Original Article

Prevalence and Pattern of Anemia in Children in Age Group 1 to 5 Years in Tertiary Care Hospital Nawabshah

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ABSTRACT

Objective: To determine the prevalence of anemia and its pattern amongst the admitted patients of age group 1 year to 5 years.

Study Design: Descriptive study

Place and Duration of Study: This study was conducted at the Department of Paediatrics, PMCH Nawabshah from January 2018 to June 2018.

Materials and Methods: A total of 556 of patients were admitted with the diagnosis of anemia within the desired age range i.e. in age group of 1 to 5 years.

Results: Total admitted patients in age range of 1 to 5 years during January 2018 to June 2018 were 7445, out of these 556(7.46%) were found to be anemic. The male patients were 389 (69.7%), and female patients were 167 (30%). Regarding the distribution in age groups; 1-2 years age group had 331 (59.53%), 2-3 years 96 (17.2%), 3-4 years age group had 72 (12.94%), and 4 -5 years of age group had 47(8.45%) patients. 56 (10%) patients had severe anemia, 157 (28%) had moderate anemia, while 343 (61.7%) had mild anemia. On peripheral smear and hemoglobin indices 469 (84.35%) had microcytic picture, 45 (8.09%) had normocytic, 31(5.57%) had macrocytic, and 11 (1.97%) had dimorphic picture.

Conclusion: Authors have concluded the finding again that anemia is still a large burden over pediatric population, which needs to be addressed promptly and some thorough research should be done on preventing strategies.

Key Words: anemia, microcytic, peripheral smear

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INTRODUCTION

Anemia is defined as a reduction of the hemoglobin concentration or red blood cell (RBC) volume below the range of values occurring in healthy persons[1]. Women of reproductive age and childrenare among the most affected population, with an estimated 1.6 billion people being anemic globally[2].The World Health Organization has set reference cut-off points for normal populations, and defined that it is a public health problem when the prevalence of anemia is >20% in a given population, and a prevalence of >40% indicates a grim health issue[3].Anemia in children has many risk factors and associations including both micro and macro environment around the child, especially in pre-school aged children anemia has been a proven impact on cognition, mental health and IQ and immunity[4]. Regarding the classification of Anemia, one is based on the morphology of red blood cells, and thus categorizes the anemia in three types as microcytic, macrocytic and normocytic[1]. The reason/causative factors as stated already are many including nutritional[5,] maternal intake/iron levels, worm infestation, other parasitic infections[6], loss of blood (gross and microcytic), hemolysis[7], chronic illnesses, drugs, agents that suppress the bone marrow , genetic causes and some other rare genetic anemia as well. Independent of the cause the need to treat anemia is even greater in children as the development of brain is highly dependent on the nutritional status including the micronutrient deficiencies which also contribute to low hemoglobin levels[8].Although the general consideration is that anemia in children is primarily a problem of under developed and low income countries as the 65% of anemic population is in south east Asia[9,]which is only second to Africa[10]but studies from developed countries has also shown that anemia in school aged children is an important predictor of morbidity[11].

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MATERIALS AND METHODS

This descriptive study was conducted in Paeds ward of People's University hospital for a period of 06 months,

from January 2018 to June 2018. A total of 556 patients were recruited in this study.

These patients were included on the basis of detailed history, clinical examination, and basic investigations were done. The parameters specifically noted are socioeconomic status, pica, worm infestation, nutritional status especially daily intake. Causes of familial/inherited anemia were inquired. A Detailed systemic examination was done. Blood samples were taking through venipuncture, blood was sent in EDTA tube. Anemia was labelled if hemoglobin was less than 11mg/dl as per WHO criteria.

Further workup was done for specific etiology of anemia in all specific cases. But those findings and results are beyond the objectives of this study.

RESULTS

Our Current study showed that amongst all 7445 admitted patients in age range of 1 to 5 years during January 2018 to June 2018, out of these 556(7.46%) were found to be anemic [Figure-1]. The male patients were 389 (69.7%), and 167 (30%) were female patients [Figure-2]. Regarding the distribution in age groups; 1-2 years age group had 331 (59.53%), 2-3 years 96 (17.2%), 3-4 years age group had 72 (12.94%), and 4 -5 years of age group had 47(8.45%) patients [Table-1]

The most common clinical manifestation was pallor, present in all 100% of patients, behavioral changes like irritability was reported in 165(29.67%) patients, listlessness was seen in 162 (29%), history of pica was found in 122(21.94%), worm infestation was found in 116(20.8%).

Out of 556 patients, 56 (10%) patients had severe anemia i.e. hemoglobin less than 5gm/dl, 157 (28%) had moderate anemia i.e. hemoglobin equals to 8gm/dl, and 343 (61.7%) had mild anemia with hemoglobin level of greater than 8gm/dl. [Table-3]

On peripheral smear and hemoglobin indices 469 (84.35%) had microcytic picture, 45 (8.09%) had normocytic, 31(5.57%) had macrocytic, and 11 (1.97%) had dimorphic picture. [Table-4]

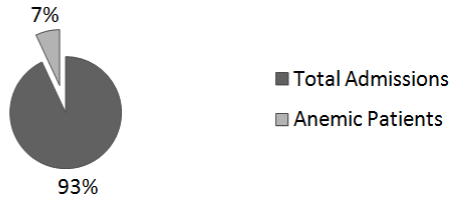

Figure No.1: Total Admissions and Anemic Patients

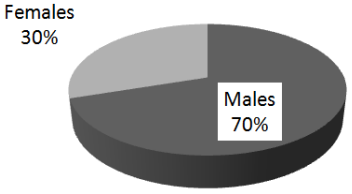

Figure No.2: Gender Distribution

Table No.1: Age Distribution of Patients (n=556)

Age in Years	Number of Patients	Percentage
1-2 years	331	59.53%
2-3 years	96	17.2%
3-4 years	72	12.94%
4-5 years	47	8.45%

Table No.2:Symptomatology of Patients

Clinical manifestation	Frequency	%age
Pallor	556	100%
Irritability	165	29.67%
Listlessness	162	29%
Pica	122	21.94%
Worm infestation	116	20.8%

Table No.3: Severity of Anemia According To Hemoglobin

Hemoglobin level	Frequency	%age
Severe anemia Hemoglobin level < 5gm/dl	56	10%
Moderate anemia Hemoglobin 5-8 gm/dl	157	28%
Mild anemia Hemoglobin >8 gm/dl	343	61.7%

Table No.4: Picture on Peripheral Smear

Peripheral smear	Frequency	%age
Microcytic	469	(84.35%)
Macrocytic	31	(5.57%)
Normocytic	45	(8.09%)
Dimorphic	11	(1.97%)

DISCUSSION

Anemia is a significant problem of almost all age groups, especially children and women, with global prevalence of almost quarter of world's population. Authors have found the frequency of anemic patients in the age group of 1-5 years of age was 7.46%. Globally about 47.4% of children under five are suffering from anemia[12]. Some of the population based studies have shown a greater prevalence in different under developed countries. Population based studies from Ethiopia showed prevalence 66.6%,from Bangladesh 60%, in Nepal 69%, and from Ghana 84.3%[13].Ours was a hospital based study, which does not represent the actual picture of whole population, so there is obvious difference in frequency of anemic patients.

Themale: female ratio in our study was 2:1. Some of the other studies replicate this male predominance as well[14]. Studies from Tanzania [15]and Brazil [16] found that sex difference have no association with presence and absence of anemia. The possible explanation for this discrepancy could possibly be due to state of rapid growth of male children in the first months of life which increases their micronutrient requirement including iron[17]. Highest percentage of anemic patients was seen among the age group of 1 to under 2 years of age (59.53%), a study from Haiti also showed that the highest prevalence of anemia (92%)was seen amongst

children less than 2 years of age, this finding was again supported by another study, which was done in Bangladesh[18].

The most common symptom that was seen in all patients was presence of pallor; this exact finding is replicated in a study from Lahore[19] and Indonesia[20]. History of irritability was seen in 165(29.67%) patients, listlessness was seen in 162 (29%), history of pica was found in 122(21.94%), studies have shown that behavior changes are associated with anemia in children [21], in our study worm infestation was found in 116(20.8%), in an study from Nepal the overall prevalence of intestinal parasites was 31.5%[22], and a study done in rural Karachi shows prevalence of 47.5%[23].

Out of 556 patients, 56 (10%) patients had severe anemia i.e. hemoglobin less than 5gm/dl, 157 (28%) had moderate anemia i.e. hemoglobin equals to 8gm/dl, and 343 (61.7%) had mild anemia with hemoglobin level of greater than 8gm/dl. On peripheral smear and hemoglobin indices 469 (84.35%) had microcytic picture, 45 (8.09%) had normocytic, 31(5.57%) had macrocytic, and 11 (1.97%) had dimorphic picture. In studies there have been findings supporting ours that the most common picture on peripheral smear is microcytic anemia[24].

CONCLUSION

Our study has highlighted the finding again that anemia is still a large burden over pediatric population, which needs to be addressed promptly and some thorough research should be done on preventing strategies.

Author's Contribution:

Concept & Design of Study:	Juverya Naqvi
Drafting:	Ali Akbar Siyal
Data Analysis:	Tabinda Taqi, Naseer Ahmed Memon
Revisiting Critically:	Juverya Naqvi, Ali Akbar Siyal
Final Approval of version:	Juverya Naqvi

Conflict of Interest: The study has no conflict of interest to declare by any author.

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