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RESEARCH ARTICLE

PREVALENCE OF NUTRITIONAL ANEMIA IN UNDER FIVE CHILDREN OF BLOCK HAZRATBAL, DISTRICT SRINAGAR. A CROSS SECTIONAL OBSERVATIONAL STUDY

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ABSTRACT

Introduction: Anemia is a major public health problem all over the world especially in developing countries. Anemia prevalence in young children continues to remain over 60% in most parts of India and Asia despite a policy being in place and a program that has been initiated for a long time.

Objectives:

- To estimate the prevalence of Nutritional Anemia in Under 5 children of block Hazratbal, district Srinagar.
- To estimate the risk factors of Nutritional Anemia in Under 5 children of block Hazratbal, District Srinagar.

Results: Out of the children surveyed 158(77.5%) were having Moderate Anemia, followed by 38 (18.6%) were having Mild Anemia at the time of study. **Conclusion:** This study has accentuated evidence of an extremely high prevalence of childhood anemia in block hazratbal of district Srinagar especially in certain sub-groups of the population.

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INTRODUCTION

Anemia is a major public health problem all over the world especially in developing countries. Prevalence of Anemia in young children continues to remain over 60% in most parts of India and Asia despite a policy being in place and a program that has been initiated for a long time. The irreparable damage that anemia in childhood can cause particularly to the development of a young child on one hand and the knowledge and mechanism available for its control on the other, makes this silent morbidity completely unacceptable in modern times where we strived for millennium development Goal 4 (Prakash, 2011). Out of all the causes, like nutritional anemias, Hemolytic anemias, chronic infections, lympho-reticular malignancy, etc., Nutritional anemias account for the major cause of anemias. Nutritional anemia is prevalent all over the world, with an estimated one billion people being iron deficient (United Nations Administrative Committee on Coordination, 1992). In India, anemia is an important health problem, especially among children. Anemia in children results in impaired cognitive performance, behavioral and language development and scholastic achievement. Anemia is also associated with increased mortality and morbidity from infectious diseases (Sethi, 2003).

The fourth National Family Health Survey (NFHS – 4) (2015-16) found that the prevalence of anemia among under 5 children approaches 58.4% even though there is a national program to control anemia for many years (IIPS, 2007). The term 'nutritional anemia' encompasses all pathological conditions in which the blood hemoglobin concentration drops to an abnormally low level, due to a deficiency in one or several nutrients. The main nutrients involved in the synthesis of hemoglobin are iron, folic acid, and vitamin B12. In public health terms, iron deficiency is by far the first cause of nutritional anemia worldwide. The three main reasons for IDA in children are:

- Poor bioavailability of iron consumed, related to the low consumption of absorption enhancers and a high consumption of absorption inhibitors in the second year of life.
- Insufficient intake of iron as compared to the need.
- Increased requirement during the rapid growth stage of infancy and early childhood, between six and twenty-three months.

Folic acid deficiency is less widespread and is often observed with iron deficiency. Vitamin B12 deficiency is far rarer and it occurs mainly in vegetarians (Asok, 2003). There are various studies done to find out the prevalence of iron deficiency

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anemias in pediatric population in India and other developing countries (Sabita Basu, 2005; Gomber, 2003). But there is paucity of studies using laboratory measurements to find out the exact cause of nutritional Anemia in Indian population (Singh, 2003). Hence this study was done with the objective to study prevalence of nutritional anemia in under 5 year children in a primary care setting.

Objectives

- To estimate the prevalence of Nutritional Anemia in Under 5 children of block Hazratbal, district Srinagar.
- To estimate the risk factors of Nutritional Anemia in Under 5 children of block Hazratbal, District Srinagar.

MATERIALS AND METHODS

This Observational cross sectional study was conducted in Medical block Hazratbal from 1st march 2017 to 31st August 2018 for a period of 6 months. Informed consent was taken from the care takers of the children for this study. A total no. of 243 children between the age group of 6 months upto 5 years of age group who were coming to their respective AWCs on VHND & Sub Centres on immunization days were screened for Nutritional anemia by HCWs by using IMNCI classification for screening Anemia at four subcentres namely Sub centre Theed, Sub centre Dhara, Sub centre Darbag and Sub centre Syedpora by convenient sampling method. Out of 243 Children, 204 children were found Anemic by HCWs who were further investigated by Haemoglobinometer for estimation of Hb% Concentration. All the children with Hemoglobin levels less than the WHO cut off levels for anemia were included in the study. WHO Expert group proposed that anemia should be considered to exist when Hemoglobin is below the following levels in their venous/capillary blood samples... 6 months to 6 years < 11 gm/dl. Categorization of Anemia was also done on the basis of WHO Classification of Anemia for under 5 children (WHO, 2003). Children who were found Severe Anemia as per WHO Classification (<7 gm/dl) were referred urgently to FRU Hazratbal for further evaluation and management.

Statistical analysis: Data was analyzed using SPSS for windows version 20.0. Descriptive statistics were performed and statistical significance was determined at $p < 0.05$. Pearson's chi square test was used to determine associations between anemia and other correlates associated with anemia.

RESULTS

Age: The study covered 204 children above 6 months up to 5 years of age from urban field practice area of Block Hazratbal which is under the administrative control of Department of Community Medicine, Govt. Medical College, Srinagar. Out of the Children surveyed majority of the children 49.0% were in 13-36 months of age group, followed by 34.8% were in 37-59 months of age group. Out of 204 children studied, 108(52.9%) were girls and 96(47.1%) were boys. All the children were having almost equal representation from each sub-Centre area. Out of the Children surveyed 69.1% had normal birth weight. Out of the children surveyed only 103(50.5%) of children were initiated exclusive breast feeding within 1 hour after birth.

Table 1. Distribution of study population according to their age group

Age group	No. of children (N)	Percentage
6-12 Months	33	16.2%
13-36 Months	100	49.0%
37-59 Months	71	34.8%
Total	204	100.0%

Table 2. Distribution of study population as per their gender

Gender	No. of children	Percentage
Male	96	47.1%
Female	108	52.9%
Total	204	100.0%

Table 3. Distribution of study population as per their residence

Residential area	No. of children(N)	Percentage
DHARA	50	24.5%
SYEDPORA	51	25.0%
THEED	52	25.5%
DARBAG	51	25.0%
Total	204	100.0%

Table 4. Distribution of study population as per their birth weight

Birth Weight	No. of children(N)	Percentage
>2500gms	141	69.1%
<2500gms	63	30.9%
Total	204	100.0%

Table 5. Distribution of children as per initiation of Exclusive Breast Feeding after birth

Breast feeding initiation	No. of children(N)	Percentage
< 1 HOUR	103	50.5%
> 1 HOUR	101	49.5%
TOTAL	204	100.0%

Table 6. Prevalence of Anemia as per W.H.O Classification in study population at the time of study.

Hemoglobin (Hb %)	No. of children (N)	Percentage
>11gms/dl (No Anemia)	4	2.0%
10-10.9gms/dl(Mild Anemia)	38	18.6%
7-9.9gms/dl(Moderate Anemia)	158	77.5%
<7gms/dl (Severe Anemia)	4	2.0%
Total	204	100.0%

Out of the children surveyed 158(77.5%) were having Moderate Anemia, followed by 38 (18.6%) were having Mild Anemia at the time of study. Out of the children surveyed, it was found 29(87.9%) in the age group of 6-12 months, followed by 81 (81%) in the age group of 13-36 months and 48(67.6%) in the age group of >36 months had Moderate Anemia as per W.H.O classification at the time of study. The difference was not found statistically significant. Out of survey it was seen male children were having Mild to Moderate Anemia while female children were have Moderate, and Severe Anemia was 100% in them. The difference was found statistically significant. Out of the Children surveyed, it was found that 101(98.1%) amongst children who were initiated breast feeding after 1 hour of birth had Moderate to Severe Anemia more at the time of study as compared to the children who were initiated breast feeding within 1 hour of birth. The difference was found statistically significant. Out of the Children surveyed, it was found that 78(100%) amongst children who were initiated complimentary feeding before 6 months after birth had Moderate to Severe Anemia as compared to the children who were initiated complimentary

Table 7. Categorization of Anemia as per W.H.O classification in accordance with different age groups

AGE		Hemoglobin at the time of study				Total
		>11gms/dl	10-10.9gms/dl	7-9.9gms/dl	<7gms/dl	
6-12 Months		0	3	29	1	33
		0.0%	9.1%	87.9%	3.0%	100.0%
13-36 Months		1	15	81	3	100
		1.0%	15.0%	81.0%	3.0%	100.0%
> 36 Months		3	20	48	0	71
		4.2%	28.2%	67.6%	0.0%	100.0%
Total		4	38	158	4	204
		2.0%	18.6%	77.5%	2.0%	100.0%

$$X^2=12.412. \text{ df} = 6, P= .053$$

Table 8. Gender and Anemia as per W.H.O Classification.

HEMOGLOBIN AT BASE	SEX		Total
	MALE	FEMALE	
>11gms/dl	3	1	4
	75.0%	25.0%	100.0%
10-10.9gms/dl	34	4	38
	89.5%	10.5%	100.0%
7-9.9gms/dl	59	99	158
	37.3%	62.7%	100.0%
<7gms/dl	0	4	4
	0.0%	100.0%	100.0%
TOTAL	96	108	204
	47.1%	52.9%	100.0%

$$X^2=38.237. \text{ df} 3. P<0.000$$

Table 9. Relationship of Anemia (Hemoglobin) in accordance with initiation of Breast feeding in study population at the time of study

BREAST FEEDING INITIATION AFTER BIRTH		HEMOGLOBIN AT THE TIME OF STUDY		Total
		13 - 10gms/dl*	9.9 - 6gms/dl*	
<1HOUR		40	61	101
		39.6%	60.4%	100.0%
>1HOUR		2	101	103
		1.9%	98.1%	100.0%
TOTAL		42	162	204
		20.6%	79.4%	100.0%

$$\text{Classes merged for purpose of analysis} * X^2= 44.242. \text{ df} = 1 P<0.000.$$

Table 10. Relationship of Anemia (Hemoglobin) in accordance with initiation of Complimentary Feeding in study population

COMPLIMENTARY FEEDIND STARTED AFTER BIRTH	HEMOGLOBIN		Total
	13-10*gms/dl	6-9.9*gms/dl	
AT 6 MONTHS OF AGE	42	84	126
	33.3%	66.7%	100.0%
BEFORE 6 MONTHS OF AGE	0	78	78
	0.0%	100.0%	100.0%
Total	42	162	204
	20.6%	79.4%	100.0%

$$\text{Classes merged for purpose of analysis} * X^2=32.741. \text{ df}=1. P<0.000.$$

Table 11. Relationship of Anemia (Hemoglobin) in accordance with initiation of Vaccination status in study population at the time of study

VACCINATION STATUS	HEMOGLOBIN AT TIME OF STUDY		Total
	13-10gms/dl*	6-9.9gms/dl*	
COMPLEYELY IMMUNISED	42	126	168
	25.0%	75.0%	100.0%
INCOMPLETELY IMMUNISED	0	36	36
	0.0%	100.0%	100.0%
Total	42	162	204
	20.6%	79.4%	100.0%

$$\text{Classes merged for purpose of analysis} * X^2=11.333. \text{ df}=1. P<0.001$$

feeding after 6 months of birth. The difference was found statistically significant. Out of the children surveyed, it was found 36(100%) amongst children who were incompletely immunized had Moderate to Severe Anemia as compared to the children who were completely immunized where 126(75%) had same type of Anemia. The difference was found statistically significant.

DISCUSSION

In our study it was found majority of the children 49.0% were in 13-36 months of age group, followed by 34.8% were in 37-59 months of age group. Results from our study found that the sex ratio in this part of the country is more than norm as 108(52.9%) were girls and 96(47.1%) were boys. In our study it was found 69.1% of children had normal birth

weight(>2500gms) Results from our study revealed that only 103(50.5%) of children were initiated exclusive breast feeding within 1 hour after birth which is low as compared to the national average. In our study we have found 158(77.5%) children were having Moderate Anemia, followed by 38 (18.6%) children were having Mild Anemia at the time of study. In the present it was seen male children were having Mild to Moderate Anemia while female children were have Moderate, and Severe Anemia was 100% in them. The difference was found statistically significant. Results from our study found that Out of the children surveyed, 29(87.9%) who were in the age group of 6-12 months, followed by 81 (81%) who were in the age group of 13-36 months and 48(67.6%) who were in the age group of >36 months had Moderate Anemia as per W.H.O classification at the time of study. The high prevalence among infants less than 3 years of age in the overall population and in particular among the urban children is of special concern. For infants under 6 months upto 36 months of age group, this would likely be due to: a) high prevalence of maternal micronutrient deficiency since children born to malnourished mothers have poor stores of iron, zinc, vitamin A and B12 and folate (Neumann, 2004; Kotecha, 2011; United Nations Children's Fund, 2000b) low concentration of iron in breast milk which may be insufficient to meet the daily iron requirements of the infant (Villalpando et al., 2003)) the introduction of complementary foods often occurs within this period which is also a period for rapid physical development with increased blood volume and a decrease in iron storage from maternal source (Osório, 2001) d) the susceptibility of infants to infections and diseases, which affects their nutrition and feeding and thus decreases the ability of their body to ingest and absorb iron (Osório, 2001).

The difference was not found statistically significant. In our study it was found that 101(98.1%) amongst children who were initiated breast feeding after 1 hour of birth had a Moderate to Severe Anemia more at the time of study as compared to the children who were initiated breast feeding within 1 hour of birth. The difference was found statistically significant. In our study, it was found that 78(100%) amongst children who were initiated complimentary feeding before 6 months after birth had Moderate to Severe Anemia as compared to the children who were initiated complimentary feeding after 6 months of birth. The difference was found statistically significant. Results from our study revealed that 36(100%) amongst children who were incompletely immunized had Moderate to Severe Anemia as compared to the children who were completely immunized where 126(75%) had same type of Anemia. The difference was found statistically significant. $X^2=11.333$. $df=1$. $P<0.00$

Conclusion

This study has accentuated evidence of an extremely high prevalence of childhood anemia in block hazratbal of district Srinagar especially in certain sub-groups of the population. Based on the WHO criteria, a population prevalence rate of greater than 40% is a severe public health concern requiring immediate actions and measures to help reduce the burden of the disease.

Specific groups with urgent needs include children aged 6 months up to 1 years where anemia is highest (87.9%) need to be identified as early as possible so that appropriate targeted intervention shall be started. Further study is also needed to determine appropriate targeted interventions in this age group which are very much vulnerable to the negative consequences on the physical and mental development of these children if left untreated.

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