

**A Hospital Based Study to Evaluate the Effect of Nutritional Variables in Children with Iron Deficiency Anemia: An Observational Study**Satya Gupta<sup>1</sup>, Rashmi Kumari Soni<sup>2</sup>, Satish Kumar<sup>3</sup><sup>1</sup>Senior Resident, Department of Paediatrics, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India<sup>2</sup>PG-Student, Department of Paediatrics Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India<sup>3</sup>Assistant Professor, Department of Paediatrics, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar India

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Conflict of interest: Nil

**Abstract****Aim:** The aim of the present study was to assess the effect of nutritional variables in children with iron deficiency anemia in Bihar population.**Methods:** The present study was conducted in the Department of Paediatrics, In the current study, the main variable was IDA, which is a categorical variable. Blood samples of 250 randomly selected children (6-59 months) living in the urban and rural areas were taken. Children who had history of liver infectious disease, liver cancer or high fever were excluded from the study.**Results:** There were 3 groups among them; majority of families had 1-2 children. Highest range of IDA was seen in the families with 6-9 children. 23.6% of rural families with IDA child had 6 or more children in their family while in the urban areas IDA was mostly seen in the families with 1-2 children. Logistic regression analysis indicated the association in the families with more than 6 children and IDA.**Conclusion:** The prevalence seems to be the same in urban and rural areas and similar in both sexes. Statistically it was proven that young mothers and families with 6 or more children were the best predictors for increased prevalence of IDA among fewer than 5 years old children in this research. It was shown that there are several main risk factors for iron deficiency and anemia in the children.**Keywords:** Anemia, Iron Deficiency, Children, NutritionThis is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

The aim of the present study was to assess the effect of nutritional variables in children with iron deficiency anemia in Bihar population. [1-5]

**Materials and Methods**

The present study was conducted in the Department of Paediatrics, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar India for one year. In the current study, the main variable was IDA, which is a categorical variable. Blood samples of 250 randomly selected children (6-59 months) living

in the urban and rural areas were taken. Children who had history of liver infectious disease, liver cancer or high fever were excluded from the study. [6-8]

Serum ferritin, CBC and hematological indices were measured. Demographic information, cultural and nutritional information were also collected through a questionnaire. Data were analyzed using SPSS13 software. [9,10]

**Results****Table 1: Distribution of anaemia according to the family size (number of children in each family)**

Family size (Number of children)	Total study population	Anaemic cases					
		No	Total	Urban		Rural	
			% of anaemic cases in each group	No	%	No	%
1-2	155	70	45.16	40	25.80	30	19.35
3-5	75	31	41.33	10	13.3	21	28
6-9	20	9	45	1	10	8	40
Total	250	110	44	51	20.4	59	23.6

There were 3 groups among them; majority of families had 1-2 children. Highest range of IDA was seen in the families with 6-9 children. 23.6% of rural families with IDA child had 6 or more children in their family while in the urban areas IDA was mostly seen in the families with 1-2 children. Logistic regression analysis indicated the association in the families with more than 6 children and IDA.

### Discussion

Iron deficiency is the most prevalent nutritional disorder in the world. [11] Nearly two billion people are suffering from anemia. [12] Iron deficiency is the most frequent cause of the anemia, affecting more than 500 million people around the world. [13-15] Iron deficiency anaemia (IDA) presents when there is not sufficient iron for haemoglobin synthesis. [13] In particular it has negative effects on the behaviour, cognitive performance, immune system and physical growth of infants, preschool and school age children. [11] The prevalence of iron deficiency is about 9% in toddlers, 9-11% in adolescent girls and less than 1% in teenage boys. [16]

There were 3 groups among them; majority of families had 1-2 children. Highest range of IDA was seen in the families with 6-9 children. 23.6% of rural families with IDA child had 6 or more children in their family while in the urban areas IDA was mostly seen in the families with 1-2 children. Logistic regression analysis indicated the association in the families with more than 6 children and IDA. In previous study carried out by Bahrami et al [17] prevalence of IDA in infants (<1 year old children) in the whole country (by provinces) was reported as 37.8% in total population. Prevalence was very similar in the rural (37.5) and urban (38.1%) areas. The results from this study showed that most children with IDA were in the 12-23 months (second year of life) group, where in the urban areas 6-11 months infants had the highest prevalence of IDA (breast-fed and formula-fed). In another study in the Yazd province rural areas, showed prevalence of IDA was also higher in 6-23 months old children and IDA rate decreased as age increased. [18] Zohouri and Rugg-Gun [19] carried out a survey for the purposes of determining the association between dietary intake and iron deficiency in 4 years old children. They concluded that consumption of tea varied between 63ml/day/child to 238-ml/ day/ child in urban and rural areas respectively. Nearly all of the children used to drink tea with their breakfast and usually immediately after lunch or dinner.

### Conclusion

The prevalence seems to be the same in urban and rural areas and similar in both sexes. Statistically it was proven that young mothers and families with 6

or more children were the best predictors for increased prevalence of IDA among fewer than 5 years old children in this research. It was shown that there are several main risk factors for iron deficiency and anemia in the children. Parent's illiteracy, family income and using cow's milk before 12 months are among most important risk factors for iron deficiency for children. In our study we found that young mothers who do not consider adequate time spacing between two pregnancies for any reason including poverty, cultural beliefs, lack of knowledge, or unavailability/unwillingness to use contraceptives for birth control, help this easily preventable nutrition disease to turn into a major health problem.

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