

Study of Prevalence of Iron Deficiency Anemia in Hospitalised Children in Tertiary Care Centre

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ABSTRACT

Background: Anemia prevalence in young children continues to remain over 70% in most parts of India and Asia. In developing countries like India, anemia is a significant cause of mortality and morbidity in children under 5 years of age. In public health terms, Iron deficiency anemia (IDA) is a very important causative factor for childhood anemia.

Materials & Methods: A prospective observational study was conducted on hospitalized children in tertiary care center. All children between 1 month to 18 years of age were admitted in Pediatric ward were taken to the study for 1.5 years study period.

Results: Total number patients admitted in pediatric ward were 1280 out of which 812 were enrolled for the study, out of which 522 patients have been studied in detail as they had iron deficiency anemia. The total prevalence in our study period is 65.64%. Our analysis showed that males outnumbered females with sex ratio of Male: Female is 1.76:1. This study shows that the children of 1 month to 5 years is 361 which are 69.1%, children of age 5-12 years are 123 which is 23.6%, children of age 12-18 years are 38 which is 7.3%. We observed that the most common age group involved is less than 5 years which is significant. The etiology of the hospitalization has been studied, out of which Lower respiratory infections were more common.

Conclusion: This study revealed that the prevalence of IDA in under 5 years is more common than in other age groups. Children with anemia and those with iron deficiency anemia were found to be more susceptible to lower respiratory tract infections.

KEYWORDS: Anemia, Paediatrics, Prevalance

INTRODUCTION:

Anemia prevalence in young children continues to remain over 70% in most parts of India and Asia.^[1] Prevalence of anemia more than 40% in any country is considered

as a public health threat. Recent data suggests that anemia is widely prevalent among all age groups, and is particularly high among the most vulnerable nearly 58% among pregnant women, 50% among non-pregnant non-lactating women, 56% among adolescent girls (15–19 years), 30% among adolescent boys and around 80% among children under 3 years of age and 70% below 5 years of age.

^[2] The highest prevalence of anemia (47.4%) among preschool-aged children of these 293 million children, 89 million live in India. Nutritional anemia is a one of public health problem in India and mostly due to iron deficiency. ^[3] Nutritional anemia is used not only as a health indicator but also, a socioeconomic indicator for any nation.

In young children, iron deficiency is due to increase in iron requirement during periods of rapid growth. Along with this infant and toddler diets are often poor in bioavailable iron, particularly post weaning. Children who suffer from anaemia have 5–10 point deficits in intelligence quotient. Iron deficiency can cause significant central nervous system damage even in the absence of anemia.^[4]

The present study was undertaken with an aim to find the occurrence of anemia, the patterns of anemia, etiology of hospital admission and its distribution in different age groups among the hospitalized children.

MATERIALS AND METHODS:

This study was conducted within the pediatric ward of K.E.M hospital, Pune. We performed a prospective observational study of children between 1 month to 18 years of age admitted in pediatric ward between 2017 and 2018 for 1.5 years.

All the children who were anemic i.e., haemoglobin less than 11 were included in the study.^[5] Details of the patients who has hemoglobin <11 were taken in detail, hemogram, peripheral blood smear, blood indices (mean corpuscular volume, serum ferritin, red cell distribution width, reticulo-

cyte count) was studied in a predefined format. Children with history of acute blood loss, chronic inflammatory diseases, chronic kidney disease and chronic liver disease, Hemolytic anemia, hemoglobinopathies, Leukaemia's were excluded. The children who are very sick and the patients who are chronically ill were excluded from the study.

A pre-designed, pre-tested and pre-coded proforma was used for recording all the findings and the questions were partially closed ended. After getting Ethical clearance from the Institutional Ethical Committee, study was conducted. Out of 1210 admissions, 812 were enrolled for study and on the basis of hemoglobin 522 patients were studied in detail.

Data Entry and Analysis:

The data were entered in Microsoft Excel 2010 version and data was analysed using Microsoft Excel 2010 and Epi Info seven.two.zero. Descriptive and inferential statistical analyses were utilized in the present study. Results on continuous measurements were conferred on Mean±SD (Min-Max) and results were presented in Number (%). Significance was assessed at 5% level of significance. Student t-test is employed to compare intergroup variations for continuous variables.

OBSERVATIONS AND RESULTS:

Gender wise distribution:

In our study total children studied were 522, out of which males are 333(63.8%), females are 189 (36.2). Males outnumbered females with sex ratio Male: Female is 1.76:1.

Age group	Females	Males	Total	%
1-6 month	27	55	82	15.7
6-24 month	58	91	149	28.5
2yr-5yr	53	77	130	24.9
5yr-12yr	41	82	123	23.6
12yr-18yr	10	28	38	7.3
Total	189	333	522	100

Table 1: AGE WISE DISTRIBUTION OF ANEMIA

In our study out of 522 children studied, children of 1-6 months age are 15.7%, children of age 6-24 months are 28.5%, children of age 2-5 years are 24.9%, children of age 5-12 years are 23.6% and children of age 12-18 years are 7.3%. In our study we observed that the most common age group involved is less than 5 years and the number of children affected is 361 which are 69.1% which is significant.

Grades Of Severity Of Anemia In Study Population:

The degree of anemia is categorized as mild anemia is hemoglobin between 10.0-10.9 g/dL, moderate anemia is 7.0-9.9 g/dL and severe anemia is < 7 g/dL.

Grade of anemia	No, of cases	%
Mild anemia	219	42.0
Moderate anemia	253	48.5
Severe anemia	50	9.5
Total	522	100

Table 2: Grades Of Severity Of Anemia In Study Population

In our study we observed that out of 522 children studied, 42% had mild anemia, 48.5% has moderate anemia, 9.5% has severe anemia. In our study we observed that moderate anemia is more prevalent than mild anemia. Kanchana et al. studied in 500 children at tertiary care hospital over period of 2 years, which shows same as results as our study with more prevalence of moderate anemia.

Socio Economic Status Of Study Population As Per Kuppuswamy Scale:

Majority population in our study belonged to lower middle and lower class which is 248 and 120 (61.48%), 147 (28.16%), 147 (28.16%) belonged to upper middle and 7(1.34%) belongs to upper class people. The etiology of the hospitalization has been studied, out of which Lower respiratory infections were about 288 (55.1%), Gastroenteritis were 54, Fever was about 53, Viral fever 50. It shows that most children admitted in hospital with lower respiratory infections.

Red Cell Distribution Width (RDW) As Per Grades of Severity of Anemia and Levels Of Serum Ferritin In Hospitalized Children:

In our study RDW is one parameter considered as per WHO definition of iron deficiency anemia. The mean values for mild, moderate and severe anemia are 14.62%, 15.47%, 16.07% respectively with standard deviations of 1.472, 2.068 and 2.312 which are statistically significant with p value of <0.001. Observed that mean serum ferritin values for mild, moderate and severe anemia are 1.30, 6.97 and 4.22 respectively which are statistically significant (P<0.001).

Population Distribution as Per the Residential Area:

Rural and urban areas are classified based on census bureau of India. Rural area is any incorporated place or census designated place (CDP) with fewer than 2500 inhabitants. Urban area is any incorporated place or CDP with more than 2500 inhabitants. In our study 210 patients i.e. 60.77% belonged to rural population and urban population was 210 which is 40.33% which is epidemiologically significant.

In our study the association of weaning was studied which shows that out of 522 children studied 355 had history of late weaning which is statistically significant with the (p value = 0.04).

grade of anemia	Weaning		Chi square df=2	P
	After 6 months	Late		
Mild anemia	161	58	6.261	0.044 Sig
Moderate anemia	165	88		
Severe anemia	29	21		
Total	355	167		

Table 3: ASSOCIATION OF LATE WEANING WITH ANEMIA

Grade of anemia	Cow milk		Chi square df=2	P
	Yes	No		
Mild anemia	54	165	13.300	0.001 Sig
Moderate anemia	98	155		
Severe anemia	22	28		
Total	174	348		

Table 4: Association Of Cows Milk With Ida

In our study of 522 children studied association of cow's milk with anemia was studied, we observed that 174 children consumed cow's milk were developed anemia and 348 have no history of consumption cow's milk.

DISCUSSION:

In our study total of 522 patients admitted in tertiary care center in pediatric ward for various causes. Total number of patients admitted in pediatric ward was 1280 out of which 812 were enrolled for the study. Out of which 522 patients have been studied in detail as they had iron deficiency anemia. The total prevalence in our study period is 65.64%. Our analysis showed that males outnumbered females. Dipshika maiti, Suchi Acharya, surupa Basu et al. [6] also showed similar results. But in study done by Sundaresan, William, A. Prema et al. [7] found that iron deficiency anemia is more common in girls than boys.

The prevalence of anemia is more in fewer than 5 years age children. Dipshika maiti, Suchi Acharya, surupa Basu et al. shows similar result of more prevalence of iron deficiency anemia under 5 years of age. The etiology of the hospitalization has been studied, out of which Lower respiratory infections were more common. Kanchana et al. [8] shows more common etiology was acute gastro enteritis, but in our study we found that lower respiratory tract infections are more common etiology.

Out of 522 patients studied majority population belonged to lower middle and lower class. Anemia is more prevalent in rural population when compared with urban population which is epidemiologically significant as per the previous

data and studies concerned. [9] Our study showed same results as Yadav Jeetendra Yadav, Ashish K et al. [10] concludes that anemia is significantly associated with age, income strata and place of residence. Cow's milk ingestion and late weaning practices were significantly increasing the risk of iron deficiency anemia. [11, 12]

CONCLUSION:

This study concludes that the prevalence of IDA in under 5 years is more common than in other age groups. Children with anemia and those with iron deficiency anemia were found to be more susceptible to lower respiratory tract infections. Anemia is significantly associated with age, education, income strata and place of residence.

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