

Assessment of the prevalence, associated risk factors, and clinical determinants of iron deficiency anaemia among school-aged children attending A Tertiary Care Hospital¹Dr. Vijay Kolhar, Assistant Professor, ESIC Medical College, Kalaburagi, Karnataka, India²Dr. Pratibha Manjunath Patagar, Consultant Paediatrician, Darsh Superspeciality Hospital, Kalaburagi, Karnataka, India**Corresponding Author:** Dr. Pratibha Manjunath Patagar, Consultant Paediatrician, Darsh Superspeciality Hospital, Kalaburagi, Karnataka, India.**How to citation this article:** Dr. Vijay Kolhar, Dr. Pratibha Manjunath Patagar, “Assessment of the prevalence and determinants of vitamin D deficiency and its association with growth parameters and bone health among children and adolescents attending A tertiary care hospital”, IJMACR– September – 2026, Volume – 9, Issue – 5, P. No. 808 – 818**Open Access Article:** © 2026 Dr. Vijay Kolhar, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution license (<http://creativecommons.org/licenses/by/4.0>). Which allows others to remix, tweak, and build upon the work non - commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.**Type of Publication:** Original Research Article**Conflicts of Interest:** Nil**Abstract****Background:** Iron deficiency anaemia (IDA) is a common nutritional disorder among children and may adversely affect growth, cognitive function, physical performance, and school achievement. Identification of associated dietary, nutritional, socioeconomic, and clinical factors is important for prevention and early management.**Objective:** To assess the prevalence of iron-deficiency anaemia and to determine its associated risk factors and clinical and laboratory determinants among school-aged children attending a tertiary care hospital.**Materials and Methods:** This hospital-based observational study was conducted at ESIC Medical College and Hospital over 18 months. A total of 80 school-aged children fulfilling the eligibility criteria were enrolled. Demographic, dietary, socioeconomic, anthropometric, and clinical information was collected

using a structured proforma. Complete blood count and appropriate iron studies, including serum ferritin, serum iron, TIBC, and transferrin saturation, were assessed. Associations between IDA and potential risk factors were analysed using appropriate statistical tests.

Results: Among the 80 children, 32 (40.0%) had iron deficiency anaemia. IDA was more frequent among older children and females. Inadequate intake of iron-rich foods (65.6%), underweight status (40.6%), excessive milk consumption (43.8%), and history of pica (25.0%) were commonly observed among children with IDA. Pallor (78.1%) and fatigue/weakness (53.1%) were the predominant clinical findings. Children with IDA had significantly lower haemoglobin, MCV, MCH, MCHC, serum ferritin, serum iron, and transferrin saturation, with higher RDW and TIBC compared with children without IDA. On multivariate analysis, inadequate iron-rich food intake, underweight status, excessive milk consumption,

and pica remained significant independent predictors of IDA.

Conclusion: Iron deficiency anaemia was prevalent among school-aged children in the study population. Poor dietary iron intake and undernutrition were important determinants. Early screening, nutritional counselling, dietary diversification, and timely management are essential to reduce the burden of IDA and its potential adverse effects on child health and development.

Keywords: Iron Deficiency Anaemia, School-Aged Children, Prevalence, Dietary Factors, Nutritional Status, Serum Ferritin, Anaemia.

Introduction

Iron deficiency anaemia (IDA) is one of the most common nutritional disorders affecting children worldwide and remains an important public health problem, particularly in low- and middle-income countries. Anaemia is characterised by a haemoglobin concentration below the normal range for age and sex and may result from nutritional deficiencies, infections, chronic diseases, genetic disorders, or blood loss. Among the various causes, iron deficiency remains the most common nutritional cause of anaemia in childhood^{1,2}.

School-aged children are particularly vulnerable to iron deficiency because of their rapid physical growth and increased nutritional requirements. Inadequate dietary iron intake, poor dietary diversity, excessive consumption of milk, recurrent infections, intestinal parasitic infestation, and poor socioeconomic conditions may contribute to depletion of iron stores and subsequent development of IDA^{3,4}. Iron deficiency may initially occur without anaemia and, if persistent, can progress to clinically significant anaemia.

The consequences of iron deficiency during childhood extend beyond haematological abnormalities. Iron is

essential for oxygen transport, cellular metabolism, neurotransmitter synthesis, and normal neurological development. Iron deficiency has been associated with impaired cognitive function, reduced attention span, poor school performance, fatigue, decreased physical capacity, and behavioural changes^{5,6}. These effects make childhood IDA an important concern not only for individual health but also for educational achievement and long-term development.

The burden of anaemia among children in India continues to be substantial. National surveys have demonstrated a high prevalence of anaemia among children, reflecting persistent nutritional, socioeconomic, and public-health challenges⁷. Although iron supplementation and anaemia-control programmes have been implemented, dietary inadequacy, poor adherence to supplementation, infections, and other contributing factors continue to influence the occurrence of IDA.

The clinical presentation of iron deficiency varies according to its severity and duration. Pallor, fatigue, weakness, reduced exercise tolerance, headache, dizziness, glossitis, angular stomatitis, and koilonychia may occur in clinically significant disease. Laboratory evaluation generally demonstrates reduced haemoglobin, microcytosis, hypochromia, increased red cell distribution width, reduced serum ferritin and serum iron, increased total iron-binding capacity, and reduced transferrin saturation^{2,8}.

Identification of risk factors is essential for effective prevention and management. Dietary history, nutritional status, socioeconomic circumstances, recurrent infections, parasitic infestation, and clinical manifestations should therefore be considered along with laboratory parameters. A better understanding of these

determinants can help clinicians identify children at increased risk and facilitate timely intervention.

Therefore, the present study was undertaken to assess the prevalence of iron deficiency anaemia, associated risk factors, and clinical and laboratory determinants among school-aged children attending a tertiary care hospital at ESIC Medical College and Hospital.

Materials and Methods

Study Design and Setting

The present hospital-based observational study was conducted in the Department of Pediatrics at ESIC Medical College and Hospital over a period of 18 months (1.5 years). The study was designed to assess the prevalence of iron deficiency anaemia (IDA), identify associated dietary, socioeconomic, and demographic risk factors, and evaluate the clinical and laboratory determinants of iron deficiency anaemia among school-aged children attending the tertiary care hospital.

Study Population

The study included school-aged children aged 6–15 years who attended the pediatric outpatient department (OPD) or were admitted to the hospital during the study period. Children fulfilling the predefined eligibility criteria were enrolled after obtaining informed consent from their parents or legal guardians.

Sample Size

A total of 80 school-aged children were included in the study. The sample size was selected based on the feasibility of recruitment during the study period and the objectives of the study.

Study Duration

The study was conducted over a period of 18 months (1.5 years).

Inclusion Criteria

Children were included if they fulfilled the following criteria:

- School-aged children aged 6–15 years attending the hospital during the study period.
- Children whose parents or legal guardians provided written informed consent.
- Children willing to undergo clinical assessment and relevant laboratory investigations.
- Children for whom adequate clinical and dietary information could be obtained.

Exclusion Criteria

Children were excluded if they had:

- Known chronic systemic illnesses likely to affect haemoglobin or iron metabolism.
- Known haemoglobinopathies or other inherited blood disorders.
- Chronic renal, hepatic, or gastrointestinal diseases.
- Recent blood transfusion.
- Current treatment with iron or other haematinics that could significantly alter laboratory parameters.
- Acute severe illness requiring immediate emergency management.
- Incomplete clinical or laboratory data.

Data Collection

A structured, predesigned proforma was used for collection of relevant information. Sociodemographic details including age, sex, residence, socioeconomic status, and relevant family characteristics were recorded. A detailed history was obtained regarding dietary practices, frequency of consumption of iron-rich foods, intake of fruits and vegetables, milk consumption, food preferences, meal frequency, history of pica, and use of iron or vitamin supplementation. Information regarding recurrent infections, worm infestation, gastrointestinal

symptoms, menstrual history where applicable, and other relevant clinical factors was also recorded.

Clinical Assessment

All enrolled children underwent a detailed clinical examination. Anthropometric parameters including weight and height were recorded using standard methods. Nutritional status was assessed using appropriate age- and sex-specific growth standards.

Clinical examination specifically looked for manifestations suggestive of anaemia, including pallor, fatigue, weakness, dizziness, exertional intolerance, tachycardia, glossitis, angular stomatitis, koilonychia, and other relevant clinical features. The presence of hepatosplenomegaly, lymphadenopathy, or other systemic findings was also documented.

Laboratory Investigations

Venous blood samples were collected under aseptic precautions from all enrolled children. Complete blood count was performed using an automated haematology analyser. The following parameters were recorded:

- Haemoglobin concentration
- Haematocrit/packed cell volume
- Mean corpuscular volume (MCV)
- Mean corpuscular haemoglobin (MCH)
- Mean corpuscular haemoglobin concentration (MCHC)
- Red cell distribution width (RDW)
- Total leukocyte counts and platelet count, where relevant

Iron status was assessed using appropriate biochemical investigations, including serum ferritin, serum iron, total iron-binding capacity (TIBC), and transferrin saturation, wherever available. Peripheral blood smear examination was performed to assess red cell morphology.

Iron deficiency anaemia was identified based on the combination of haemoglobin concentration below the age-appropriate reference range together with laboratory evidence of depleted iron stores. Serum ferritin was interpreted in conjunction with clinical findings and other iron indices, particularly in children with possible concurrent infection or inflammation.

Assessment of Risk Factors

Potential risk factors associated with iron deficiency anaemia were evaluated under demographic, nutritional, socioeconomic, and clinical categories. These included age, sex, socioeconomic status, dietary pattern, inadequate intake of iron-rich foods, excessive milk consumption, history of pica, poor nutritional status, recurrent infections, history suggestive of parasitic infestation, and other relevant clinical factors.

Outcome Measures

The **primary outcome** of the study was the prevalence of iron deficiency anaemia among the enrolled school-aged children.

The **secondary outcomes** included identification of demographic, dietary, socioeconomic, anthropometric, clinical, and laboratory factors associated with iron deficiency anaemia and assessment of the relationship between these factors and the severity of anaemia.

Statistical Analysis

The collected data were entered into Microsoft Excel and analysed using appropriate statistical software. Continuous variables were expressed as mean $\pm$ standard deviation or median with interquartile range, depending on the distribution of data. Categorical variables were presented as frequencies and percentages.

The association between categorical variables was assessed using the Chi-square test or Fisher's exact test, as appropriate. Continuous variables between two groups

were compared using the independent Student's t-test for normally distributed data or the Mann–Whitney U test for non-normally distributed data. A p-value of <0.05 was considered statistically significant. Where appropriate, regression analysis could be performed to identify independent predictors of iron deficiency anaemia.

Ethical Considerations

The study was conducted after obtaining approval from the Institutional Ethics Committee of ESIC Medical College and Hospital. Written informed consent was obtained from the parents or legal guardians of all participating children. Assent was obtained from children wherever applicable. Confidentiality of participant information was maintained throughout the study, and the collected data were used solely for research purposes.

Results and Observations

The present hospital-based observational study was conducted over a period of 18 months at ESIC Medical College and Hospital. A total of 80 school-aged children fulfilling the predefined eligibility criteria were included in the study. The study evaluated the prevalence of iron deficiency anaemia (IDA), along with demographic, nutritional, socioeconomic, clinical, anthropometric, and laboratory factors associated with IDA.

Table 1: Distribution of Study Participants According to Age Group

Age group	Number (n=80)	Percentage (%)
6–8 years	24	30.0
9–11 years	28	35.0
12–15 years	28	35.0
Total	80	100.0

The majority of children belonged to the 9–11 years and 12–15 years age groups, with 28 (35.0%) children in each group, while 24 (30.0%) children were aged 6–8 years.

Table 2: Distribution of Participants According to Sex

Sex	Number (n=80)	Percentage (%)
Male	43	53.8
Female	37	46.2
Total	80	100.0

There was a slight male predominance, with 43 (53.8%) males and 37 (46.2%) females.

Table 3: Prevalence of Anaemia and Iron Deficiency Anaemia

Haematological status	Number (n=80)	Percentage (%)
Iron deficiency anaemia	32	40.0
Anaemia without evidence of iron deficiency	8	10.0
No anaemia	40	50.0
Total	80	100.0

Iron deficiency anaemia was identified in 32 (40.0%) children, making it the major form of anaemia observed in the study population. Eight (10.0%) children had anaemia without laboratory evidence of iron deficiency, while 40 (50.0%) children were non-anaemic.

Table 4: Distribution of Children with IDA According to Sex

Sex	IDA present n (%)	IDA absent n (%)	Total
Male	15 (34.9)	28 (65.1)	43
Female	17 (45.9)	20 (54.1)	37
Total	32 (40.0)	48 (60.0)	80

Iron deficiency anaemia was more frequently observed among females (45.9%) compared with males (34.9%). The difference was not statistically significant ($p>0.05$).

Table 5: Distribution of IDA According to Age Group

Age group	IDA present n (%)	IDA absent n (%)	Total
6–8 years	7 (29.2)	17 (70.8)	24
9–11 years	11 (39.3)	17 (60.7)	28
12–15 years	14 (50.0)	14 (50.0)	28
Total	32 (40.0)	48 (60.0)	80

The prevalence of IDA showed an increasing trend with age, from 29.2% among children aged 6–8 years to 50.0% among those aged 12–15 years.

Table 6: Anthropometric and Nutritional Characteristics of Study Participants

Parameter	IDA present (n=32)	IDA absent (n=48)	p-value
Mean weight (kg)	29.4 ± 7.8	32.1 ± 8.4	0.14
Mean height (cm)	130.8 ± 12.1	133.7 ± 11.8	0.27
Underweight	13 (40.6%)	9 (18.8%)	0.03
Normal nutritional status	16 (50.0%)	32 (66.7%)	0.13
Overweight/obesity	3 (9.4%)	7 (14.6%)	0.52

Underweight status was more common among children with IDA (40.6%) compared with those without IDA (18.8%), and this association was statistically significant ($p=0.03$).

Table 7: Dietary Risk Factors Associated with Iron Deficiency Anaemia

Dietary factor	IDA present n (%)	IDA absent n (%)	p-value
Inadequate intake of iron-rich foods	21 (65.6)	15 (31.3)	0.003
Predominantly vegetarian diet	22 (68.8)	24 (50.0)	0.10
Excessive milk consumption	14 (43.8)	10 (20.8)	0.03

Poor intake of fruits/vegetables	18 (56.3)	16 (33.3)	0.04
History of pica	8 (25.0)	3 (6.3)	0.02
Previous iron supplementation	7 (21.9)	13 (27.1)	0.59

Inadequate consumption of iron-rich foods was significantly more frequent among children with IDA (65.6% vs. 31.3%, $p=0.003$). Excessive milk consumption, poor intake of fruits and vegetables, and history of pica were also significantly associated with IDA.

Table 8: Clinical Factors Associated with Iron Deficiency Anaemia

Clinical factor	IDA present n (%)	IDA absent n (%)	p-value
Pallor	25 (78.1)	9 (18.8)	<0.001
Fatigue/weakness	17 (53.1)	9 (18.8)	0.001
Reduced exercise tolerance	12 (37.5)	7 (14.6)	0.02
Recurrent infections	13 (40.6)	10 (20.8)	0.05
History suggestive of worm infestation	11 (34.4)	7 (14.6)	0.04
Glossitis/angular stomatitis	6 (18.8)	2 (4.2)	0.04
Koilonychia	4 (12.5)	1 (2.1)	0.08

Pallor was the most frequently observed clinical finding among children with IDA (78.1%), followed by fatigue or weakness (53.1%). Pallor and fatigue showed statistically significant associations with IDA.

Table 9: Haematological Parameters According to Iron Deficiency Anaemia Status

Parameter	IDA present (n=32)	IDA absent (n=48)	p-value
Haemoglobin (g/dL)	9.6 ± 1.1	12.1 ± 1.0	<0.001
MCV (fL)	69.8 ± 7.2	81.6 ± 5.8	<0.001
MCH (pg)	22.1 ± 3.1	27.4 ± 2.4	<0.001
MCHC (g/dL)	30.9 ± 1.8	33.1 ± 1.2	<0.001
RDW (%)	17.2 ± 2.8	13.9 ± 1.6	<0.001

Children with IDA demonstrated significantly lower haemoglobin, MCV, MCH, and MCHC values and significantly higher RDW compared with children without IDA.

Table 10: Iron Profile of Children with and without Iron Deficiency Anaemia

Parameter	IDA present (n=32)	IDA absent (n=48)	p-value
Serum ferritin (ng/mL)	10.8 ± 4.6	35.7 ± 12.4	<0.001
Serum iron (µg/dL)	36.4 ± 12.7	78.2 ± 22.1	<0.001
TIBC (µg/dL)	421.6 ± 54.3	332.5 ± 42.8	<0.001
Transferrin saturation (%)	8.7 ± 3.4	23.8 ± 6.1	<0.001

Children with IDA showed significantly reduced serum ferritin, serum iron, and transferrin saturation, along with significantly increased TIBC, consistent with depleted iron stores.

Table 11: Socioeconomic Factors Associated with Iron Deficiency Anaemia

Socioeconomic factor	IDA present n (%)	IDA absent n (%)	p-value
Lower socioeconomic status	19 (59.4)	17 (35.4)	0.04
Middle socioeconomic status	11 (34.4)	23 (47.9)	0.24
Higher socioeconomic status	2 (6.3)	8 (16.7)	0.18
Food insecurity/limited dietary diversity	15 (46.9)	11 (22.9)	0.02

A higher proportion of children with IDA belonged to the lower socioeconomic group. Limited dietary diversity or food insecurity was also significantly more frequent among children with IDA.

Table 12: Multivariate Analysis of Factors Associated with Iron Deficiency Anaemia

Risk factor	Adjusted Odds Ratio (AOR)	95% CI	p-value
Inadequate iron-rich food intake	3.21	1.28–8.04	0.013
Underweight	2.74	1.06–7.09	0.037
Excessive milk consumption	2.61	1.01–6.74	0.048
History of pica	3.86	1.03–14.42	0.045
Lower socioeconomic status	2.18	0.91–5.24	0.081
Female sex	1.42	0.59–3.42	0.430

On multivariate analysis, inadequate intake of iron-rich foods, underweight status, excessive milk consumption, and history of pica remained independently associated with iron deficiency anaemia. Female sex and lower

socioeconomic status showed increased odds of IDA but did not retain statistical significance after adjustment.

Discussion

The present study evaluated 80 school-aged children attending a tertiary care hospital and assessed the prevalence of iron deficiency anaemia along with its demographic, nutritional, socioeconomic, clinical, and laboratory determinants. In the present study, 40.0% of children were found to have iron deficiency anaemia, indicating a considerable burden of IDA among school-aged children attending the study centre.

The observed prevalence is consistent with the continuing public-health importance of childhood anaemia in India. The high prevalence of anaemia reported in national surveys has highlighted the persistence of nutritional anaemia despite ongoing supplementation and anaemia-control programmes⁷. Differences in prevalence between studies may be explained by variations in age distribution, dietary habits, socioeconomic characteristics, geographical setting, diagnostic criteria, and access to healthcare.

In the present study, IDA showed an increasing trend with age, with prevalence rising from 29.2% among children aged 6–8 years to 50.0% among those aged 12–14 years. Increasing nutritional requirements during periods of growth may partly explain this observation. Children approaching adolescence experience increased requirements for iron because of rapid growth and, in girls, additional iron requirements associated with the onset of menstruation. Similar concerns regarding increased iron requirements during growth have been emphasised in previous studies of childhood and adolescent iron deficiency^{3,6}.

A slightly higher prevalence of IDA was observed among females than males in the present study. Although female

sex was not an independent statistically significant predictor after adjustment, the higher proportion among females may be related to increased iron requirements during adolescence and menstrual blood loss. This finding emphasises the importance of early identification of iron deficiency among older school-aged girls, particularly around the transition to adolescence.

Nutritional factors were important determinants in the present study. Inadequate consumption of iron-rich foods was significantly more common among children with IDA. On multivariate analysis, inadequate iron-rich food intake remained independently associated with IDA. This finding is biologically plausible because insufficient dietary iron intake can progressively reduce iron stores and ultimately impair haemoglobin synthesis. Dietary diversity and adequate consumption of iron-containing foods are therefore essential components of prevention strategies^{4,9}.

Excessive milk consumption was another significant dietary factor associated with IDA. Children consuming large quantities of milk may have reduced appetite for iron-rich foods, resulting in inadequate overall dietary iron intake. In younger children, excessive cow's milk consumption has also been associated with iron deficiency through dietary displacement and, in some circumstances, gastrointestinal blood loss^{4,10}. Appropriate dietary counselling regarding balanced meals and avoidance of excessive milk intake may therefore be beneficial.

A history of pica was significantly more frequent among children with IDA. Pica is a recognized manifestation associated with iron deficiency, although its precise relationship may be bidirectional. The presence of pica should therefore prompt consideration of iron deficiency and appropriate laboratory evaluation. In the present

study, pica remained independently associated with IDA on multivariate analysis.

Undernutrition was also significantly associated with IDA. A substantially greater proportion of children with IDA were underweight compared with children without IDA. On adjusted analysis, underweight status remained an independent predictor of IDA. Poor nutritional status may reflect inadequate intake of multiple micronutrients, including iron, and may coexist with reduced dietary diversity. Similar relationships between nutritional inadequacy and childhood anaemia have been described in population-based studies^{9,11}.

Socioeconomic conditions also appeared to influence the occurrence of IDA. Children from lower socioeconomic backgrounds and those with limited dietary diversity showed a higher prevalence of IDA. However, lower socioeconomic status did not remain statistically significant after adjustment for other variables. This suggests that socioeconomic status may influence IDA indirectly through dietary quality, nutritional status, healthcare access, and other related factors rather than acting as an isolated biological determinant.

The clinical findings in the present study were consistent with the classical manifestations of iron deficiency. Pallor was the most common clinical finding, occurring in 78.1% of children with IDA, followed by fatigue or weakness. Reduced exercise tolerance was also more common among affected children. These findings are consistent with the physiological consequences of reduced haemoglobin concentration and impaired oxygen delivery. However, clinical examination alone may underestimate the burden of iron deficiency because mild or moderate deficiency may remain clinically silent [2,8]. The haematological findings showed a characteristic pattern of iron deficiency. Children with IDA had

significantly lower haemoglobin, MCV, MCH, and MCHC values and higher RDW compared with children without IDA. The microcytic and hypochromic pattern is typical of established iron deficiency, while increased RDW reflects variation in red cell size due to progressive iron depletion. Similar laboratory patterns have been described in standard diagnostic approaches to iron deficiency anaemia^{2,8}.

Serum ferritin and serum iron were significantly lower in children with IDA, whereas TIBC was significantly higher and transferrin saturation was reduced. These findings provide biochemical evidence supporting iron depletion. Serum ferritin is considered a useful indicator of body iron stores, although it may increase during infection or inflammation because it behaves as an acute-phase reactant. Consequently, interpretation of ferritin should be considered alongside clinical findings and other iron indices, particularly in children with concurrent inflammatory conditions^{2,8}.

The findings of the present study highlight the importance of evaluating children with suspected IDA using a combination of clinical assessment, dietary history, anthropometric assessment, complete blood count, and appropriate iron studies. Reliance solely on haemoglobin estimation may identify anaemia but cannot adequately distinguish iron deficiency from other causes of anaemia. The study also emphasizes the importance of preventive strategies. Nutritional counselling should focus on improving consumption of iron-rich foods and overall dietary diversity. Children at higher risk because of undernutrition, poor dietary practices, recurrent infections, or other clinical factors may benefit from targeted screening and follow-up. School-based nutritional education and existing anaemia-control

programmes can play an important role in improving awareness and promoting early detection.

The present study has certain limitations. The sample size was relatively small, with only 80 children, and the study was conducted at a single tertiary care centre; therefore, the findings may not be directly generalizable to the wider population. As the study was hospital-based, selection bias may also have influenced the observed prevalence. Dietary information was obtained through history and may therefore be subject to recall bias. In addition, some potential causes of anaemia, such as detailed parasitological evaluation, chronic inflammation, occult blood loss, and haemoglobinopathies, may require more extensive investigation.

Despite these limitations, the study provides useful information regarding the burden and determinants of IDA among school-aged children. The findings indicate that iron deficiency anaemia remains common and is strongly associated with inadequate dietary iron intake, undernutrition, excessive milk consumption, and pica. Early identification and appropriate nutritional intervention may help reduce the clinical and developmental consequences of iron deficiency in school-aged children.

Conclusion

Iron deficiency anaemia was common among school-aged children in the present study, with a prevalence of 40%. Inadequate intake of iron-rich foods, undernutrition, excessive milk consumption, and pica were important associated factors. Pallor and fatigue were the predominant clinical findings, while low haemoglobin, microcytosis, hypochromia, low serum ferritin, and reduced transferrin saturation supported the diagnosis. Early screening, dietary counselling, nutritional improvement, and timely iron supplementation are

essential to reduce the burden and consequences of IDA among school-aged children.

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