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A STUDY OF ANEMIA IN INFANTS AT A TERTIARY CARE HOSPITAL

Dr. Shahaji Yadawa Gaikwad

Assistant Professor Dept. of Paediatrics Ashwini Rural Medical College and Research Centre Kumbhari Solapur

Conflicts of Interest: Nil

ABSTRACT:

Introduction: *Anaemia is worldwide health problem which affects both developed and developing countries and this burden are being higher in the developing countries. Anaemia is nutritional problem which is commonly seen in women and children that affects their most crucial periods like during pregnancy and growth respectively. According to WHO database Global on Anemia for 1993–2005, it was estimated that worldwide prevalence of anemia is 25 % with higher percentage noted in developing countries (43%). About 293 million children were affects anemia out of which 89 million live in India. India is one of the countries having with high prevalence of nutritional anemia in the world. In India prevalence rate is about 40% of anaemia as severe health problem. The National Family Health SURVEY –III showed about prevalence of 70% were of anaemia in children under 5 years whereas about 79% of those belonging to the below three age group suffer from varying degrees of anaemia. There are several studies for investigated one or the other form of anaemia and only few provide an overall insight into the profile of anaemia in population.*

Aim: *The main aim of this study is to find the occurrence of anemia and its severity among children with aged 6 months-12 months.*

Material and methods: *This is cross- section study which is undertaken at the Department of Paediatrics at Ashwani Rural Medical College and Research Center, during the period of one year. This study was carried out on patients between the age group 6 months to 12 months(1 year) old infants which found have anemia on routine blood investigations and further investigations were carried out to ascertain the cause of the anemia.*

Result: *A total of 147 infants of age group 6m- 12 m were admitted during the study period, among which 147 infants were, selected who fulfilled the inclusion criteria. In this study 27 (18%) males and 120 (81%) females were include in which mean age was 9.6 months. 14 infants(6.80%)were born with low birth weight. 1.5kg was noted as Lowest birth weight and mean birth weight was 2.4kg. Through caesarian section 42.9% (63 infants) were born. 32 cases21.8% gave history of exclusive breast feeding till 6 months of age where as history of giving cow's milk as supplementation starting at 2-3 months of age is 95 (18.37%). Infants with history of giving top up feed diet commercially available baby was 92(19.73%) which was started at an average age of 2-3% of the infants. 88(12.93%) of cases were observed as Improper weaning technique.*

Conclusion: *Consumption of cow's milk, top-up formula feeding, Improper Weaning techniques, and low birth weight are important Risk factors Associated with development of Anemia as moderate to severe in infants. Therefore maternal education relating to breast feeding and complementary feeding is more importance.*

Keywords: *infants, anemia, etiology, risk factors,*

Corresponding author: Dr. Shahaji Yadawa Gaikwad

Introduction

Anaemia is worldwide health problem which affects both developed and developing countries and this burden are being higher in the developing countries. Anaemia is nutritional problem which is commonly seen in women and children that affects their most crucial periods like during pregnancy and growth respectively. According to WHO database Global on Anemia for 1993–2005, it was estimated that worldwide prevalence of anemia is 25 % with higher percentage noted in developing countries (43%)[i]. Globally WHO database on anaemia shows that highest prevalence of anaemia amongst the preschool age children were 47.4% followed by the pregnant women (41%)[ii]. About 293 million children were affects anemia out of which 89 million live in India. India is one of the countries having with high prevalence of nutritional anemia in the world (1). According to NFHS-3 data, in India about 79% of infants in the age group between 6-35 months of age are anemic[iii]. In African continent highest prevalence of anaemia is seen followed by the Southeast Asian region. In India prevalence rate is about 40% of anaemia as severe health problem. The National Family Health SURVEY –III showed about prevalence of 70% were of anaemia in children under 5 years whereas about 79% of those belonging to the below three age group suffer from varying degrees of anaemia[iv]. There are a different study which shows that children anaemic in infancy continue to have poor cognition, school achievement and more behavior problems into middle childhood which implicit significance of early detection and cure of anaemia[v],[vi],[vii]. Moist of the infants suffering from anemia are asymptomatic however they have nonspecific symptoms like anorexia and irritable. In infancy and early childhood anemia is associated with cognitive delays and behavioral, decreased social achievement, including impaired learning and lower scores on tests of mental and motor development. There are several studies for investigated one or the other form of anaemia and only few provide an overall insight into the profile of anaemia in population.

The main aim of this study is to find the occurrence of anemia and its severity among children with aged 6 months-12 months.

Material and Methods:

This is cross- section study which is undertaken at the Department of Paediatrics at Ashwani Rural Medical College and Research Center during the period of one year. This study was carried out on patients between the age group 6 months to 12 months(1 year) old infants which found have anemia on routine blood investigations and further investigations were carried out to ascertain the cause of the anemia.

Birth weight, Age, sex, maternal anemia, detail history of preterm delivery, blood loss during delivery, exclusive breast feeding, weaning history, cow's milk supplementation, giving top feeds and the current diagnosis for which the infant cause anemia and noted down detail relevant clinical examination findings. Clinical finding like total and differential counts, hemoglobin, platelet count, MCH, MCHC were done using automated cell counter method.

Observations and Results:

A total of 147 infants of age group 6m- 12 m were admitted during the study period, among which 147 infants were, selected who fulfilled the inclusion criteria. In this study 27 (18%) males and 120 (81%) females were include in which mean age was 9.6 months. 14 infants(6.80%)were born with low birth weight. 1.5kg was noted as Lowest birth weight and mean birth weight was 2.4kg. Through caesarian section 42.9% (63 infants) were born. 32 cases21.8% gave history of exclusive breast feeding till 6 months of age where as history of giving cow's milk as supplementation starting at 2-3 months of age is 95 (18.37%). Infants with history of giving top up feed diet commercially available baby was 92(19.73%) which was started at an average age of 2-3% of the infants. 88(12.93%) of cases were observed as Improper weaning technique. Most of the weaning foods observed were rice products. Overall weaning food given to infants was deficient in iron as shown in table no 1 below.

Table 1: The frequency of the Variables Present in Infants with Anaemia.

Variables	Frequency	Percentage (%)
Maternal anemia	52	8.84
Low socio economic strata	82	12.24
Not exclusively breast-fed	88	11.56
Cows milk given	95	18.37
Top up feeds given	92	19.73
Improper weaning	88	12.93
Perinatal blood loss	75	9.52
Low birth weight	14	6.80

On the basis of term as preterm or full term babies, moderate and severe degree of anaemia was seen more commonly as 16(22.5%) and 1(11.1%)severe anaemia which was statistically significant. low birth weight babies were modrete in 19(28.4%) to normal birth weight and 2(22.2%) had severe anaemia. Cow's milk and top up formula fed group with severe anaemia noted in 33.3% and 11.1% respectively. 22.2 % with proper weaning technique were observed with severe anaemia. Therefore consumption of cow's milk , improper Weaning techniques, , pre-term Gestation, top-up formula feeding and low birth weight are important risk factors associated with development of Moderate to Severe Anemia in infants was recorded as shown in table 2 below.

Table: 2 Relation between the severity of anaemia and risk factors

Variable	Mild (%)	Moderate	Severe	P-value
Term (preterm or full term)	16(22.5)	20(29.9)	1(11.1)	
Birth weight	11(15.5)	19(28.4)	2(22.2)	
Cow's milk	20(28.2)	7(10.4)	3(33.3)	0.105684
Weaning	15(21.1)	8(11.9)	2(22.2)	
Top up formula	9(12.7)	13(19.4)	1(11.1)	
Total	71	67	9	

The chi-square statistic is 13.1837. The p-value is .105684. The result is not significant at $p < .05$.
Mean Hb was calculated as 9.6gm/dl, the lowest value being 4.5gm/dl. According to WHO classification Mild anemia was seen in 48% and moderate anemia in 49% whereas severe anemia was seen only in 3% of cases. Microcytic hypochromic anemia was observed in majority of cases 69.4% followed by normocytic normochromic anemia 27.2% of cases. Dimorphic anemia was in only 3.4% of cases were seen dimorphic anemia as shown in Table 3 below.

Table 3: Haematological parameters (n=147)

Parameter	Minimum	Maximum	Mean ±SD
Hb	4.5	11	9.6 ± 1.2
RBC	2.4	6	4.3 ± 0.6
MCH	20	34.7	23.8 ± 4.2
MCHC	23.1	35.9	32.5 ± 2.5
Platelet	1.3	6.3	1.8 ± 0.7

Discussion:

Out of the 147 infants who were suffer from anemia. According to study of Saba F et.al children between 6months to 12 years was the most affected group with anemia (33%) at Bangalore, Karnataka[viii]. Another study which is similar as done by F Akin et al in Turkey found that Hb of the patients >24 months were significantly higher than those of the patients with the age of 6–12 months[ix]. A study done by Lima et al reported higher prevalence of anemia in infants with infectious diarrhea. This is similar to this study[x]. Study of Zlotkin set al also shows that occurrence of anemia is dependent on time and type of complementary feeds given and frequency of infections apart from other factors[xi]. According to study of Spinelli MG et al multiple regression analysis maternal age less than twenty years, birth weight less than 2.5 kgs was not being breast feeding and male gender were important risk factors found to be associated with anemia[xii]. Study carryout by Kambli s et al knowledge of mother about weaning practices found that majority of mothers are having wrong concept about weaning and about current weaning recommendations[xiii]. Similar study carried in developing country as India as study done by Jain s et al was conclude that weaning at the correct age, nutritional status, exclusive breast feeding more importantly receiving iron supplements were found to be significant in lowering the incidence of anemia[xiv]. In Indian many study reported as there is association between anemia and malnutrition with lower mean hemoglobin levels in underweight and stunted children[xv]. Therefore continuous monitoring of infant feeding practices is essential for timely interventions to protect optimal growth and development.

Conclusion:

In current study the Prevalence of anemia was 56% with more than 69% of anemic infants having microcytic hypochromic anemia which suggested that iron deficiency still as the major cause for nutritional anemia in infants. Consumption of cow's milk, top-up formula feeding, Improper Weaning techniques, and low birth weight are important Risk factors Associated with development of Anemia as moderate to severe in infants. Therefore maternal education relating to breast feeding and complementary feeding is more importance.

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