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Prevalence of Anemia and clinical Characteristic among Children aged between 6 months to 12 years

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ABSTRACT
Aim: To determine the Prevalence of Anemia and clinical Characteristic among Children aged between 6 months to 12 years.
Methods: This study was done in the department of Pediatrics in children aged 6 months to 12 years who visited the hospital's OPD and had a complete blood count (CBC) examination for minor diseases. According to the American Academy of Pediatrics, CBC is not recommended in all babies unless there is clinical suspicion of anaemia and risk factors for anaemia. As a result, CBCs were not performed on all children, but only on those who presented with pallor and certain diseases were included in this study. Total 230 children were included in this study.
Results: 150 of the 230 children were anaemic. In this research, the prevalence of anaemia is 65.22 percent. Out of the 150 children examined, 84 were between the ages of 6 and 12 years old, and 66 were between the ages of 6 months and 6 years old. The bulk of the 150 youngsters investigated were boys, accounting for 90 of the participants, with girls accounting for 60. Out of 150 youngsters examined, 49 (46.67 percent) belonged to the middle class, whereas 49 (32.67 percent) belonged to the lower class. Pallor (70%) was the most common clinical symptom in 150 cases, followed by platynchia (16.67 percent). Out of the 150 children evaluated, 20 (13.33%) had mild anaemia (Hb- 10-12 gm/dl), 93 (62%) had moderate anaemia (Hb- 7-10 gm/dl), and 37 (24.67%) had severe anaemia.
Conclusion: We show evidence of an alarming nationwide anaemia pandemic, especially among children aged 12 to 24 months. Anemia management should be prioritised as a national priority because of the serious effects for young children's physical and mental development, as well as their long-term health.
Keywords: Anemia, clinical Characteristic, Children

Introduction

Anemia is one of the most widespread pandemics, mostly impacting underdeveloped nations. Anemia affects about 3.5 billion people in poor nations. [1] The most common cause of anemia is iron deficiency, however other micronutrient deficiencies such as folate and vitamins A and B12 play a minor role. [2]Anemia may occur as a consequence of some disorders that cause blood loss, parasite infections such as filariasis, and persistent diarrhea. [3]

Anemia in children under the age of five is especially concerning since it has a severe influence on mental development and future social functioning. Children with iron deficiency anemia in their first two years of life have delayed cognitive development, as well as inferior school performance and employment potential later in life. [4] Iron deficiency anemia has also been linked to a decreased capacity to fight infections by decreasing cell-mediated immunity, resulting in increased morbidity from acute infections. [5] Iron deficiency anemia also has a deleterious impact on linear development and physical work capacity, particularly endurance exercise. [6]

Anaemia is defined as a reduction of the hemoglobin concentration or RBC volume below the range of values occurring in healthy persons.[7]

Hemoglobin thresholds to define anaemia

1. Children between 6 months to 6 years – less than 11 gm% of hemoglobin
2. Children between 6 years to 14 years – less than 12gm% of hemoglobin.

3. Adolescent male – less than 13 gm% of hemoglobin. 4. Adolescent female–Less than 12 gm% of hemoglobin

It is useful to consider iron deficiency as existing in three functionally distinct stages of severity.

1. Stage of storage iron deficiency: Exist when iron stocks are lower than normal yet haemoglobin and other functional iron proteins are present. In the absence of any biochemical indications of iron shortage in enzymes, this stage is distinguished by a reduction in serum ferritin.
2. Stage of iron limited erythropoiesis: is said to exist when the iron supply is inadequate to support basal erythropoiesis. Hemoglobin level will be in the lower range of normal, serum iron is decreased, Total iron binding capacity is increased, saturation of transferring with iron is decreased and free erythrocyte protoporphyrin is increased.
3. Stage of iron deficiency anaemia: there is a decrease in Hemoglobin concentration along with progressive microcytosis and hypochromia.

Methods and materials

This study was done in the department of Pediatrics in children aged 6 months to 12 years who visited the hospital's OPD and had a complete blood count (CBC) examination for minor diseases. According to the American Academy of Pediatrics, CBC is not recommended in all babies unless there is clinical suspicion of anaemia and risk factors for anaemia. As a result, CBCs were not performed on all children, but only on those who presented with pallor and certain diseases were included in this study. Total 230 children were included in this study. Premature infants, newborns with intrauterine growth retardation, babies with recurrent infections, severe infections, babies on supplements, bottle feeds, and haemoglobinopathies were all excluded from the study. The hospital software was used to gather the patients' data and Hb values.

Statistical analysis

All of the information was input into MS-Excel and then exported to SPSS Version 24.0. The findings were given in the form of frequencies and percentages.

Results

Out of 230 children 150 were Anemic. In this research, the prevalence of anaemia is 65.22 percent. Out of the 150 children examined, 84 were between the ages of 6 and 12 years old, and 66 were between the ages of 6 months and 6 years old. The bulk of the 150 youngsters investigated were boys, accounting for 90 of the participants, with girls accounting for 60.

Table 1. Prevalence of anemia

Total	Anemia Present	Percentage
230	150	65.22

Table 2 Gender distribution of children's

Gender	Number	Percentage
Male	90	60
Female	60	40

Table 3. Age distribution of children

Age group	Total	%
6 month – 6 year	66	44
6 year – 12 year	84	56
Total	150	100

Out of 150 youngsters examined, 49 (46.67 percent) belonged to the middle class, whereas 49 (32.67 percent) belonged to the lower socioeconomic position. The majority were vegetarians, accounting for 110 (73.33 percent) of the cases, with non-vegetarians accounting for the remaining 40 (26.67 percent).

Table-4: Socio economic class

Socio-Economic Class	Number of Cases	Percentage
Lower class	49	32.67
meddle class	70	46.67
upper class	31	20.66

Table-5: Clinical manifestations of children's

Symptoms	Number	Percentage
Pallor	105	70
Bald tongue	14	9.33
Platynchia	25	16.67
Murmur	6	4

Pallor (70%) was the most common clinical symptom in 150 cases, followed by platynchia (16.67 percent).

Table-6: Classification of Anemia

Type of Anaemia	Number	Percentage
Mild anaemia	20	13.33
Moderate anaemia	93	62
Severe anaemia	37	24.67

Out of the 150 children evaluated, 20 (13.33%) had mild anaemia (Hb- 10-12 gm/dl), 93 (62%) had moderate anaemia (Hb- 7-10 gm/dl), and 37 (24.67%) had severe anaemia.

Discussion

The World Health Organization (WHO) considers anaemia prevalence between 20.0 and 39.9 percent, as a substantial moderate public health concern, and prevalence beyond 40 percent to be of severe public health relevance. Out of the 150 children examined, 84 were between the ages of 6 and 12 years old, and 66 were between the ages of 6 months and 6 years old. The bulk of the 150 youngsters investigated were boys, accounting for 90 of the participants, with girls accounting for 60. Out of 150 youngsters examined, 49 (46.67 percent) belonged to the middle class, whereas 49 (32.67 percent) belonged to the lower socioeconomic position. The majority were vegetarians, accounting for 110 (73.33 percent) of the cases, with non-vegetarians accounting for the remaining 40 (26.67 percent). Pallor (70%) was the most common clinical symptom in 150 cases, followed by platynchia (16.67 percent). Out of the 150 children evaluated, 20 (13.33%) had mild anaemia (Hb- 10-12 gm/dl), 93 (62%) had moderate anaemia (Hb- 7-10 gm/dl), and 37 (24.67%) had severe anaemia.

RachanaBhoite, Uma Iyer, and colleagues (2011) investigated the extent of malnutrition and anaemia among Vadodara's rural schoolchildren. 3010 rural schoolchildren from grades 1 to 7. Malnutrition was widespread, with 70% of children being underweight. Stunting was seen in 32.4 percent of the females and 30.8 percent of the boys. According to CDC criteria, the proportion of severely underweight children was 37%, but it was 27% according to WHO 2007 standards. Clinical signs and symptoms of different micronutrient deficits such as iron (33.5%) and vitamin A (8.12%) were also seen. The majority of the youngsters missed breakfast, and their intake of MDM was sporadic. Anaemia was found in 73% of children, with the severity being worse in undernourished children. The connection between haemoglobin and clinical signs and symptoms of iron deficiency anaemia has a sensitivity of 64% and a specificity of 44%. [8]

Sudha Gandhi et al (2009-2010) investigated the incidence of anaemia in Kattankulathur, Tamil Nadu, schoolchildren. This research involved 900 youngsters ranging in age from 8 to 16 years. In writing, parental approval was acquired. Blood was drawn via a finger prick, and haemoglobin was tested using the cyanmethemoglobin technique. The children's health information was gathered using a pre-planned questionnaire. The youngsters were divided into age groups. The prevalence of anaemia among these youngsters was 52.88 percent, according to the World Health Organization's suggested cut off value for haemoglobin. When compared to boys, the prevalence of anaemia was substantially greater in females. According to the research population, 52.88 percent were anaemic, females (67.77 percent) outnumbered boys (35.55 percent), and anaemic youngsters were underweight. [9]

Severe anaemia is a leading cause of illness and mortality among African children, yet the causes of anaemia in this group have received little attention. In urban and rural Malawi, they performed a case-control study of 381 preschool children with severe anaemia (haemoglobin concentration, 5.0 g per dl) and 757 preschool children without severe anaemia. Causal variables previously linked to severe anaemia were investigated.

Multivariate analysis and structural equation modelling were used to analyse the data. Bacteremia (adjusted odds ratio, 5.3; 95 percent confidence interval [CI], 2.6 to 10.9), malaria (adjusted odds ratio, 2.3; 95 percent CI, 1.6 to 3.3), hookworm infection (adjusted odds ratio, 4.8; 95 percent CI, 2.0 to 11.8), human immunodeficiency virus infection (adjusted odds ratio, 2.0; 95 percent CI, 1.0 to 3.8), the G6PD (-20 Folate deficiency, sickle cell disease, and aberrant inflammatory responses in the laboratory were infrequent. Iron deficiency was not

common in case patients (adjusted odds ratio, 0.37; 95 percent confidence interval, 0.22 to 0.60) and was related with bacteremia. Malaria was linked to severe anaemia in the urban setting (due to seasonal transmission), but not in the rural setting (where malaria was holoendemic). Hookworm infections were discovered in 76% of children under the age of 2 years. Although there are many causes of severe anaemia in Malawian preschool children, folate and iron deficits are not among them. Even when malaria parasites are present, other or alternative causes of severe anaemia should be examined. [10]

Anaemia has long been an issue in India, with the National Family Health Survey (NFHS) III statistics showing that the prevalence of anaemia among children under the age of five is over 70%. When we look at the statistics for anaemia prevalence among children under three years old, it climbs to 79 percent, which is 5% higher than the NFHS II survey, which was conducted six years previous to the NFHS III survey, which was conducted in 2005-2006. However, during the previous seven years, there has been a minor decrease in the incidence of severe anaemia while there has been an increase in overall anaemia. [11,12]

Around 93 million children are under the age of three, accounting for 8% of India's total population, which was estimated at 116 million in 2009. Nearly 73 million children under the age of three (79 percent) have anaemia in varied degrees, with over 50 million having moderate-to-severe anaemia. When these anaemia prevalence figures are compared to current data and studies done by the Indian Council of Medical Research (ICMR) in the 1970s and 1980s, there is no difference, indicating the persistence of India's anaemia epidemic, which is thought to be largely due to iron deficiency. [13,14]

Prior to 1985, studies in India found an average prevalence rate of 68 percent in pre-school children. The prevalence ranged from 48 to 95 percent in several studies, putting all of India's states in the large magnitude group. However, this data is for children under the age of five, and children under the age of two are not researched individually, when the prevalence is predicted to be greater. According to National Nutrition Monitoring Bureau research, anaemia prevalence among children aged one to five years is roughly 66 percent, with a range of 33 to 93 percent between states. Kotecha and Kotecha investigated anaemia prevalence in children under the age of three in a Vadodara urban slum and discovered anaemia prevalence as high as 91 percent. [15-18]

Conclusion

We offer evidence showing an unacceptably high frequency of anaemia in children at the national level, regardless of whether the kid lives in the city or the country. The incidence in children between 12 to 24 months is especially concerning. Combating and preventing this disease is a national emergency, given the serious repercussions of anaemia and iron deficiency on young children's physical and mental growth and development, as well as their long-term health. We recognise that some actions have been taken in this regard, such as the enrichment of corn and wheat flours, the fortified food supplement distributed by Progresa to children under the age of two and pregnant and lactating women living in extreme poverty, and the pharmacological supplement containing iron and several vitamins included in two public health programmes.

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