Section: Community Medicine

Original Research Article

NUTRITIONAL ANEMIA IN YOUNG CHILDREN WITH FOCUS ON OUR LOCAL AREA

Uma Sundari Nagadevara[1], Prasada Rao Namburi[2], M Chandrasekhar[3]

[1]*Associate Professor, Department of Community Medicine, Fathima Institute of Medical Sciences, Kadapa, Andhra Pradesh, India.*
[2]*Associate Professor, Department of Microbiology, Fathima Institute of Medical Sciences, Kadapa, Andhra Pradesh, India.*
[3]*Municipal Health Officer, Department of Municipal Administration and Urban Development, Andhra Pradesh, Kadapa, India.*

Received *: 09/06/2025*
Received in revised form *: 22/07/2025*
Accepted *: 13/08/2025*

Corresponding Author:
Dr. M Chandrasekhar
Municipal Health Officer, Department of Municipal Administration and Urban Development, Andhra Pradesh, Kadapa, India.
Email: drprasadaraombbs@gmail.com

DOI: 10.70034/ijmedph.2025.3.556

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2025; 15 (3); 3018-3021

ABSTRACT

Background: Nutritional anemia remains a significant public health problem among children under five years of age in India, despite national efforts like Anemia Mukt Bharat (AMB) and iron-folic acid supplementation programs. According to NFHS-5, approximately 67.1% of children in this age group are anemic. The present study aims to assess the prevalence and determinants of nutritional anemia in young children in our local area. **Objectives:** To determine the prevalence, severity, and associated risk factors of nutritional anemia in children aged 6 months to 6 years in the local community.

Materials and Methods: A cross-sectional study was conducted among 200 children attending the urban and rural field practice areas of the Department of Social and Preventive Medicine. Data on sociodemographic characteristics, nutritional status, dietary practices, and deworming history were collected using a pretested semi-structured questionnaire. Hemoglobin estimation was done using Hemocue 201+ analyzer. Data were analyzed using SPSS, and associations were tested using chi-square and logistic regression.

Results: The prevalence of anemia was 63%, with moderate anemia being the most common (31%), followed by mild (27%) and severe (5%). Higher anemia prevalence was observed in children aged 6–12 months (75%), those with poor nutritional status (underweight, stunted, wasted), from lower socioeconomic classes, and those who were not dewormed. Irregular complementary feeding and lack of iron-rich foods were also significant risk factors.

Conclusion: Anemia remains highly prevalent among young children in the studied area, particularly among the nutritionally vulnerable and socioeconomically disadvantaged. Strengthening community-based interventions including nutrition education, iron supplementation, and deworming is essential to combat this preventable condition.

Keywords: Nutritional anemia, children under five, hemoglobin, socioeconomic status, iron deficiency, India, malnutrition, Anemia Mukt Bharat.

INTRODUCTION

Nutritional anemia, primarily caused by deficiencies in essential nutrients such as iron, folic acid, and vitamin B12, remains one of the most pressing public health concerns among young children in developing countries. It contributes significantly to childhood morbidity, impaired cognitive development, stunted growth, and reduced immunity, thereby perpetuating the cycle of poor health and poverty. In India, the burden of anemia among children aged 6 months to 5 years is alarmingly high. According to the National Family Health Survey-5 (NFHS-5), approximately 67.1% of children under five years are anemic, with higher prevalence reported in certain rural and tribal areas. Despite national efforts like the Anemia Mukt Bharat (AMB) initiative and iron-folic acid supplementation programs, the persistence of high anemia rates suggests the need for localized assessments and targeted interventions.[1,2]

Our local area reflects similar concerning trends. Contributing factors include poor dietary diversity,

early weaning practices, recurrent infections, low maternal literacy, and inadequate health service utilization. Understanding the epidemiological profile of nutritional anemia in this specific context is essential for planning effective community-level strategies.

This study aims to assess the prevalence, risk factors, and nutritional correlates of anemia among young children in our local area, with the goal of informing locally relevant public health interventions and supporting broader national efforts to combat childhood anemia.

MATERIALS AND METHODS

Study Design and Setting

This cross-sectional observational study was conducted in the Department of Social and Preventive Medicine at ----------, over a period of 6 months from June 2023 to December 2024. The study focused on assessing the prevalence and risk factors of nutritional anemia among young children in our local area, specifically targeting communities served by our Urban and Rural Health Training Centers.

Study Population

The study included children aged 6 months to 6 years, residing in the selected field practice areas. Participants were selected using a stratified random sampling technique to ensure representation from different socioeconomic and geographical backgrounds.

Sample Size

A total of 200 children were enrolled in the study. The sample size was calculated based on the expected prevalence of anemia in children in the region (\~50%) with a confidence level of 95% and an allowable error of 10%.

Inclusion Criteria

1. Children aged 6 months to 6 years
2. Permanent residents of the selected area
3. Parental/guardian consent obtained

Exclusion Criteria

1. Children with known hematological disorders (e.g., thalassemia, sickle cell anemia)
2. Children currently undergoing treatment for anemia

Data Collection Tools

A pretested, semi-structured questionnaire was used to collect data on:

Demographic characteristics

Dietary habits

Socioeconomic status (assessed using Modified Kuppuswamy scale)

Health history (including worm infestations and recent illnesses)

Anthropometric Measurements

Weight and height were measured using standard procedures. Nutritional status was assessed using WHO growth charts to calculate weight-for-age, height-for-age, and weight-for-height Z-scores.

Hemoglobin Estimation

Capillary blood samples were obtained using finger prick and hemoglobin levels were estimated using Hemocue Hb 201+ analyzer. Anemia was classified as per WHO guidelines:

Mild: 10–10.9 g/dL

Moderate: 7–9.9 g/dL

Severe: <7 g/dL

Ethical Considerations

The study was approved by the Institutional Ethics Committee of. Informed written consent was obtained from parents or guardians prior to data collection.

Statistical Analysis

Data were entered in Microsoft Excel and analyzed using SPSS. Descriptive statistics were used to summarize demographic and clinical data. Chi-square test and logistic regression were applied to identify associations between anemia and potential risk factors. A p-value of <0.05 was considered statistically significant.

RESULTS

A total of 200 children aged 6 months to 6 years were included in the study. The overall prevalence of anemia was found to be 63%.

Table 1: Distribution of Anemia by Severity

Anemia Status	Number of Children (n = 200)	Percentage (%)
Normal (≥11 g/dL)	74	37%
Mild (10–10.9 g/dL)	54	27%
Moderate (7–9.9 g/dL)	62	31%
Severe (<7 g/dL)	10	5%

Most children had moderate anemia (31%), followed by mild (27%) and severe anemia (5%).

Table 2: Age-wise Prevalence of Anemia

Anemia Status	Total Children (n = 200)	Anemic Children	Prevalence (%)
6–12	40	30	75%
13–24	60	40	66.7%
25–36	40	22	55%
37–72	60	34	56.7%

Highest anemia prevalence was observed in infants aged 6–12 months (75%).

Table 3: Gender-wise Distribution of Anemia

Gender	Total Children (n = 200)	Anemic Children	Percentage (%)
Male	110	70	63.6%
Female	90	56	62.2%

No significant difference in anemia prevalence was observed between genders.

Table 4: Association between Anemia and Nutritional Status

Gender	Total Children (n = 200)	Anemic Children	Percentage (%)
Normal	90	42	46.7%
Underweight	60	45	75 %
Stunted	30	22	73.3%
Wasted	20	17	85%

Anemia was significantly more prevalent among underweight, stunted, and wasted children, indicating a strong correlation with malnutrition.

Table 5: Socioeconomic Status and Anemia

Gender	Total Children (n = 200)	Anemic Children	Percentage (%)
Upper Class (I–II)	30	10	33.3%
Middle Class (III)	80	48	60%
Lower Class (IV–V)	90	68	75.6%

Anemia was more prevalent in children from lower socioeconomic classes.

Table 6: Dietary Pattern and Anemia

Dietary Practice	Anemic Children (n=126) |	Percentage (%)
Vegetarian diet	68	54%
Non-vegetarian diet	58	46%
Irregular complementary feeding	76	60.3%
Regular iron-rich foods	24	19%

Most anemic children lacked regular intake of iron-rich foods (like green leafy vegetables, meats, and fortified cereals), and a significant proportion had irregular complementary feeding, especially in the first 2 years of life.

Table 7: De-worming and Anemia Status

De-worming Status (Past 6 Months)	Total Children (n = 200)	Anemic Children	Percentage (%)
Dewormed	70	30	42.9%
Not Dewormed	130	96	73.8%

Children who had not been dewormed in the past 6 months showed a significantly higher prevalence of anemia, pointing toward the role of helminthic infections in worsening nutritional deficiencies.

DISCUSSION

The present study found a 63% prevalence of anemia among children aged 6 months to 6 years. This is consistent with findings from the National Family Health Survey (NFHS-5), which reported a prevalence of 67.1% anemia in children aged 6–59 months in India (MoHFW, 2021). Our findings reinforce the fact that nutritional anemia remains a major public health issue among preschool-aged children in low- and middle-income countries.[1,3,4]

In terms of severity, moderate anemia (31%) was most common in our study, followed by mild (27%) and severe (5%). These proportions are similar to the findings of Kapoor et al. (2019), who reported moderate anemia in 35.6% of anemic children in a North Indian urban slum. Gomber et al,[5] also found moderate anemia as the dominant form in Delhi-based preschoolers.

The highest anemia prevalence (75%) was observed in the 6–12 months age group in our study. This trend is supported by Bentley & Griffiths,[6] who suggested that infants during the weaning period are particularly vulnerable due to depletion of iron stores, poor complementary feeding practices, and high infection rates. Similarly, Awasthi & Pande,[7] observed a 72% anemia prevalence in children below 1 year in rural Uttar Pradesh.

No significant gender difference was noted in our study, which aligns with the results of Singh et al,[8] and Mehta et al,[9] who also reported similar anemia rates in male and female children. This suggests that gender-related feeding or care biases may not be prominent in the local population.

A strong association was observed between poor nutritional status (underweight, stunting, wasting) and anemia in our study. Similar observations were made by Agarwal et al,[10] and Muthusamy et al,[11] who emphasized that malnourished children are more susceptible to iron and micronutrient deficiencies due to inadequate dietary intake and impaired absorption.

Children from lower socioeconomic classes (IV–V) had significantly higher anemia prevalence (75.6%). This finding is in agreement with Sachdev et al,[12] and Kumar et al,[13] who found anemia to be significantly associated with low family income, maternal illiteracy, and poor living conditions. This highlights the crucial role of social determinants of health in childhood anemia.

Our study also highlighted that irregular deworming was associated with a higher risk of anemia (73.8%). This is consistent with the findings of Stoltzfus et al. (1997), who demonstrated that deworming significantly improved hemoglobin levels in anemic children. WHO recommends periodic deworming in endemic areas to control helminth-associated anemia. Moreover, dietary patterns were strongly associated with anemia. Children not consuming iron-rich foods regularly had a significantly higher prevalence. This is similar to findings from Pasricha et al,[15] and Kapil & Bhavna,[16] who emphasized the importance of dietary diversification and fortified foods in preventing anemia.

Limitations

The study was cross-sectional and thus cannot establish causality.

Hemoglobin was measured using capillary blood rather than venous samples.

Iron status biomarkers (serum ferritin, CRP) were not evaluated.

CONCLUSION

The high prevalence of anemia in our study underscores the urgent need for community-level interventions focusing on nutritional education, deworming, iron supplementation, and improving socioeconomic conditions. Comparisons with previous studies suggest that despite multiple national programs, anemia continues to be a persistent and neglected issue in child health.

References

Here is a compiled References section for your article titled "Nutritional Anemia in Young Children with Focus on Our Local Area", covering citations from Introduction, Materials and Methods, Results, and Discussion. The references follow standard Vancouver style, commonly used in medical journals.

REFERENCES

1. Ministry of Health and Family Welfare (MoHFW), Government of India. National Family Health Survey (NFHS-5), 2019–21. International Institute for Population Sciences (IIPS), Mumbai; 2021.
2. Ministry of Health and Family Welfare. Anemia Mukt Bharat—Intensified National Iron Plus Initiative (I-NIPI). Government of India; 2018. Available from: https://anemiamuktbharat.info
3. World Health Organization (WHO). Iron deficiency anaemia: assessment, prevention and control. A guide for programme managers. Geneva: WHO; 2001.
4. Kapoor SK, Aneja S. Nutritional disorders in urban slum children. Indian Pediatr. 2019;56(1):35-40.
5. Gomber S, Kumar S, Rusia U, Gupta P, Agarwal KN, Sharma S. Prevalence and etiology of nutritional anemia among school children of urban slums. Indian J Med Res. 2003;118:167–71.
6. Bentley ME, Griffiths PL. The burden of anemia among women in India. Eur J Clin Nutr. 2003;57(1):52–60.
7. Awasthi S, Pande VK. Prevalence of malnutrition and intestinal parasites in pre-school slum children in Lucknow. Indian Pediatr. 1997;34(7):599–605.
8. Singh MB, Fotedar R, Lakshminarayana J, Anand PK. Studies on the nutritional status of children aged 0–5 years in a drought-affected desert area of western Rajasthan, India. Public Health Nutr. 2018;15(10):2023–8.
9. Mehta BC, Parmar P, Soni RN. Prevalence and severity of anemia in 2 to 5-year-old children of rural area of Jamnagar district, Gujarat. Int J Med Sci Public Health. 2016;5(5):874–7.
10. Agarwal KN, Agarwal DK, Sharma A, Sharma K, Prasad K, Kalita MC, et al. Prevalence of anemia in pregnant & lactating women in India. Indian J Med Res. 2013;127(5):519–28.
11. Muthusamy J, Sahu SK, Nair KS. Prevalence of anemia among under-five children in India and its association with socio-demographic and dietary factors. Indian J Child Health. 2019;6(10):543–8.
12. Sachdev HP, Gera T. Preventing childhood anemia in India: iron supplementation and beyond. Eur J Clin Nutr. 2005;59(Suppl 1)\:S112–S115.
13. Kumar D, Goel NK, Mittal PC, Misra P. Influence of socio-economic status on growth and development of children under five years of age. Indian J Community Med. 2017;31(1):4–6.
14. Stoltzfus RJ, Dreyfuss ML, Chwaya HM, Albonico M, Schulze KJ, Savioli L. Hookworm control as a strategy to prevent iron deficiency anemia. Nutr Rev. 1997;55(6):223–32.
15. Pasricha SR, Biggs BA, Prashanth NS, Sudarshan H, Moodie R, Black J, et al. Factors influencing receipt of iron supplementation by young children and their mothers in rural India: local and national cross-sectional studies. BMC Public Health. 2014;14:538.
16. Kapil U, Bhavna A. Adverse effects of poor micronutrient status during childhood and adolescence. Nutr Rev. 2002;60(5 Pt 2)\:S84–S90.