



An investigation of prevalence of anaemia in pre-school children and its functional consequences and preventions

Dr. Bobby Kumari

Lecturer, Department of Home Science, Ram Shreshtha College, Chochahan, Muzaffarpur, Bihar, India

Abstract

Anaemia is a major global problem affecting between 20-70 percent of population in various countries including India. It is an important public health problem affecting people from all walks of life. The diseases in Particular Significance in Pre-School Children because of the high prevalence (50-70 percent) and the adverse functional consequences. Anaemia is also directly and indirectly responsible for 10-20 percent of maternal death, high incidence of premature births and intrauterine malnutrition. Anaemia is defined as reduction in the hemoglobin (HB) level in circulation which can be measured by Salvi's Hemoglobinometer with pipette. The other method is to measure weight and height of the Anaemia prone children. Food in adequate quantity and quality is probably the most important factor affecting health and nutritional status, especially in the case of children. A child without adequate nourishment is highly vulnerable to different types of diseases including Anaemia. Children being the future and supreme asset of a nation requires careful and well planned programs for their proper upliftment. Most important need is to give proper nutritional education to mother which can be the surest permanent step in its alleviation.

Keywords: pale tongue koilonychia, hemoglobin, leucocyte, platelet count

Introduction

Investigation of anaemia is an important tool in diagnosing anaemia. Hemoglobin can be measured from finger prick blood samples by direct colour comparison of acid or alkaline heematin where a calorimeter is not available (i.e. in field) or alkaline heating where 9 calorimeter is not available (i.e. in field) or as cyanmethaemoglobin or oxyhaemoglobin. The precision of measurement is important methods based on direct colour comparison are not recommended even from a field area. It is advisable to bring the blood samples on a filter-paper and estimate hemoglobin calorimetrically after extraction.

Leucocyte and Platelet Count help to differentiate between anaemia due to general bone marrow defects and other cause. For Prevention and Treatment of Anaemia:-

1. **Oral Iron:** It is the common treatment for preventing anaemia. Low dosage iron in adequate, this is the basic of the NNAP (National Nutritional Anaemia Programme) in India. To make it success, it is also necessary to launch awareness programme by providing knowledge at each and every hand of society.
2. **Dietary Approach:** All medical health and social workers, horticulture department and voluntary organization roles to play on promoting the consumption of iron rich foods. Following points need to be considered for promotion of the strategy mainly –
 - Promotion of consumption of pulses/green leafy vegetable (which are rich in iron and folic acid).
 - Creation of awareness in mothers attending antenatal clinics, immunization centres and Anganwadi centre.
 - Addition of iron rich foods to the foods of weaning infants.

Methodology

The procedure involved in the conduct of the above investigation included the following steps –

- a. Location of study of Pre-school children,
 - b. Selection of Pre-School Children,
 - c. Measurement of variables and
 - d. Laboratory investigation
- A. Location of study of pre-school:** The study was proposed to be conducted in urban and rural area of Muzaffarpur district of North Bihar.
 - B. Selection of pre-school children:** A sample of pre-school children each from three different economy group of both rural and urban area of Muzaffarpur district was selected for assessment of deficiency symptoms by stratified sampling.
 - C. Measurement of variables:** At first, structured schedule was formed. Survey of 600 selected pre-school children from different economy status in both urban and rural area of Muzaffarpur district was done. Evolution of nutritional deficiency diseases (especially protein energy malnutrition, conjunctival xerosis, corneal xerosis, night blindness, angular stomatitis, rickets and anaemia etc.) was done with appropriated schedule and observation of clinical sign and symptoms of nutritional deficiency diseases.
 - D. Laboratory investigation:** Anthropometric measurement for all the assessment of blood hemoglobin level for 60 sub-samples was done.
 - a. **Weight and height measurement:** Weight of all 600 pre-school children was measured by weighting machine in kilograms. The measurement of height was made on a smooth wall by pencil in centimeters, and respondents

standing against it.

- b. **Assessment of blood hemoglobin level:** The estimation of blood samples for hb percent was done by haemoglobinometer with pipette.

Sixty pre-school children, 10 from each six groups from different from economic status from both rural and urban area were selected for assessment of blood HB level in which clinical sign of Anaemia was observed. The estimation of blood sample for HB level was done by filling.

The decinormal hydrochloric acid in diluting tube 10 to 20 marks. An adequate puncture was made on the left hand middle finger of the children taking antiseptic care by sucking up to 20 marks i.e., 20 centimeters of blood. Blood was then gently blown into the diluting tube. The tube was then allowed to stand for 5 minutes. Distilled water was then added drop by drop by a dropper until the tint of the solution and standards glass tube appeared identical. Then the results were noted.

Result and Discussion

Food in adequate quantity and quality is probably the most important factor affecting health nutritional status especially in the case of children. A child without adequate nourishment in highly vulnerable to Viral, Bacterial and others infections and diseases.

Children being the future and supreme assets of a nation required a careful and well planned programmes for their nature and growth.

The result obtained and discussed under the following head:-

A. Prevalence of Anaemia in Children.

- a. Assessment of malnutrition by observation of clinical sign and symptoms in children.
- b. Assessment of malnutrition on the basis of anthropometric measurement.
- c. Prevalence of Iron deficiency (Anaemia) in children.

Table 3: Blood hemoglobin levels of sixty pre-school children

Economic Status	Area	Blood Deficien (<10)	Homoglobin Low (10-10.9)	Category (G/dl) Acceptable (>11.0)
Low	Rural Urban	65	44	-1
Middle	Rural Urban	41	54	15
High	Rural Urban	1-	34	66

Conclusion

This main objective of the present study “Inter-relation among malnutrition and other deficiencies in children “is to evaluate the iron deficiency in pre-school children of three different Socio-economic groups of both rural and urban area of Muzaffarpur district of North Bihar and after that the different among all the three Socio-economic groups and in each in same group between the rural and urban area was analysed. At last co-relation of prevalence of malnutrition with prevalence of other deficiencies was seen.

Prevalence of iron deficiency assessed on the basis of two clinical signs (A pale tongue and koilonchiya) was more in rural area than urban area for low, middle and high income group.

- A. Percentage of pale tongue for low income group in rural area was 50 percent and 34 percent for urban area.

For middle income group 30 percent for rural and 20 percent

B. Prevalence of iron

All the 600 children were examined for iron deficiency Anaemia on the basis of two clinical sign such as Pale Tongue and Koilonchiya.

Table 1: Percentage of IRON DEFICIENCY Anaemia (Low Income Group)

Area	Pale Tongue	Koilonchiya
Rural	50	10
Urban	34	05

In low income group rural children were found more Anaemic than urban children. In rural area 80 percent and 10 percent children were suffered from pale tongue and koilonychia were as in urban area it urban it was 34 percent and 5 percent respectively.

Table 2: (Middle Income Group)

Area	Pale Tongue	Koilonchiya
Rural	30	04
Urban	20	--

In middle income group 30 percent in rural area and 20 percent in urban area showed pale tongue while only 4 percent children of rural area were suffered from Koilonchiya.

Assessment of blood hemoglobin level in laboratory: A total of 60 pre-School Children (10 from three group of different economic status each from both rural and urban area) were selected for assessment of blood hemoglobin level. Children with clinical sign of anaemia were preferred first for this test. Blood hemoglobin level assessed by shouts hemoglobinometer are presented in following table.

for urban area.

For high income group 8 percent for rural and 5 percent for urban Children.

- B. Percentage of koilnychia, for low income group 10 percent for rural area and 5 percent for urban area.

For high income group only 2 percent for rural and nil for urban area.

The correlation of percentage of malnutrition with percentage of other deficiencies (on the basis of presence of first clinicalsign) was analysed the result revealed that percentage of malnutrition and other deficiencies were positively corrected. As income increased percentage of malnutrition and other deficiencies decreased. Percentage of malnutrition and other deficiencies was less for rural than urban in low income group but more for rural in middle and high income group [2]. From the above results, it is evident that prevalence of

malnutrition and other deficiencies can be decreased by giving nutrition knowledge to mother as reported in the study in the area with lack of nutrition knowledge increasing purchasing power of low income groups as it was observed percentage of deficiencies was high in low income group.

Hence it is a challenging role for the Government, health worker, extension worker, teacher, and scientists etc. to make a combined effort for the improvement of health and nutritional status and of children as well as community. All these efforts will go in vain without giving proper nutrition education to each and every member of the community ultimately the nation.

References

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