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Original Research Article

Assessment of Paediatric Anaemic Children: A Hospital Based Study

1. Dr. Mohammed Shamim, 2. Dr. Rizwan Haider*
PG student,Department of Paediatrics, Darbhanga Medical College and Hospital, Darbhanga, Bihar,India
Associate Professor,Department of Paediatrics, Darbhanga Medical College and Hospital, Darbhanga, Bihar,India.
Corresponding Author:- Dr. Rizwan Haider

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ABSTRACT: Background: *Nutritional anemia is worldwide problem with highest prevalence in developing countries. Causes of anemia are inadequate intake and poor absorption of iron, malaria, hookworm infestation, diarrhea, heavy menstrual blood flow etc. It involves population of up to12year age group and sex. The objective of the study was to carry out assessment of anemia amongchildren's attending OPD of Darbhanga Medical College and Hospital Darbhanga, India.*
Material and methods: *A total of 240 paediatric subjects were included in the present study. Only those subjects were included in the present study in which confirmed diagnosis of anemia was obtained after haematological examination. Detailed clinical details and demographic data of all the subjects were obtained. A self-framed questionnaire was used for obtaining the details of past medical history and family history of all the subjects.*
Results: *A total of 240 anaemic patients were studied in the present study. Mean age of the patients of the present study was 9.8 years. Majority of the patients belonged to the age group of 8 to 12 years. Among the 240 anaemic patients analysed in the present study, majority of them 144(60%) were females while the remaining 96 (40%) were males. Positive family history of anemia was found to be present in 90 (37.5%) of the patients. 75% of the patients of the present study had rural residence .Gastroenteritis was the most common associated diagnosis found to be present in 37.5% of the patientpopulation and followed by respiratory infection 28.75%.*
Conclusion: *From the above mentioned data, it can be concluded that anemia is a common worldwide hazard affecting significant portion of paediatric population. Higher prevalence of anaemia is seen among females with associated gastric manifestations. Hence; periodic paediatric check-up should be done so that early diagnosis and prompt treatment planning of this pathology could be done.*
KEYWORDS: *Anaemia, Paediatric, Prevalence.*

I. INTRODUCTION

Anaemia is the most common nutritional disorder worldwide. It is a major public health problem in India. It is a condition in which the number of red blood cells (RBCs), and consequently their oxygen-carrying capacity, is insufficient to meet the body's physiological needs. Causes of anemia are inadequate intake and poor absorption of iron, malaria, hookworm infestation, diarrhea, heavy menstrual blood flow etc.[1,2]

The prevalence of iron deficiency anemia is the highest among preschool children. In this age group (6–59 months), body grows rapidly and requires high-iron-rich and nutritious food that may not be fulfilled by their normal diet. Low economic status, less education, and poor health of mothers due to meager dietary intake are the main causes of anemia.[3-5]Hence; present study was planned to assess the paediatric patients diagnosed withanaemia.

The prevalence of anemia in the developing countries tends to be three to four times higher than in the developed countries.[6]Recent studies on the prevalence of anemia have been on schoolers only,[7,8]So there is a need for more studies related to anemia in school children. Anemia affects the physical and mental development of an individual leading to decreased working capacity, which in turn affects the development of the country.[9]Since the technological advancement and economic development of a nation depend heavily on its trained human resources, the behavioural effects of anemia are highly relevant. Consequently, if anemia is highly prevalent in a country, it can substantially affect its intellectual and economical potential.

In addition, the interaction between under nutrition and infection can create a potentially lethal cycle of worsening illness and deteriorating nutritional status. Poor nutrition in the first 1,000 days of a child's life can also lead to stunted growth, which is irreversible and associated with impaired cognitive ability and reduced school and work performance. A country needs a well-nourished population of children, in order to have a healthy and productive labour force in future. Improved nutrition and health enhance the learning ability of children. In the long run it leads to an increase in the strengthening of the labour force and thereby it contributes positively for the economic growth.Hence; present study was planned to assess the paediatric patients diagnosed withanaemia.

II. MATERIAL AND METHODS

The present study was planned in the Department of Paediatrics, Darbhanga Medical College and Hospital,Darbhanga, India.The study was conducted withtheaimofassessingtheanemicpatientsvisitingthe OPD of the paediatric department. Before the starting of the study. Studyperiodwasaboutoneyear. A total of 240pediatric subjects were included in the present study.

Inclusion and exclusion criteria

Only those subjects were included in the present study in which confirmed diagnosis of anemia was obtained after haematological examination. Detailed clinical details and demographic data of all the subjects were obtained. A self-framed questionnaire was used for obtaining the details of past medical history and family history of all the subjects.

Hemoglobin estimation was done by Sahli's hemoglobinometer. Hb criteria were taken according to WHO standard. Anemia was defined as hemoglobin of less than 13g/dl in males and less than 12 g/dl in females. Mild anemia was hemoglobinlevelof10to12.9g/dlinmalesand10to 11.9 g/dl in females, moderate anemia was hemoglobin level of 7 to 9.9 g/dl and severe anemia was hemoglobin level of less than 7g/dl both among males and females respectively.

Statistical analysis

The recorded data was compiled entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 20 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages, means and standard deviations were calculated.

III. RESULTS

The present study was planned in the Department of Paediatrics, Darbhanga Medical College and Hospital Darbhanga, India and it included assessment of anemic paediatric patients. A total of 240 anemic patients were studied in the present study. Mean age of the patients of the present study was 9.8 years. Majority of the patients belonged to the age group of 8 to 12 years. Non- significant results were obtained while assessing the age-wise distribution of anemicpatients.Among the 240 anemic patients analyzed in the present study, majority of them 144(60) were females while the remaining 96 (40) percent were males. Significant results were obtained while assessing the gender-wise distribution of anemic patients. Out of 96 male 68.8 patients were suffering from mild anaemia and of 144 female 56.2 had mild anemia.

Positive family history of anemia was found to be present in 90 (37.5%) of the patients. Of 240 total patients,180 (75%) of the patients of the present study had rural residence, while the remaining 25% had urban residence. Gastroenteritis was the most common associated diagnosis found to be present in 37.5% of the patientpopulation and followed by respiratory infection 28.75%.

Table 1: Prevalence of anemia, according to age

Age group (years)	Number of patients	Percentage
Less than 8	65	27.1
8 to 12	175	72.9
Total	240	100

Table 2: Prevalence of anemia, according to sex

Gender	Number of patients	Percentage
Males	96	40

Females	144	60
Total	240	100

Table 3: Distribution of anemia according to grading of anaemia

Grade of anemia	Male n=96	Percentage	Female n=144	Percentage
Mild	66	68.8	81	56.2
Moderate	21	21.8	52	36.1
Severe	9	9.4	11	7.7

Table 4 clinical data of the study population

Parameter		Number of patients	Percentage
Positive family historyof anemia	Yes	90	37.5
	No	150	62.5
Residence	Rural	180	75.0
	Urban	60	25.0
Associated manifestations	Gastroenteritis	90	37.5
	Respiratory infection	69	28.75
	Asthma	45	18.75
	Others	36	15.0

IV. DISCUSSION

Anemia is a worldwide community health hazard with an associated elevated risk of morbidity and mortality, more commonly in pregnant females and adolescents. Worldwide,1.62 billion subjects are anaemic, while 47.4% is the prevalence of anaemia among preschool children. Nearly fifty percent of the worldwide anaemia cases are accounted by nutritional anaemia affecting the South Asia. In our country, it continues to be the most common health problem in adolescents, and pregnant women. Approximately 50% of the population suffers from nutritional anemia as known in countries where meat consumption is low [10-12].

The present study included assessment of anaemic paediatric patients. A total of 240 anaemic patients were studied in the present study. Mean age of the patients of the present study was 9.8 years. Majority of the patients belonged to the age group of 8 to 14 years. Non- significant results were obtained while assessing the age-wise distribution of anaemic patients. In a previous study done by Dos Santos RF et al.[13], authors assessed the incidence of anemia and it correlating factors in subjects a children's hospital in Recife. A total of 595 male subjects and female children with age- range between 6 to 59 months old were included in their study. They defined anaemia in their study as paediatric subjects with a hemoglobin concentration less than 11 g/dL. They used the Poisson regression analysis method for assessing the association between studied parameters and anemia. The total prevalence of anaemia in their study was found to be 56.6 percent. They observed a significant correlation of occurrence of anaemia with low weight, young age and a diagnosis of acute lower respiratory disease. The high incidence of anemia proposed that it might contribute as a causative agent for hospitalization, mostly because the period of hospitalization was short and the patient was likely to be anemic at the time of admission. This study emphasized on the importance of assessing the overall nutritional status of patients, including their ingestion ofmicroelements.[12]

Among the 240 anaemic patients analysed in the present study, majority of them (60 percent) were females while the remaining 40 percent were males. Significant results were obtained while assessing the gender-wise distribution of anaemic patients.

The prevalence of severe, moderate and mild anaemia in male and female was 68.8%,21.8%,9.4% and 56.2%, 36.1% and 7.7% in the present study was respectively. This was higher than the findings reported by Dulipala et al from their study conducted among school going adolescent in Guntur where the prevalence of severe, moderate and mild anaemia were 0.8%, 4.6% and 22% respectively.[14] Our findings were almost similar to those reported from a study conducted in rural Tamil Nadu where severe anaemia was 2%, moderate anaemia was 6.3% and mild anaemia was 36.5%.[15]

Positive family history of anaemic was foundtobepresentin37.5percentofthepatients.75percentof the patients of the present study had rural residence, while the remaining 25 percent had urban residence. Gastroenteritis wasthe most common associateddiagnosis found to be present in 37.5 percent of the patient population. The incidence and risk factors of anaemia were assessed in another study by Rocha Dda S et al.[16] Assessment of a total of 312 paediatric subjects with the age range of 7 to 59 months was done, who attended daycarecenters of the East Sanitary District of Belo Horizonte. From the finger stick blood samples, using the HemocueTM portable photometer, they diagnosed the anaemia cases. For this, they considered the hemoglobin levels below 11.0 g/dL. For assessing the nutritional status of the subjects, they measured the weight and height of the subjects followed by classification according to WHO criteria. Parameters were gathered through a questionnaire replied by subject's parents or guardians, containing socioeconomic variables, along with data on maternal and children's health. The occurrence of anemia in the population studied was 30.8%, with a higher prevalence in children ≤ 24 months of age (71.1%). Risk factors for anemia were age ≤ 24 months (OR: 9.08 CI: 3.96 to 20.83), and height-for-age < -1 z-score (OR: 2.1, CI: 1.20 to 3.62). The high prevalence of anemia in children attending day care centers in Belo Horizonte, especially those younger than 24 months and in children with height- for-age < - 1 z-score, demonstrates the importance of nutritional care to infants and strengthens the need for commitment of child care institutions in reducing this deficiency.[13]

V. CONCLUSION

From the above mentioned data, it can be concluded that anemia is a common worldwide hazard affecting significant portion of paediatric population. Higher prevalence of anaemia is seen among females with associated gastric manifestations. Hence; periodic paediatric check-up should be done so that early diagnosis and prompt treatment planning of this pathology could be done.

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