International Journal of Medical Research Professionals
P-ISSN: 2454-6356; E-ISSN: 2454-6364
DOI: 10.21276/ijmrp

Original Research Article.

A Prospective Study on Anemia: Prevalence and Risk Factors in Children Under 5 Years of Age

Faraz Ahmad Khan[1*], Mohd Parvez[2], Vaibhav Jain[1], Mohd Waseeque Khan[3]

[1]Assistant Professor, [3]Senior Resident, Department of Paediatrics,
Integral Institute of Medical Sciences & Research, Lucknow, Uttar Pradesh, India.
[2]Associate Professor, Department of Paediatrics, Autonomous State Medical College, Bahraich, UP, India.

ABSTRACT

Introduction: Anemia has several potential etiologies followed by acute blood loss and heredity or acquired diseases. In young children, the most common cause of anemia is low consumption and absorption of iron-rich foods.

Methodology: 100 children which was under the 5 year of age included in this study. This study was conducted in Department of Pediatrics in Integral Institute of Medical Sciences & Research, Lucknow.

Result: Result of this study revealed that in 31% cases moderate anemia was seen, whereas in 24% cases mild anemia, 10% severe anemia was seen. While in 35% cases no anemia was seen.

Conclusion: This study can be concluding that iron and other micronutrient rich diet can provided to the children for prevention of anemia.

Keywords: Anemia, Hemoglobin, Morbidity.

***Correspondence to:**

Dr. Faraz Ahmad Khan,
Assistant Professor,
Department of Paediatrics,
Integral Institute of Medical Sciences & Research,
Lucknow, Uttar Pradesh, India.

Article History:

Received: 19-11-2019, **Revised:** 28-12-2019, **Accepted:** 25-01-2020

Access this article online	
Website: www.ijmrp.com	Quick Response code
DOI: 10.21276/ijmrp.2020.6.1.042	

INTRODUCTION

Anemia is the major public health problems to manage in malaria endemic countries.[1] It has been estimated that anemia affects more than half of children less than five years old.[2] It leads to an increased risk of child mortality. Moreover, anemia also has negative effects on cognitive development and physical growth of children from infancy to adolescence.[1] It is associated with increased morbidity rates.[3] Though, due to the deceptive nature of its presentation, mild-to-moderate degrees of anemia frequently remain undetected.[4] It is reported that most of the cases of anemia are related to iron deficiency, while other causes of anemia are parasitic infections and nutritional deficiencies.[5] In pediatric populations, anemia and malaria are the major health problems.[6] Malaria produces anemia through hemolysis and increased splenic clearance of red blood cells and cytokine-induced dyserythropoeisis.[7] A single episode of malaria or repeated episodes due to reinfection may result in life-threatening anemia.[8]

In childhood anemia, a child has an insufficient hemoglobin (Hb) level to provide adequate oxygen to the body tissues. The threshold Hb level for being nonanemic children between 5 to 59 months is 11.0 grams per deciliter (g/dL).[9] Anemia has several potential etiologies followed by acute blood loss and heredity or acquired diseases. In young children, the most common cause of anemia is low consumption and absorption of iron-rich foods.[10-13] These conditions most often lead to iron deficiency anemia. It accounts for approximately half of all anemia cases globally.[14,15] Though significant across the life span, anemia in under-five children is a special case given its significance to underlying a range of morbidities and mortality within this population subset.[16]

The aim of this present study was to assess the burden and proportion of anemia in children aged between 6 to 59 months of age and also generates awareness among people and health care providers about the problems due to anemia.

MATERIALS & METHODS

Study Population: 100 children which were under the 5 year of age included in this study.

Study Area: This study was conducted in Department of Pediatrics in Integral Institute of Medical Sciences & Research, Lucknow.

Study Duration: The duration of study was over a period of one year.

Data Collection: All history, examination findings & reports were collected & filled in predesigned pro forma. Investigation of Blood was done which involved of hemoglobin and hematocrit evaluation, total RBCs count, reticulocyte count, mean corpuscular volume, mean corpuscular hemoglobin concentration, red cell distribution width, white blood cell count: total and

differential, ESR, peripheral blood smear examination . Iron studies also evaluated like serum iron, serum ferritin, transferrin saturation and TIBC. Anemia was analysed as per the WHO cut off of Hemoglobin (Hb) level. Hb < 7 g/dL in 6-59 months and to categorize the degree of anemia, following cut-off points were used:

Mild anemia: 10.0-10.9 g/dL,

Moderate anemia:7.0-9.9g/dL,

Severe anemia: < 7 g/dL

Data Analysis: Data was analyzed by using Microsoft excel.

RESULTS

In our study, we were included 100 cases. Among all cases 55 were male and 45 were female. In this study we found that most prevalent age was 6-24 months (37%) followed by 24-48 months (34%) & 49-59 months (29%). Socioeconomic status also recorded that which were 39% from lower class, 35% upper lower class, 22% lower middle class, 3% middle class & 1 from upper middle class, 57% cases were found from rural areas & 43% cases were seen from urban areas. Result of this study revealed that in 31% cases moderate anemia was seen, whereas in 24% cases mild anemia, 10% severe anemia was seen. While in 35% cases no anemia was seen. This study also observed that Anemia with age correlation which showed in table 3.

Table 1: Distribution of cases according to age group

Age group	No. of cases	Percentage
6-24 months	37	37%
24-48 months	34	34%
49-59 months	29	29%
Total	100	100%

Table 2: Distribution of cases according to anemia

Anemia	No. of cases	Percentage
No anemia	35	35%
Mild	24	24%
Moderate	31	31%
Severe	10	10%
Total	100	100%

Table 3: Distribution of cases according to anemia with correlation of age

Age	Anemia		
	Mild	Moderate	Severe
6-24 months	6	13	4
25-48 months	7	11	5
49-59 months	11	7	1
Total	24	31	10

Chart 1: Distribution of cases according to gender

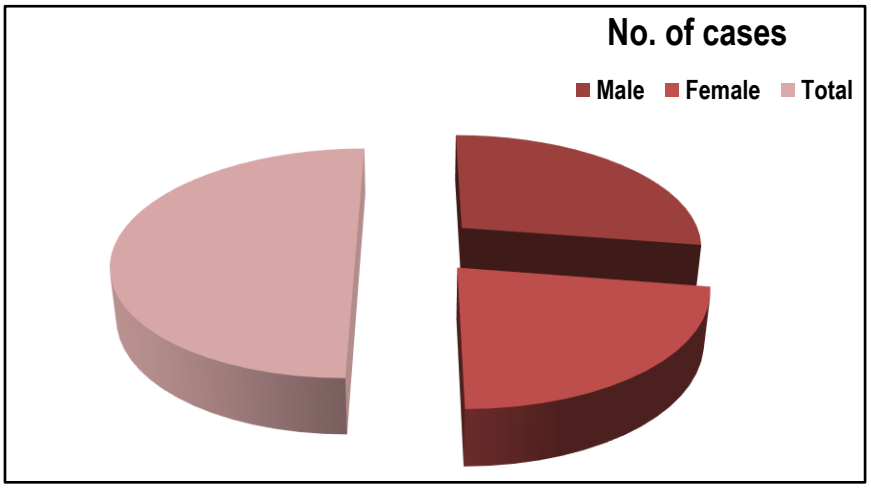


Chart 2: Distribution of cases according to socioeconomic status

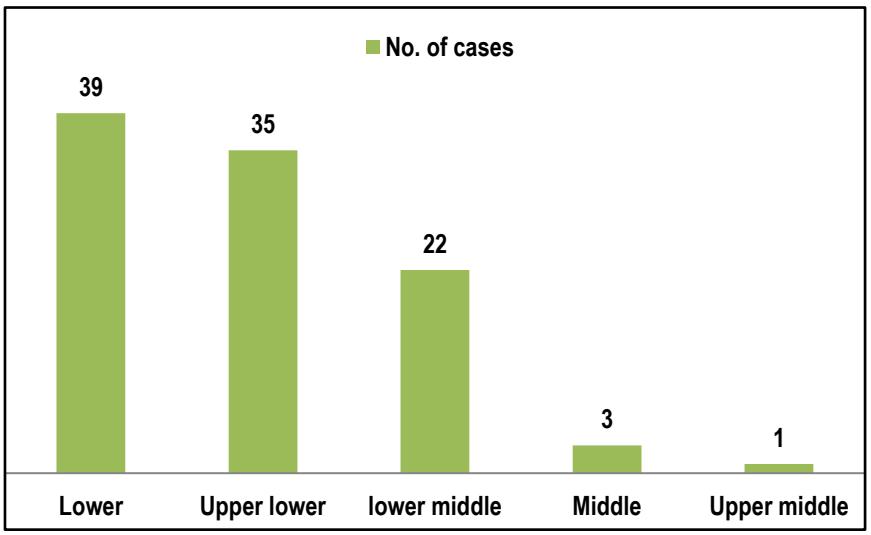
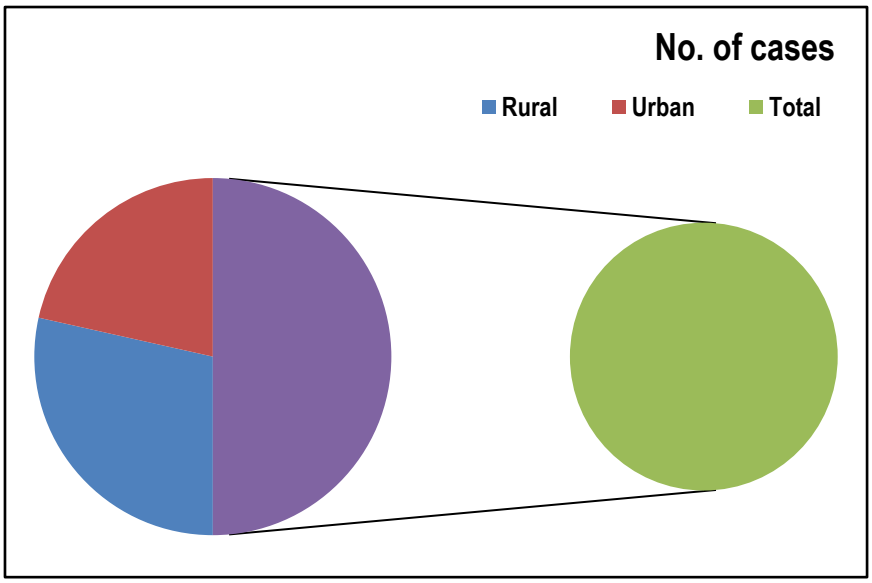


Chart 3: Distribution of cases according to residence



DISCUSSION

In this study, 65% percent children were diagnosed to have anemia. Sahu T et al has found anemia in 93.8% of children below 5 years in Orissa.17 Similar finding were seen by Saba F et al. They reported that around 73% children were anemic.18 According to NFHS-3 reports, seventy eight percent of children under five had anemia. WHO has reported that around 74.3% of fewer than five children are anemic globally. In the present study, the ratio of anemia in females was less than in male i.e. 45:55. This is in contrary to the study of Saba F et al who have reported a male: female ratio of 1.4:1. Ferreira et al also revealed higher incidence of anemia in male children in Brazil.19 The higher incidence of anemia in female children in this part of world may be due to the ignorance in the care of female child as compared to the male child.19 Our study observation showed that around 95% children belonged to lower middle class. Kanchana et al also found that 90% anemic children belonged to lower class and10% belonged to lower middle class.20 Mehrotra SK et al have reported in their study that 78.4% of anemic children belonged to lower socio-economic status.21 All these children are prone for recurrent diarrhea, repeated respiratory tract and parasitic infestations. Their diet is also deficient in iron content. Due to all these factors, children are anemic. In the present study, between the age group of 6 to 24 months 62.1% children had anemia. Sailaja et al.22 observed similar results with 91.5% children suffering from various grades of anemia. 14.6% children had mild anemia, 61.5% children had moderate anemia, and 15.4% children were suffering from severe anemia.22 The main reason behind a high percentage of anemic children in this age group is lengthy breast feeding, inadequate weaning practices.

CONCLUSION

This study can be concluding that iron and other micronutrient rich diet can provided to the children for prevention of anemia. Prolonged breast feeding should be disincentive with introduction of complimentary feeding and weaning off practice to start after 6 months of age. Regular de worming and proper sanitary facilities should be provided in the residential area of lower socio economic families.

REFERENCES

1. Crawley J. Reducing the burden of anemia in infants and young children in malaria-endemic countries of Africa: from evidence to action. Am J Trop Med Hyg. 2004; 71: 25–34. PMID: 15331816.
2. World Health Organization (WHO). Assessing the iron status of populations. Including literature reviews. Joint World Health Organization/Centers for Disease Control and Prevention Technical Consultation on the Assessment of Iron Status at the Population Level. Geneva, Switzerland.; 2007.
3. Balarajan Y, Ramakrishnan U, O¨ zaltin E, Shankar AH, Subramanian S. Anemia in low-income and middle-income countries. The Lancet. 2012; 378: 2123–35.
4. Schellenberg D, Schellenberg J, Mushi A, Savigny D de, Mgalula L, Mbuya C, et al. The silent burden of Anemia in Tanzanian children: a community-based study. Bull World Health Organ. 2003; 81: 581– 590. PMID: 14576890.
5. World Health Organization (WHO). Iron deficiency Anemia: assessment, prevention, and control. [Internet]. Geneva: World Health Organization; 2001.
http://apps.who.int/iris/bitstream/10665/66914/1/
WHO_NHD_01.3.pdf?ua=1
6. World Health Organization., Global Malaria Programme. World malaria report 2014. [Internet]. Geneva: World Health Organization; 2015.
http://www.who.int/malaria/publications/world_malaria_report_2014/ wmr-2014-no-profiles.pdf
7. Menendez C, Fleming A, Alonso P. Malaria-related Anemia. Parasitol Today. 2000; 16: 469–476. PMID: 11063857.
8. English M. Life-threatening severe malarial Anemia. Trans R Soc Trop Med Hyg. 2000; 94: 585–588. PMID: 11198634.
9. WHO. Haemoglobin concentrations for the diagnosis of Anemia and assessment of severity. Vitamin and Mineral Nutrition Information System. Geneva: World Health Organization; 2011.
10. Black RE, Victora CG, Walker SP, et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. Lancet. 2013;382(9890):427–51.
11. Bhutta ZA, Salam RA, Das JK. Meeting the challenges of micronutrient malnutrition in the developing world. Br Med Bull. 2013;106(1):7–17.

12. Cardoso MA, Scopel KK, Muniz PT, Villamor E, Ferreira MU. Underlying factors associated with anemia in Amazonian children: a population-based, cross-sectional study. PLoS One. 2012; 7(5):e36341.
13. Yang W, Li X, Li Y, et al. Anemia, malnutrition and their correlations with socio-demographic characteristics and feeding practices among infants aged 0–18 months in rural areas of Shaanxi province in northwestern China: a cross-sectional study. BMC Public Health. 2012;12(1):1.
14. Schrier SL. Causes and Diagnosis of Iron Deficiency Anemia in the Adult. In: UpToDate, Waltham, MA: Wolters Kluwer Health; 2017. Accessed February 20, 2017.
15. de Benoist B, McLean E, Egli I, Cogswell M. Worldwide Prevalence of Anemia 1993–2005: WHO Global Database on Anemia. Geneva: World Health Organization; 2008.
16. Allen LH, De Benoist B, Dary O, Hurrell R, World Health Organization. Guidelines on Food Fortification with Micronutrients. Geneva: World Health Organization; 2006.
17. Sahu T, Sahani NC, Patnaik L. Childhood anemia: a study in tribal area of Mohana block in Orrisa. Indian J Com Med. 2007;32(1):106-8.
18. Firdos S, Poornima S. Anemia among hospitalized children at a multispecialty hospital, Bangalore (Karnataka), India. J Family Med Primary Care. 2014;3(1):256-57.
19. Rosemary F. Prevalence of anemia in under five- year-old children in a children'shospital in Recife, Brazil. Rev Bras Hematol Hemoter. 2011;33(2):100-4.
20. Kanchana, Madhusudan Sr, Ahuja S, Nagaraj N. Prevalence and risk factors of anemia in under five-year-old children in children's hospital. Int J Contemp Pediatr 2018;5:499- 502.
21. Mehrotra SK, Mathur JS, Maheswari BB. Epidemiological aspects of nutritional anemia in children below five years. Indian J Pediatr. 1976;43:132-5.
22. Sailaja K, Reddy KV, Reddy KA, Keerthi S. Iron deficiency Anemia in young children (6 to 23 months) in relation to complementary feeding practices in rural Telangana. Int J Contemp Pediatr 2017;4:1240-4.

Source of Support: Nil. **Conflict of Interest:** None Declared.

Cite this article as: Faraz Ahmad Khan, Mohd Parvez, Vaibhav Jain, Mohd Waseeque Khan. A Prospective Study on Anemia: Prevalence and Risk Factors in Children Under 5 Years of Age. Int J Med Res Prof. 2020 Jan; 6(1):170-73.
DOI:10.21276/ijmrp.2020.6.1.042