is a minor problem that needs no attention.	50	41.7	70	58.3

Table 4
Frequency and percentage distribution of awareness level of anaemia among female adolescence (n=120)

Classification of awareness*	Frequency (n)	Percentage %
Low awareness	21	17.5
Moderate awareness	53	44.2
High awareness	46	38.3

**Awareness levels were classified based on Bloom's Cut-off Criteria as follows: low awareness < 60% (<11), moderate awareness 60% -79% (12–15), and high awareness >80% (16–20).*

Table 7
Association between sociodemographic variables and awareness level of anaemia among female adolescence (n=120)

Demographic Variable	High awareness n (%)	Moderate awareness n (%)	Low awareness n (%)	Pearson χ^2(p-value)	df
Age					
10-12 years (n=10)	1(10.0)	7(70.0)	2(20.0)	24.63	4
13-15 years (n=47)	8(17.0)	26(55.3)	13(27.7)	(<0.01)**	
16-19 years (n=63)	37(58.7)	20(31.7)	6(9.5)		
Class					

VI-VIII (n= 24)	2(8.3)	17(70.8)	5(20.8)	47.98	4
IX-X (n= 48)	8(16.7)	26(54.2)	14(29.2)	(<0.01)**	
XI-XII (n= 48)	36(75.0)	10(20.8)	2(4.2)		
Type of school					
Government(n=79)	40(50.6)	28(35.4)	11(13.9)	14.79	2
Private (n=41)	6(14.6)	25(61.0)	10(24.4)	(<0.01)**	
Food preference					
Non-vegetarian (n=106)	40(37.7)	47(44.3)	9(17.9)	0.184	2
Vegetarian(n=14)	6(42.9)	6(42.9)	2(14.3)	(0.937)	
Monthly income of family (in INR)					
<10,000 (n=23)	6(26.1)	9(39.1)	9(39.1)	9.67	4
10,000 to 30,000 (n=79)	33(41.8)	33(41.8)	33(41.8)	(0.045)**	
>30,000 (n=18)					
	7(38.9)	11(61.1)	0(0.0)		

Table 4.3, shows the frequency and percentage distribution of awareness of anaemia among participants. Most participants showed good basic knowledge, with 75.0% correctly identifying anaemia as decreased hemoglobin. A majority (88.3%) knew that Hb <12 g/dl indicates anaemia, 90.8% recognized its common occurrence among adolescent females, and 84.2% understood that it is not limited to older age groups.

Major Findings

The study found that 57.5% of female adolescent students were anaemic, with mild (30.0%) and moderate (27.5%) anaemia being the most common forms. Most participants demonstrated moderate (44.2%) to high (38.3%) awareness regarding anaemia. A significant association was observed between awareness level and age, class, type of school, and family income ($p < 0.05$), whereas no significant association was found with food preference ($p = 0.937$). Despite satisfactory awareness levels, the high prevalence of anaemia highlights the need for strengthened preventive and educational interventions among adolescent girls.

Major Findings

The study found that most female adolescent students had satisfactory awareness regarding anaemia. Among the participants, 44.2% demonstrated moderate awareness, 38.3% had high awareness, and 17.5% had low awareness. The majority correctly identified anaemia as a decrease in haemoglobin levels and were aware of its common occurrence among adolescent girls. A significant association was observed between awareness level and selected socio-demographic variables such as age, class, type of school, and family income ($p < 0.05$). However, no significant association was found between awareness level and food preference ($p = 0.937$).

VI. DISCUSSION

The findings of the present study revealed that among 120 female adolescent students, 53 (44.2%) had moderate awareness, 46 (38.3%) had high awareness, and 21 (17.5%) had low awareness regarding anaemia. These findings indicate that the majority of participants possessed moderate to high levels of awareness about anaemia. Similar findings were reported by Kavita Verma (2024) and Bronwen Gillespie (2023), who also observed moderate levels of awareness among adolescent girls. The study further found a statistically significant association between awareness level and selected socio-demographic variables such as age, class, type of school, and family income ($p < 0.05$). These findings are consistent with those of Neha Rathi (2024) and Kaur et al. (2023), who identified socio-demographic factors as important determinants of anaemia awareness. However, no significant association was found between food preference and awareness level ($p = 0.937$).

VII. CONCLUSION

The study concluded that most female adolescent students had moderate to high levels of awareness regarding anaemia. A significant association was observed between awareness level and selected socio-demographic variables, including age, class, type of school, and family income, indicating that these factors influence awareness. However, food preference was not significantly associated with awareness level. The findings emphasize the importance of targeted health education programmes to further improve awareness regarding anaemia among adolescent girls.

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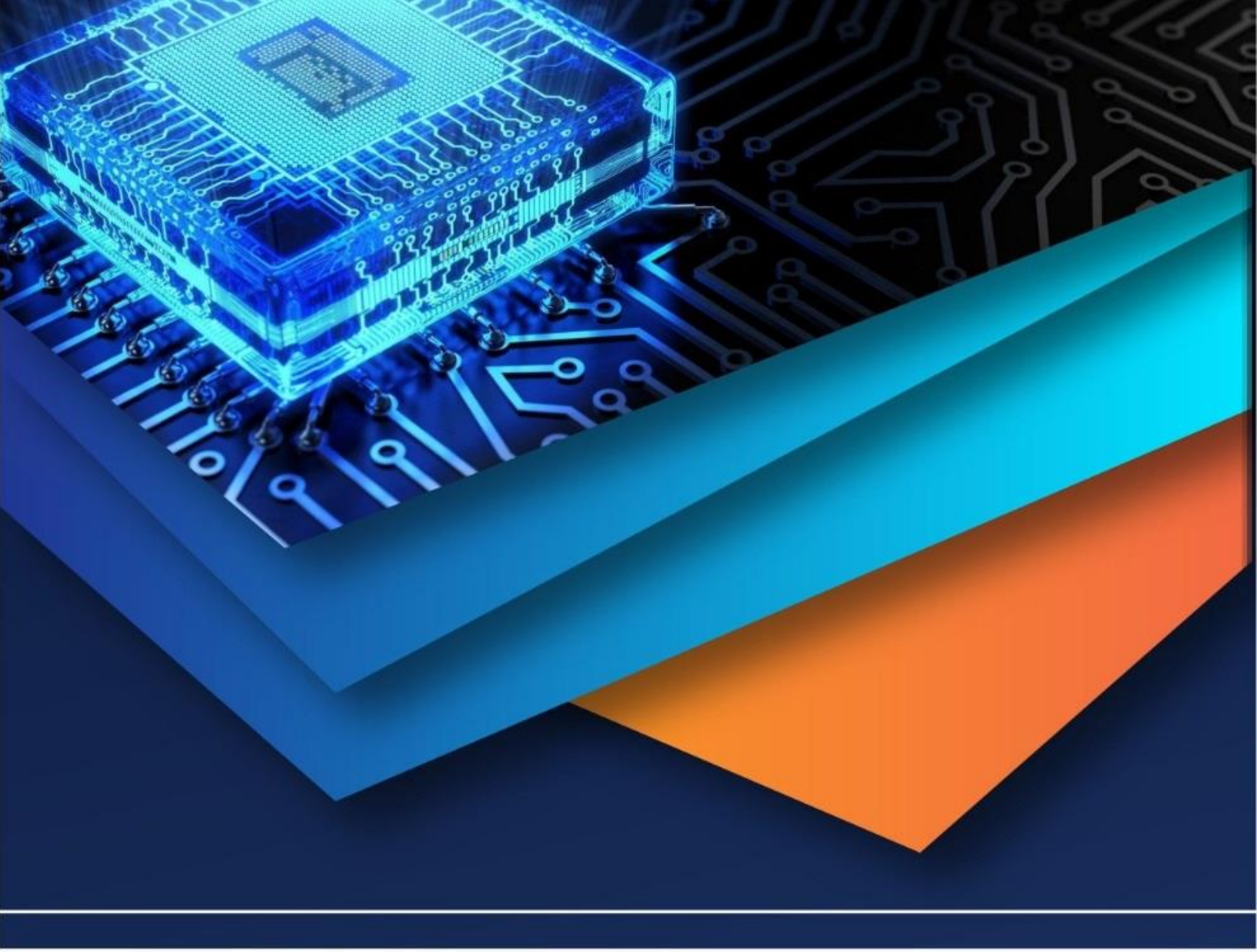

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