Research Article

CROSS SECTIONAL STUDY ON BURDEN AND STATUS OF ANAEMIA IN UNDER FIVE CHILDREN IN URBAN SLUMS OF DISTRICT, DEHRADUN

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A B S T R A C T

Background: Anaemia is considered as the most prevalent nutritional deficiency globally effecting all age group, however overcrowding and poor environmental health conditions of urban slums make the children vulnerable to infections which further compromises the health status.

Objective: To assess the prevalence of anaemia among under-five children in urban slums.

Methodology: Community based analytical cross-sectional study was conducted in urban slums amongst under-five children. A house to house survey was conducted, Pre-informed consent was taken from mother's for haemoglobin estimation of their child. Blood sample from each child was collected and estimated by using Hemocue HB 201 analyzer.

Results: A total of 381 children were studied, however, due to noncompliance only 354 children were included in this study for haemoglobin estimation. Prevalence of anaemia was found to be 72.5%. More than half of the females (53.3%) were found to be anaemic in comparison to males. It was observed that anaemia was seen maximum in the age group of 6 to 12 months (79.5%). According to the severity of anaemia 19.0% children were found to be mildly anaemic and 50.2% moderately and 3.4% were severely anaemic.

Conclusions: The problem of Anaemia, especially mild and moderate Anaemia is more common in younger age. Common reasons are improper feeding practices, incompleteness of weaning practices, exclusive breastfeeding till late age or top feeding with predominantly diluted feeds, worm infestation improper washing of hands before eating increases the risk of undernutrition and anaemia.

INTRODUCTION

Anaemia is considered as the most prevalent nutritional deficiency globally affecting 1.62 billion people of the world. Out of this, 89 million anaemic children are residing in India alone and contributes to the burden of disease. It corresponds to 24.8% of the population in both developing and developed countries with major consequences on human health, effecting especially children and women of reproductive age group. (1) The fourth National Family Health Survey (NFHS IV) 2015-2016 revealed that more than half i.e. 58.5% of under-five age children are anaemic.(2) Anaemia refers to a state in which the level of haemoglobin in the blood is below the normal range appropriate for age, and develops gradually and progressively due to iron deficiency and associated nutritional deficiencies.(3)

Anaemia frequently develops as breast milk is replaced by foods that are poor in iron and other nutrients, including vitamin B12 and folic acid.

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This problem exacerbate during early childhood bad feeding habits, especially during initiation of complementary feeding (4) Other causes include inadequate dietary intake of iron, low level of absorption, increased physiological requirements during rapid growth in infancy.

It leads to serious health problems, such as poor cognitive and motor development and behavioural problems, in children.(5) Although the prevalence of anaemia is more in rural area in comparison to urban area however overcrowding and poor environmental health conditions of urban slums makes the children vulnerable to infections which further compromises the health status.(6)

This study aimed to estimate the prevalence of anemiaamong under five children of urban slums which will help to understand the true burden of disease in the community..

MATERIALS & METHODS

The present study was conducted in the SheeshamJhadi and Chandreshwar Nagar urban slums a field practice area of the Department of Community Medicine, Himalayan Institute of Medical Sciences, Dehradun over a period of one year. The study design was cross-sectional, which included 381 children

in the age group of 0-5 years.A house to house survey was conducted and subsequently data was collected after taking written consent from the participants.

Haemoglobin estimation

Pre-informed consent was taken from mother's for haemoglobin estimation of their child. Due to noncompliance only 354 children were included in this study. Blood sample from each child was collected by finger pricking after rubbing the finger-tip with sterile cotton (immersed in alcohol), and pricking it with a sterile disposable lancet. A drop of blood was then allowed to enter the optical window of the microcuvette through capillary action. The microcuvett was placed into the cuvett holder of a hemocue spectrophotometer (Hemocue HB 201 analyzer) and the concentration of haemoglobin was quantitatively determined in g/dl. Anaemic status was then determined accordingly. (2). Hemoglobin levels were measured to diagnose anemia (hemoglobin<11.0 g/dl), Severe: Hb<7 g/dl Moderate: Hb 7-10 g/dl Mild: Hb 10-11 g/dl. P value <0.05 was considered significant.

RESULTS

The study group of 381 children comprised of 51% female and 49 % male children. 226 children belonged to low socio-economic status, 152 children were exclusively breast fed, timely initiation of complementary feeding was started in 123 children , history of passage of worms was present in 77 children, 114 children had history of deworming in past six months and 200 children were found to be undernourished.

Table 1 Demographic profile of the study group as per Age & Gender

| Child age in Months | Distribution of children | | Total |
	Male	Female	
0 to 6	16(8.6)	17(8.8)	33(8.7)
6 to 12	27(14.4)	25(12.9)	52(13.6)
12 to 36	83(44.4)	102(52.6)	185(48.6)
36 to 60	61(32.6)	55(25.8)	111(29.1)
Total	**187(49.0)**	**194(51.0)**	**381**

Table 2: Distribution of Study Population According to their Hemoglobin Status
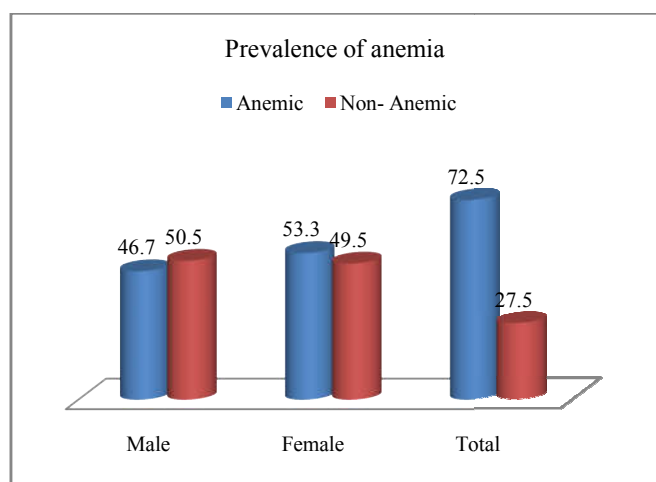
N= 354 (27 children were not included in the estimation of anemia due to noncompliance)

Table 3 Age and Gender wise Distribution of Status of Anemia

| Age in months | Sex | Status of Anaemia | | Total |
		Anaemic	Non-Anaemic	
0 to 6	Male	10(71.4)	4(28.6)	14(46.7)
	Female	12(75.0)	4(25.0)	16(53.3)
	Total	22(73.3)	8(26.7)	30 (8.4)
6 to 12	Male	17(77.3)	5(22.7)	22(50.0)
	Female	18(81.8)	4(18.2)	22(50.0)
	Total	35(79.5)	9(20.5)	44 (12.4)
12 to 36	Male	53(68.8)	24(31.2)	77(43.5)
	Female	73(73.0)	27(27.0)	100(56.5)
	Total	126(71.2)	51(28.8)	177(50.0)
36 to 60	Male	40(71.4)	16(28.6)	56(54.4)
	Female	34(72.3)	13(27.7)	47(45.6)
	Total	74(71.8)	29(28.2)	103(29.0)
Total	Male	120(71.0)	49(29.0)	169(47.7)
	Female	137(74.1)	48(25.9)	185(52.3)
	Total	257(72.5)	97(27.5)	354 (100.0)

N= 354 (27 children were not included in the estimation of anemia due to noncompliance)
Chi sq 0.41 df 1 p >0.05

Table 4 Distribution of Study Population According to the severity of Hemoglobin Status

| Age in Months | Hemoglobin Status | | | | Total |
	Normal	Mild	Moderate	Severe	
0 to 6	5(5.2)	8(11.9)	14(7.9)	3(25.0)	30(8.5)
6 to 12	16(16.5)	5(7.5)	21(11.8)	2(16.7)	44(12.5)
12 to 36	46(47.4)	38(56.7)	87(48.9)	6(50.0)	177(50.0)
37 to 60	30(30.9)	16(23.9)	56(31.5)	1(8.3)	103(29.0)
Total	97(27.4)	67(19.0)	178(50.2)	12(3.4)	354

DISCUSSION

Anemia is considered the most prevalent nutritional deficiency globally, affecting about a quarter of the world population, especially children and women of reproductive age. In the present study, authors found that the prevalence of anemia was 72.6 % in under- five children. Jain S *et al* found 60% of the children suffering from anemia in his study (7). Khor GL et al found in his study that iron deficiency Anemia affects 40.0-50.0% of preschool and primary school children (8) Another observer Nanjunda ,found in his study that the prevalence of anaemia was 62.0 % among under five children.(9)

It was observed in this study that anemia was seen maximum i.e. 79.5% in the 6-12 months of age group and least in 36-60 months (72.6%) of age group. Similar findings were observed by Thorne *et al* in his study, who reported that the haemoglobin concentrations were lowest in the 6–11 months age-group and highest in the 48–59-months age-group. The corresponding prevalence of anaemia was 95.7% and 63.6% respectively. (10)

Another observer Ray.S *et al* also observed that, majority (75%) of the children suffering fromanemia were<2 years of age.(11)Similar were the findings by Santos *et al* who found that the proportion of cases of anemia decreases with age, varying from 70.9% in children between 6 and 12 months to 36.2% in children 36 months and older.(4)

In the present study it was observed that females (53.3 %) were found to be more anaemic in comparison to their male (46.7%) counter part. Similar findings were observed by Anderson *et al* who found in his study that females (84.4%) were more anaemic than males (76.0%) (12)

Contrary to our study, Kuziga *et al* observed that the prevalence was more in males (61.3%) in comparison to females .(13)

In the present study 72.6% children were found to be anaemic and out of this, 19.0% were mild, 50.2% were moderately and 3.4% were severely anaemic. These findings were seconded by Muhammad *et al*, who also found that the overall prevalence of anaemia was 62.3% in his study and out of those who were anaemic 4.1% were severely and 58.3% were moderately anaemic. (14)

Thorne *et al* also found that, in his study 28.9% children were mildly, 48.4% were moderately and 3.0%, were severely anaemic. (10) Similar were the findings of NFHS-4 data, according to this 28 % of children had mild anaemia, 29% had moderate and 2 percent had severe anaemia.(2)

CONCLUSION

In a developing country like India, Anaemia is one of the major public health problems and potential treat to health, development and survival of children. The problem of Anaemia, especially mild and moderate Anaemia is more common in younger age. Common reasons are improper feeding practices, incompleteness of weaning practices, exclusive breast feeding till late age or top feeding with predominantly diluted feeds, worm infestation improper washing of hands before eating increases the risk of undernutrition and anaemia.

Health education and provision of additional food supplements could be important to reduce the problem of anaemia among school age children. Deworming of school age children would also have additional impact on reducing the prevalence of anaemia among school age children

The prevention and the control of anemia should be given immediate priority in the health and nutrition sectors particularly preschool children.

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