

Research Article

Study on Prevalence of Anaemia among School Children in a Rural Community Setup

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Abstract: Anaemia is one of the important public health problem, which affects the world's population widely. Among all types of anaemia, iron deficiency anaemia is commonly seen in people of developing countries. The prevalence is high specifically in school children and pregnant women. This study was designed to evaluate the prevalence of anaemia among the school going children in a rural area. A prospective study was carried out among 700 children of three different schools. The haemoglobin levels were estimated using Sahli's haemometer by acid haemolysis method. The overall prevalence of anaemia was 81.71% which was commonly seen in female children. 28.91% of the children between the age group of 9 to 11 years were more prone to anaemia. The haemoglobin levels of 312 children were below 7 g/dl, which indicates that the children were severely anaemic. The severity of anaemia was analysed and found that around 54.36% of children were severely anaemic. The below normal BMI levels indicates the nutritionally compromised status of the children. In order to reduce the prevalence of anemia, the government need to emphasize on community and primary care health programs and create an awareness of healthy diet and reproductive health, which can help to reduce the burden of anemia. Further research in this area are required to rectify the problem and take appropriate measures to improve the overall quality of life of children, where the pharmacist should play a pivotal role in the health care team by providing patient counselling and health screening services..

Keywords: Anaemia, body mass index, sahli's haemometer, quality of life, nutritional deficiency, iron deficiency anemia.

INTRODUCTION

Anaemia is one of the major public-health problem that affects the world's total population widely [1]. Anaemia is known to affect people belonging to all age-groups, particularly women of child bearing age and children. World Health Organization (WHO) definitions for anaemia is as follows: in children's from 6 months to 5 year, anaemia is defined as a Hb level <11g/dl, and in children between 5–11 years Hb < 11.5 g/dl [2].

India has the world's highest prevalence of iron deficiency anaemia among women, with 60 to 70 percent of the adolescent girls being anaemic [3]. About two billion people are iron-deficient, with half of them manifesting clinical signs of anaemia. It is estimated that 75% of anaemia is related to iron deficiency, followed by folate and vitamin B₁₂ deficiencies [4].

In developing countries it serves as a primary cause for 40% of maternal death either directly or indirectly. World Health report of 2002 identified anaemia as one among the top 10 risks for infant mortality, maternal mortality and preterm birth. During

adolescence anaemia is more prevalent in both sexes especially in girls where they are exposed to risk of onset of menarche. Prevalence of anaemia is very high in vulnerable groups even in higher socioeconomic status. In preschool-age children, the anaemia prevalence is 47.4%, affecting 293 million children globally. The highest prevalence is in Africa (67.6%) and South-East Asia (65.5%). In the Eastern Mediterranean, the prevalence is 46% and around 20% in the other WHO regions like America, Europe and Western Pacific [5].

Sant-Rayn Pasricha conducted a study on Determinants of anaemia among young children in rural India and found that Poor nutrition and low socio-economic status are the two important primary factors to be considered in anaemia. Strategies for minimizing childhood anaemia must include optimized iron intake but should simultaneously address maternal anaemia, poverty and food insecurity [6]. *N. Arlappa et al* studied on the prevalence of anaemia among rural pre-school children revealed that 59% of pre-school children living in rural areas were anaemic. Therefore, appropriate intervention measures such as supplementary iron &

folic acid, periodic deworming and health & nutrition education should be strengthened [7]. *Baudouin A. Kokore et al* studied on the Haematological Status and Anaemia Prevalence among Children Aged 5 to 11 Years in School Canteens showed that 82.9 % of children have indicated that at least a parameter of the blood count was abnormal owing to the deficiency of micronutrients. This advises us to avoid the early onset of nutritional deficiency and overload in children that can impede their physical and intellectual capacity[8]. Hence, the previous work shows a consistent prevalence of anaemia with its hold the strongest in children of growing age.

The facts show that anaemia exhibits as one of the most prevalent disease and perilous threat to health care sector, so it becomes a potential subject to be dealt with, to increase the quality and life expectancy. Hence this study was taken up to study the prevalence and create an awareness about the scenario of the disease state right at the age of childhood and counsel the children regarding the importance of iron rich foods in order to reduce the prevalence of the disease.

METHODS AND MATERIALS

Study site: The study was conducted in four government schools among 700 children in Chettipalayam Village, Coimbatore, Tamilnadu.

Study design: Prospective study.

Sample size: 700 school going children.

Inclusion Criteria: Children between the age group of 6 -16 years were selected for the study.

Exclusion Criteria: Children below the age five and above the age of sixteen were excluded from the study.

Designing of data entry format: A specially designed data entry format was used to enter all patient's details like patient name, age, sex, school, height, weight, BMI, blood group, haemoglobin level.

Methods:

Anaemia was detected using Sahli's haemometer. By using a Pasteur pipette, 0.1N HCl was added into the graduated tube. Blood was drawn upto the 20 µl mark in the Sahli Hb pipette and the blood was then transferred into the haemoglobin tube containing HCl. The pipette is rinsed well, the reaction mixture is mixed thoroughly and the tube is allowed to stand for at least 10 min. The solution was diluted with distilled water by adding few drops at a time until the colour matches with the standard glass reference blocks. The matching should be done only against natural light. The level of the fluid is noted at its lower meniscus and

the corresponding reading to this level on the scale is recorded in g/dl. The collected data are then screened to identify the prevalence of anaemia by calculating the number of anaemic cases.

RESULTS AND DISCUSSIONS

The study results emphasized the high prevalence of anaemia among all the age groups of children. The reports of haemoglobin levels in 700 children revealed that 81.71% were anaemic and 18.29% were non-anaemic.(figure no:1). When the occurrence pattern of anaemia was compared to the age distribution, 26.50% of anaemic children were between the age group of 6-8 years, 28.91% between 9-11 years, 23.69% between 12-14 years and 20.90% of children were between 15-16 years.(Table No:1). Based on the above results, the age group of children found highly susceptible to anaemia were between 9 to 11 years. The gender categorization reveals the prevalence of anaemia was high in females than in males. Among the 574 anaemic children, 44.25% were found to be male where as 55.75% were found to be female children. (Fig No: 2). Out of the 574 anaemic children, 54.36 % were found to have haemoglobin below 7 g/dl percentage, 28.22 % have between 7– 10 g/dl and 17.42 % between 10-12 g/dl levels.(Table No:2). The severity of anaemia was analysed and found that majority of children were severely anaemic. Around 54.36% of children were severely anaemic, 28.22% were moderately anaemic and 17.42% of children were having mild anaemia(figure no:3). The Body Mass Index of the children was calculated by using weight by height ratio. Out of 700 children, 48% had below normal BMI, 25.86% had normal BMI and 26.14% had above normal BMI. [Fig No:4] The analysis of blood grouping showed that majority of the children were under 'B' group.

Table-1: Age Distribution

Age Distribution	Total anaemic children in the given range	Percentage (%)
6-8 years	152	26.50
9-11 years	166	28.91
12-14 years	136	23.69
15-16 years	120	20.90

Table- 2: Determination of haemoglobin

Level Of Haemoglobin (gm/dl)	No. of Cases	Percentage (%)
Below 7 (severe anaemia)	312	54.36
7-10 (moderate anaemia)	162	28.22
10-12 (mild anaemia)	100	17.42

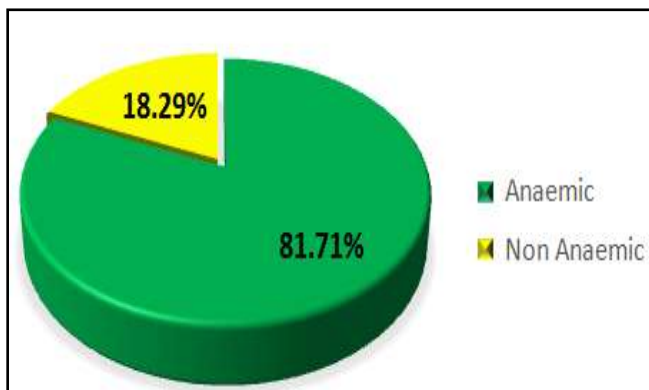


Fig-1: Prevalence of anaemia

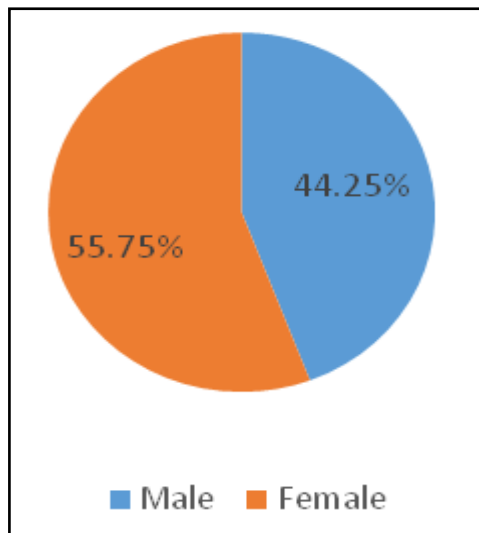


Fig-2: Sex distribution in anaemic children

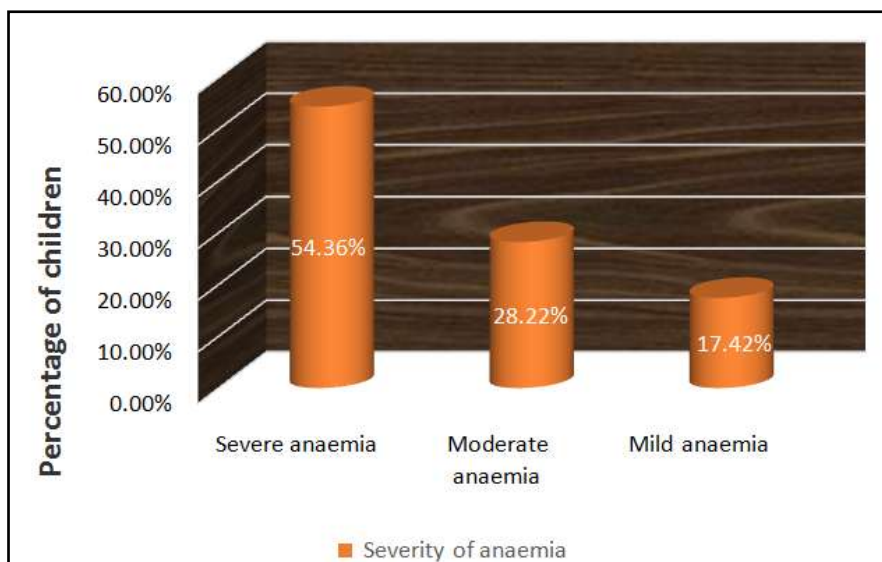


Fig-3: Severity of anaemia

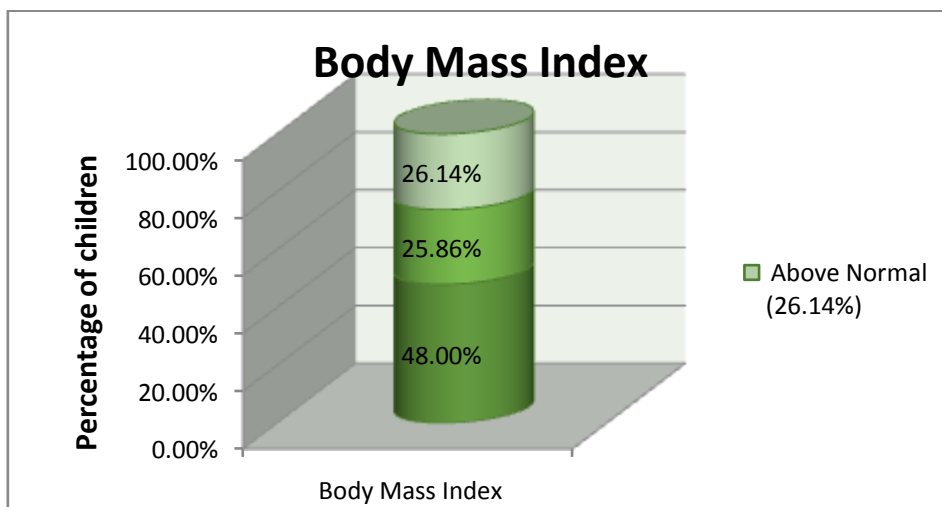


Fig-4: BMI Analysis

CONCLUSION

The study was carried out to understand the current prevalence pattern of anaemia among school going children in the rural areas of the city and to enhance the health status of children and raise the awareness about these diseases in the rural population. As anaemia is one of the major public health problem in India, a comprehensive plan to overcome this problem is important. National guidelines can be followed for the prevention and management of anaemia. Various strategies to prevent anaemia are by improving dietary intake, by providing iron folate rich foods and food item that promote iron absorption, providing awareness to the public by conducting health and nutrition education programmes and screening for early detection of anaemia among children. Hence, the current study suggests that various measures should be taken to reduce the incidence of anaemia to improve the quality of life of the children, where the pharmacist should play an important role in health care team for better patient health care provision by providing patient counselling and health screening services.

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