The Bioscan AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES
20(4): 2040-2050, 2025 www.thebioscan.com

Prevalence and Occurance of Anaemia among Adolescent Girls in Selected Schools of Gurugram, Haryana: A Cross-Sectional Study

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DOI: 10.63001/tbs.2025.v20.i04.pp2040-2050

Keywords
Anaemia, adolescent girls, prevalence, occurrence, haemoglobin level, nutritional deficiency, school-based screening, and cross-sectional study.

Received on:

25-10-2025

Accepted on:

22-11-2025

Published on:

31-12-2025

ABSTRACT

Introduction: Anaemia remains a major public health concern among adolescent girls in India. Nutritional deficiencies, menstrual blood loss, and socio-economic factors significantly contribute to its prevalence. Untreated anaemia can adversely affect growth, health, and cognitive performance, making early identification and timely intervention essential.
Aim: To determine the prevalence and occurrence of anaemia among adolescent girls.
Methods: A quantitative cross-sectional survey was conducted among 100 adolescent girls selected through random sampling. Data were collected using a structured questionnaire covering demographic details and anaemia-related symptoms. Haemoglobin estimation was performed to assess anaemia status. Data were analysed using descriptive and inferential statistics.
Results: Half of the participants belonged to classes 10th–12th. Haemoglobin assessment showed that 26% had normal levels, while 48% had mild, 20% moderate, and 6% severe anaemia, indicating mild anaemia as the most common type. Symptoms were reported by most participants, with 73% experiencing mild and 27% moderate symptoms. No significant association was found between anaemia and selected demographic variables at the 0.05 level.
Conclusion: The study reveals a high prevalence of anaemia among adolescent girls in Gurugram, Haryana, predominantly in its mild form. The findings underscore the importance of routine screening, nutrition awareness, and school-based preventive strategies to reduce the burden of anaemia.

Introduction

Anaemia is a condition characterized by a reduced red blood cell count or low haemoglobin concentration, leading to impaired oxygen delivery to body tissues. Among adolescent girls, anaemia significantly affects physical endurance, cognitive development, academic performance, school attendance, and immune function. Adolescence is a critical period marked by rapid growth and the onset of menstruation, which further increases iron requirements and vulnerability to anaemia.

Gurugram, a rapidly urbanizing district of Haryana, reflects a contrast between economic growth and persistent health inequalities. Adolescents from low-income school settings often experience inadequate nutrition, limited healthcare access, and poor living conditions, increasing their risk of micronutrient deficiencies, particularly anaemia. Although national initiatives such as Anaemia Mukt Bharat and the Weekly Iron and Folic Acid Supplementation (WIFS) programme have been implemented to address this issue, gaps in awareness, coverage, and adherence continue to limit their effectiveness.

Anaemia during adolescence is associated with adverse health outcomes, including impaired cognitive function, reduced concentration, frequent infections, delayed development, and menstrual irregularities. Globally, despite a gradual decline in iron-deficiency anaemia, its prevalence remains substantial, especially among females of reproductive age. Adolescent girls represent a high-risk group, as iron depletion during this stage can have long-term consequences, including poor maternal health outcomes in later life.

The present study was conducted to assess the prevalence and occurrence of anaemia among adolescent girls in selected schools of Gurugram, Haryana. The study also seeks to explore associated socio-demographic and nutritional factors and evaluate awareness related to anaemia. The findings aim to provide localized evidence to strengthen school-based screening, nutrition education, and targeted public health interventions.

Purpose for the study: To determine the prevalence and occurrence of anaemia among adolescent girls.

Objectives of study:

- To assess the prevalence rate of anaemia among adolescent girls.
- To assess the occurrence of anaemia among adolescent girls.
- To determine the association of prevalence rate of anaemia with selected demographic variables.

Materials And Methods:

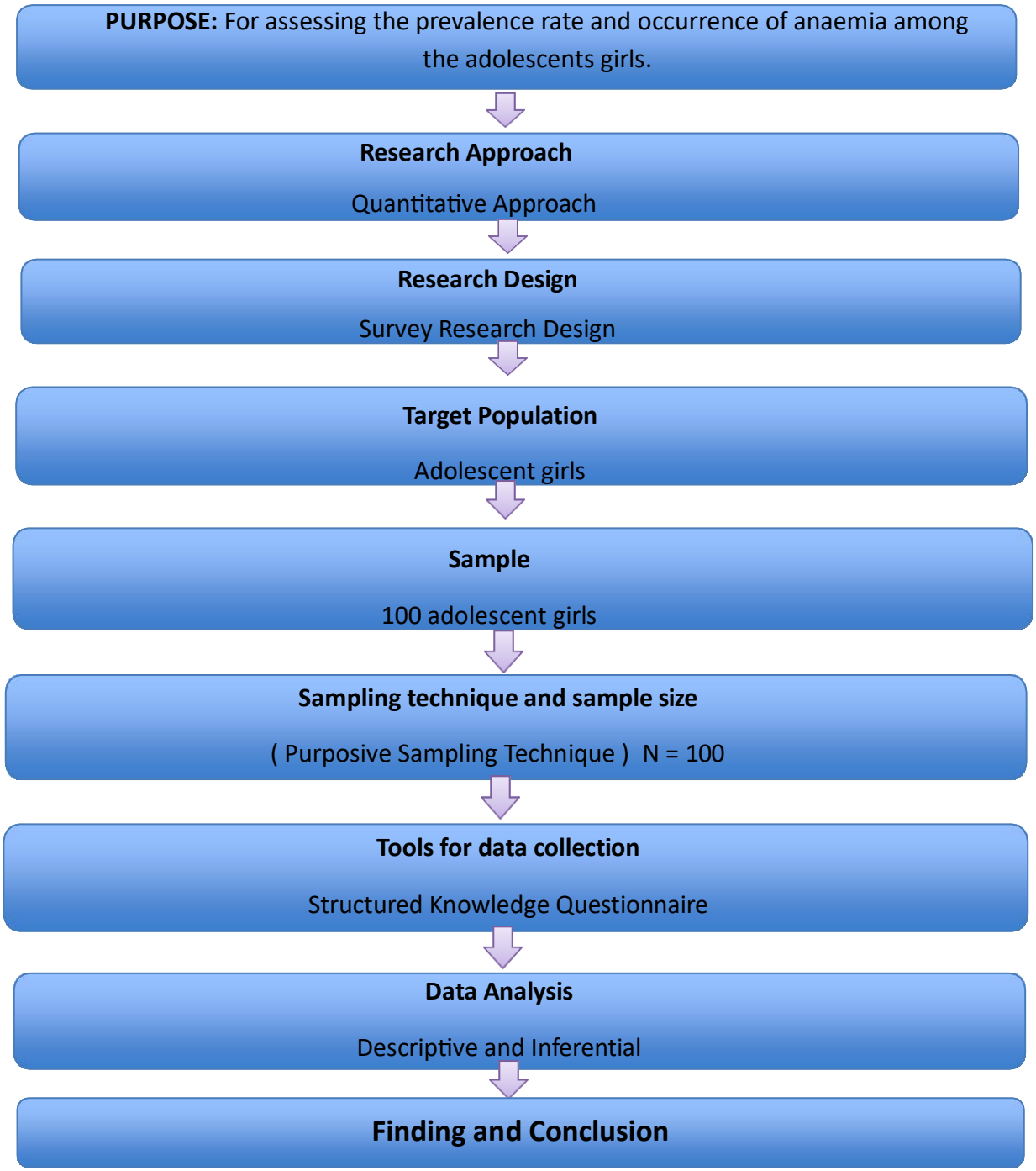

Fig-3.1: Schematic representation of Research MethodologyResults

Among the participants, 50% were studying in classes 10th to 12th. Based on haemoglobin levels, 26% of adolescent girls had normal haemoglobin, while 48% had mild anaemia, 20% had moderate anaemia, and 6% had severe anaemia. Mild anaemia emerged as the most prevalent category.

Regarding symptoms, 73% of participants reported experiencing mild symptoms related to anaemia, while 27% reported moderate symptoms. Chi-square analysis revealed no statistically significant association between anaemia status and selected demographic variables at the 0.05 significance level.

DATA ANALYSIS: Among the participants, 50% were studying in classes 10th to 12th. Based on haemoglobin levels, 26% of adolescent girls had normal haemoglobin, while 48% had mild anaemia, 20% had moderate anaemia, and 6% had severe anaemia. Mild anaemia emerged as the most prevalent category.

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Section I: Present findings regarding the demographic features of adolescent girls in terms of frequency and percentage.

Variables	Categories	Frequency	Percentage (%)
Age	10-12YRS	**16**	**16**
	13-15 YRS	**36**	**36**
	16-18 YRS	**48**	**48**
Class	6-8TH	**24**	**24**
	8-10 TH	**26**	**26**
	10-12 TH	**50**	**50**

n=100

Table:1 Demographic data of subjects

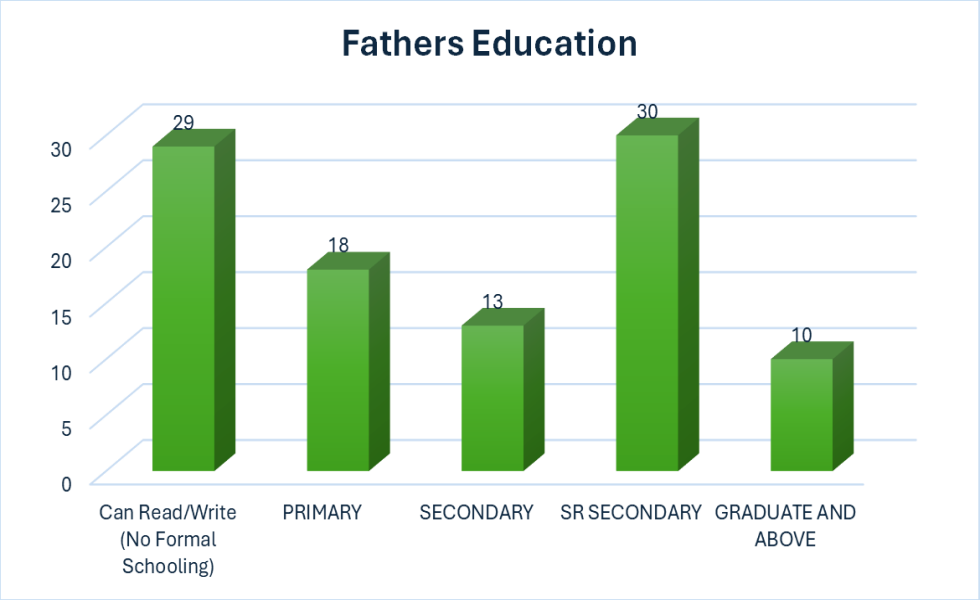


Figure 1. The column chart illustrates the father's education of adolescent girls.

The figure illustrates the educational status of fathers in the study population. The largest proportion (31%) had completed secondary education, followed by 29% who attained senior secondary education. Nearly one-fourth (24%) were literate without formal schooling, while only 6% had primary education, representing the lowest category. A small proportion (10%) had completed graduation or higher studies, indicating limited access to higher education. Overall, although most fathers had attained at least secondary education, higher educational attainment remained relatively uncommon. This educational profile may influence children's socioeconomic status, educational aspirations, and future career opportunities, highlighting the need for further exploration of its impact on academic outcomes.

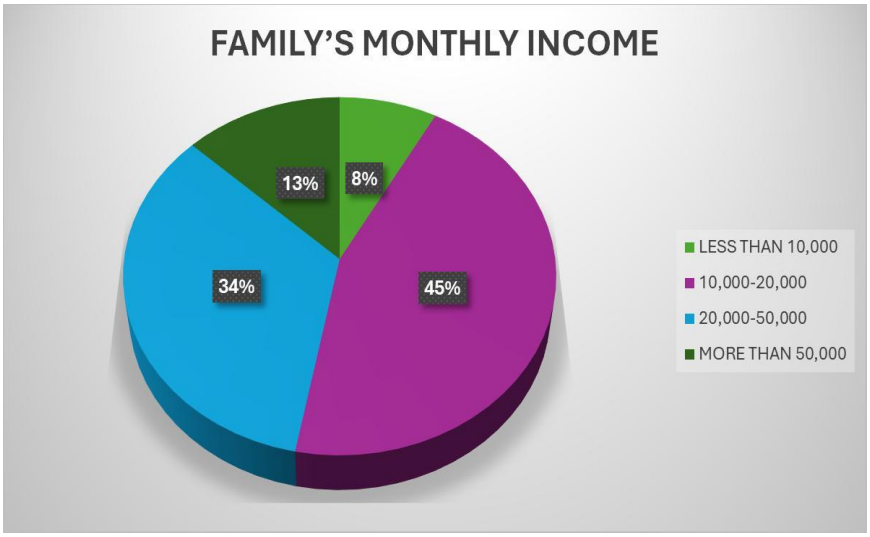


Figure 2. The pie chart illustrates the family's monthly income of adolescent girls.

The figure depicts that the majority of households belonged to the lower-middle-income category, with 45% reporting a monthly income of ₹10,000–₹20,000 and 34% earning ₹20,000–₹50,000. A smaller proportion (13%) had a monthly income above ₹50,000, while 8% earned less than ₹10,000, indicating financial vulnerability. This income distribution reflects existing economic disparities that may influence access to adequate nutrition, healthcare, and educational opportunities for children, thereby affecting the overall socioeconomic status and well-being of the families.

Section II: Classification of prevalence rate of anaemia among adolescent girls.

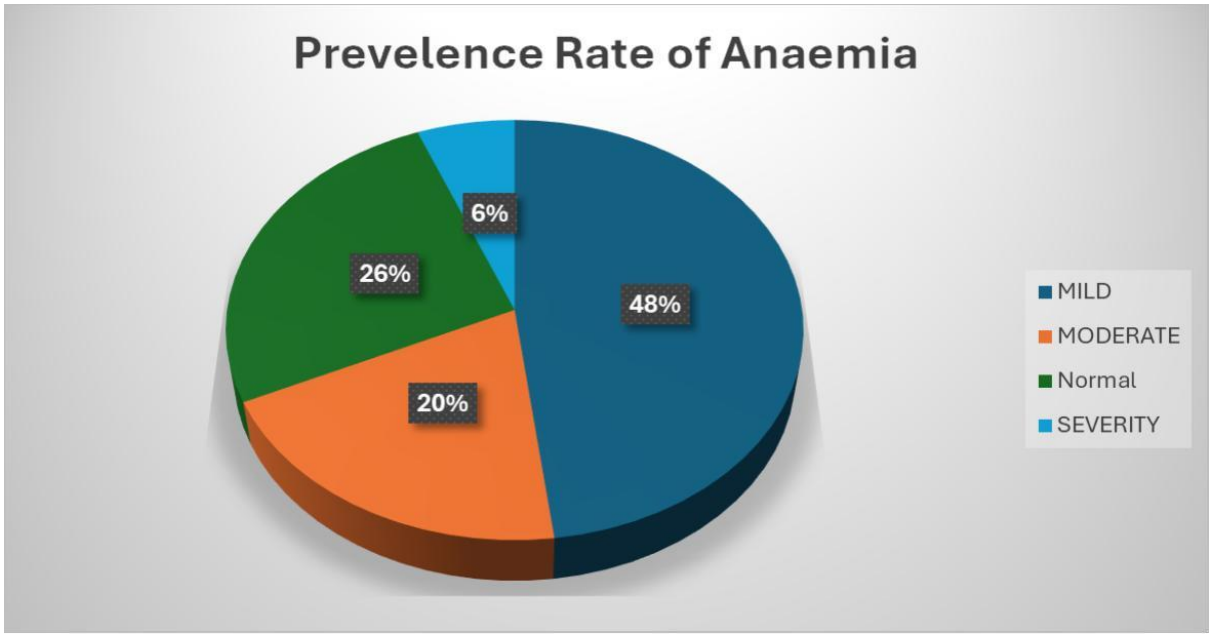
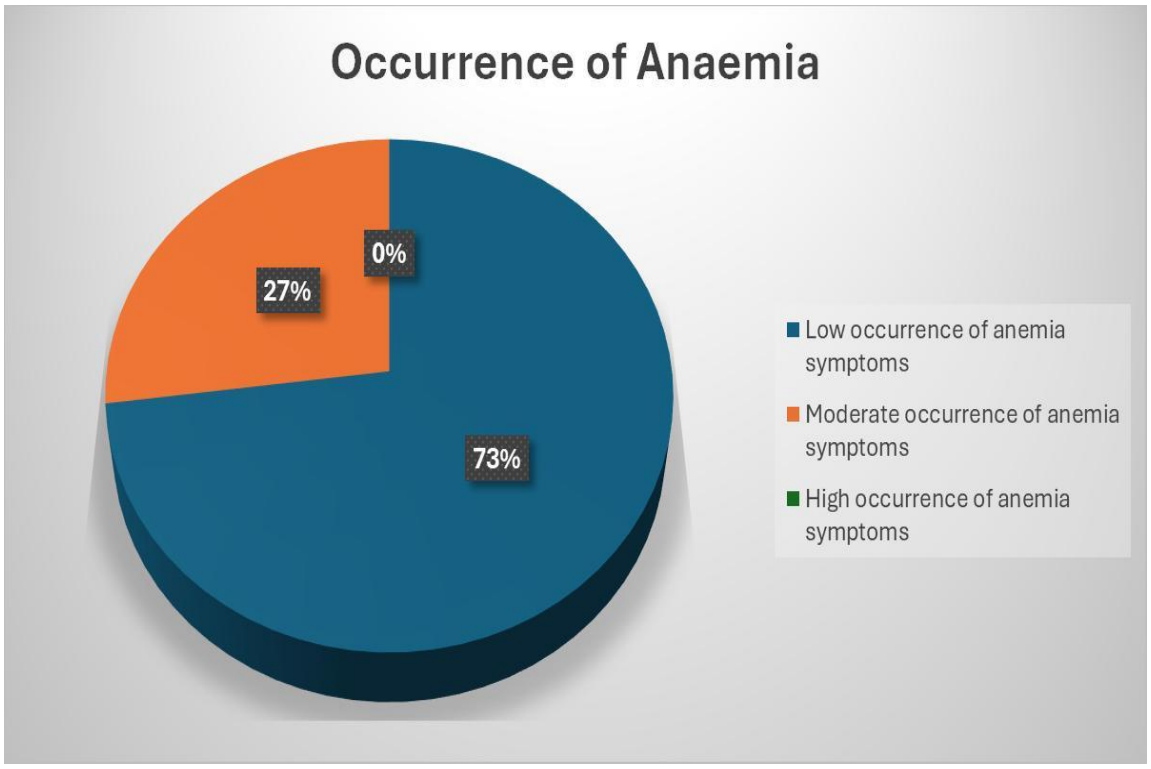


Figure 3. The pie chart illustrates the prevalence rate of anaemia in adolescent girls.

The figure illustrates the prevalence of anaemia among the respondents, categorized into four groups: normal (26%), mild (48%), moderate (20%), and severe (6%). Mild anaemia constituted the largest proportion, while severe anaemia was observed in only a small percentage of participants. This distribution highlights the predominance of early-stage anaemia and provides valuable insight for prioritizing preventive strategies and planning appropriate medical interventions based on severity.

Section III: To examine the occurrence of anaemia within this demographic group.



The figure depicts the occurrence of anaemia-related symptoms among the respondents. Most participants (73%) reported experiencing few symptoms, while 27% reported moderate symptoms. Notably, none of the respondents exhibited severe anaemic symptoms. This suggests that although anaemia is prevalent in the study population, its severity is generally low. The absence of severe symptoms may reflect a predominance of mild anaemia, early detection, or relatively adequate dietary practices. However, the presence of moderate symptoms in over one-fourth of the participants highlights the need for continued monitoring and timely interventions, including nutritional counselling and supplementation. Such findings are valuable for public health planning, with an emphasis on prevention and early management strategies.

Discussion

The findings of the present study indicate a high prevalence of anaemia among adolescent girls, with mild anaemia being the most common form. These results are consistent with several Indian studies reporting a substantial burden of anaemia among school-going adolescents. Nutritional inadequacies, menstrual blood loss, and limited awareness may contribute to the observed prevalence.

Despite widespread reporting of symptoms, no significant association was found between anaemia and demographic variables, suggesting that anaemia is prevalent across different socio-demographic groups. This highlights the need for universal screening and preventive strategies rather than targeted approaches alone.

Conclusion

The study concludes that anaemia remains highly prevalent among adolescent girls in selected schools of Gurugram, Haryana. Mild anaemia constitutes the majority of cases, indicating early-stage nutritional deficiency that can be effectively addressed through timely interventions. Strengthening school-based screening programmes, nutrition education, and consistent implementation of national anaemia control initiatives is essential to improve adolescent health outcomes.

Recommendations

- Regular haemoglobin screening in schools
- Strengthening WIFS and Anaemia Mukt Bharat programmes
- Nutrition education focusing on iron-rich diets
- Periodic monitoring and follow-up of anaemic adolescents

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