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ORIGINAL ARTICLE

Prevalence of iron deficiency anemia in children

Gaurav Mandhan

Assistant Professor, Department of Pediatrics, Rama Medical College Hospital & Research Centre, Hapur, Uttar Pradesh, India

ABSTRACT:

Introduction-Iron deficiency anemia (IDA) is a common hematological disorder in childhood and adolescence, with varying incidence rates globally. IDA is characterized by low haemoglobin levels, reduced mean corpuscular volume (MCV), and mean corpuscular haemoglobin (MCH), resulting in hypochromic and microcytic red blood cells. **Materials and methods-** The present study was conducted for assessing incidence of iron deficiency anemia among school going children. A total of 500 children were enrolled. A complete demographic and clinical detail of all the children was obtained. Data analysis was done using SSPS software. **Result**-In the study, out of a total of 500 participants, 233 individuals, representing 46.6% of the sample, were found to have iron deficiency anemia. **Conclusion**-Addressing the complex causes and gender variations in iron deficiency anemia is crucial for reducing its public health burden, especially among children.

Keywords- Iron, haemoglobin, anemia

Corresponding author: Gaurav Mandhan, Assistant Professor, Department of Pediatrics, Rama Medical College Hospital & Research Centre, Hapur, Uttar Pradesh, India

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INTRODUCTION

Iron deficiency anemia (IDA) is a common hematological disorder in childhood and adolescence, with varying incidence rates globally.[1,2] In industrialized countries, the incidence is around 20.1% in children aged 0-4 years and 5.9% in those aged 5-14 years. However, in developing countries, the rates are higher, ranging from 39% to 48.1%.[3]

IDA is characterized by low hemoglobin levels, reduced mean corpuscular volume (MCV), and mean corpuscular hemoglobin (MCH), resulting in hypochromic and microcytic red blood cells.[4]

Iron is crucial for fetal, infant, and child development. The body's iron levels are influenced by dietary intake and absorption. Iron homeostasis is maintained through a balance of absorption, storage, and release.[5] Iron is absorbed in the duodenum, recycled by macrophages, and stored in various tissues when in excess.[6]

When iron levels are low, absorption is enhanced, and when they are high, iron is stored in tissues like the liver and spleen. The regulation of iron release is facilitated by proteins like ferroportin, which is controlled by hepcidin.[7]

Overall, understanding the mechanisms of iron metabolism and absorption is essential in managing and preventing iron deficiency anemia in children and adolescents.

MATERIALS & METHODS

The present study was conducted for assessing incidence of iron deficiency anemia among school going children. A total of 500 children were enrolled. A complete demographic and clinical detail of all the children was obtained. Blood samples were obtained from all the children. Hemoglobin levels were evaluated. Hematological profile was evaluated separately. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS software.

RESULTS

In the study, out of a total of 500 participants, 233 individuals, representing 46.6% of the sample, were found to have iron deficiency anemia. On the other hand, 267 participants, accounting for 53.4% of the total, did not exhibit iron deficiency anemia. (table 1)

Table 1: Incidence of Iron deficiency anemia

Iron deficiency anemia	Number	Percentage
Present	233	46.6
Absent	267	53.4
Total	500	100

Table 2: Iron deficiency anemia among boys and girls

Iron deficiency anemia	Boys	Girls	Total
Present	59	174	233
Absent	178	89	267
Total	237	263	500
p-value	0.001 (Significant)		

In Table 2, which examines the presence of iron deficiency anemia among boys and girls, it was observed that out of a total of 237 boys, 59 were diagnosed with iron deficiency anemia, while 178 boys did not have the condition. Among the 263 girls included in the study, 174 had iron deficiency anemia, and 89 did not.

The statistical analysis revealed a significant p-value of 0.001, indicating a statistically significant difference in the prevalence of iron deficiency anemia between boys and girls in the sample.

DISCUSSION

Anemia is a prevalent hematologic abnormality found in infants and children, affecting a significant portion of the global population.The presence of anemia is linked to increased morbidity and mortality, especially in preschool-aged children. Anemia can arise from various inherited and acquired factors, with causes differing among populations worldwide. Rather than a specific disease, anemia encompasses a diverse range of pathological conditions.[8,9]

Quantitatively, anemia is characterized by a reduction in the number of circulating red blood cells or functionally, as a state where the available red blood cells, crucial for oxygen transport, is insufficient to meet the body's metabolic needs.[10,11] Clinically, anemia is identified by levels of hemoglobin (Hb), hematocrit, or red blood cell counts falling below the established normal ranges adjusted for age and sex.

In our research study involving 500 participants, 233 individuals, making up 46.6% of the sample, were identified as having iron deficiency anemia, while 267 participants, constituting 53.4% of the total, did not show signs of iron deficiency anemia. Further analysis focusing on gender differences showed that out of 237 boys, 59 were diagnosed with iron deficiency anemia, and 178 boys did not exhibit the condition. Among the 263 girls in the study, 174 were found to have iron deficiency anemia, with 89 girls not being affected by the condition. The statistical evaluation yielded a notable p-value of 0.001, indicating a significant difference in the prevalence of iron deficiency anemia between boys and girls within the sample population. Keikhaei B et al determined the prevalence of iron-deficiency anemia in children under 5 years of age. At eight randomly selected health centers, the children's height (or length) and weight were measured, and information on length and weight at birth was obtained from growth charts. Blood samples were taken from 337 randomly selected children.The results showed that 43.9% of the children had anemia and 29.1% iron-deficiency anemia. The highest prevalence of iron-deficiency anemia was in the 12- to 24-month age group. In the urban areas, infants 6 to 11 months of age had the highest prevalence of iron-deficiency anemia.The high prevalence of iron-deficiency anemia among children indicates a major nutrition and health problem.[12]

CONCLUSION

Addressing the complex causes and gender variations in iron deficiency anemia is crucial for reducing its public health burden, especially among children and adolescents.

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