



Clinical Evaluation Of Adolescence (10-14 years) To Know The Deficiency Of Trace Element And Micro-nutrients

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Abstract

The importance of coexisting micronutrient deficiencies in developing countries is gaining recognition, prompted by the disappointing responses often observed with single micronutrient supplements. Further, of concern is the feasibility and sustainability of supplementation as a mode of delivery in poor resource settings. A cross sectional study was carried out to assess the nutritional status of adolescent girls and boys of Kanpur district. This study was conducted among 4-schools using general information, anthropometric, clinical information, and dietary intake information and food habits. The study comprised of 150 adolescence boys and girls between the age group of 10-14 years of age. Iron, zinc and dietary folate deficiency are the common health problems among adolescent girls. A well balanced nutritious food should be consumed to prevent micro-nutrient efficiencies and to attain a good physical and mental well-being. Interventions like public health measures, school health programs should be implemented to address these health problems. Supplementation and fortification of foods should be done to prevent the micro-nutrient and trace element deficiencies and to improve the nutritional status of the adolescence.

Keywords: signs and symptoms, micro-nutrients, adolescents boys and girls, deficiency diseases, trace element

Introduction

Nutritional assessment consists of anthropometric, biochemical, clinical, and dietary assessment and forms the objective basis for diagnosis of protein-calorie malnutrition as well as the mechanism by which nutritional adequacy of aggressive alimentation (enteral and parenteral) is evaluated.

Micronutrient deficiencies are associated with 10% of all children's deaths, and are therefore of special concern to those involved with child welfare. Early childhood micronutrient deficiency leads to stunted growth and impaired cognitive development. Deficiencies of essential vitamins or minerals such as Vitamin A, iron, and zinc may be caused by long-term shortages of nutritious food or by infections such as intestinal worms. They may also be caused or exacerbated when illnesses (such as diarrhoea or malaria) cause rapid loss of nutrients through feces or vomit.

Trace element and micronutrient deficiencies affect more than two billion people of all ages in both developing and industrialized countries. Micronutrient deficiency adversely affects the physiology and immunology of an individual, causing long term health consequences. They are the cause of some diseases, exacerbate others and are recognized as having an important impact on worldwide health.

Exact needs vary among species, but commonly required plant trace elements include copper, boron, zinc, manganese, and molybdenum. Animals also require manganese, iodine, and cobalt. Lack of a necessary plant trace element in the soil causes deficiency diseases; lack of animal trace elements in the soil may not harm plants, but, without them, animals feeding solely on those plants develop their own deficiency diseases. (Britannica, T. Editors of Encyclopaedia , 2019)

Trace elements are micronutrients required in the body for its normal function especially through various enzymes, hormones, vitamins etc. where they are the important components among them iron, zinc, copper and cobalt are prominent. Deficiency of each one gives rise to specific clinical feature. Besides iron deficiency causing anemia, zinc deficiency causes skin changes, copper deficiency hair changes, cobalt deficiency vitamin B12 deficiency and selenium deficiency may cause cardiomyopathy. (Tarun Kumar Dutta et al., 2012)

Objective

To know the deficiency of trace element and micro-nutrients by clinical evaluation of adolescence.

Methodology

A cross sectional study was carried out to assess the nutritional status of young girls and boys of Kanpur district. A total of 150 adolescent girls and boys of 10 to 14 years of age, living in the kalyanpur area of Kanpur district of Uttar Pradesh state were selected at randomly as sample. Out of them, 75 were girls and 75 were boys. The socio-demographic data were elicited by administering the pretested questionnaire and anthropometric measurements such as height, weight, waist and hip circumference were recorded by following standard methods and clinical methods. The indirect method used was diet survey; the 24 hours recall method, food habits and dietary intake information.

Result

Table 1.1 : Distribution of respondents according to Skin

Clinical Signs	Boys		Girls	
	N	%	N	%
Normal	67	89.4	71	94.6
Flaky	3	4	0	0
Dryness	2	2.6	3	4
Any other	3	4	1	1.4
Total	75	100	75	100

Table 1.1 reveals the distribution of respondents according to skin. Among boys, 89.4 % were recorded as normal, 4 % were recorded as flaky, 2.6 % were recorded as dryness and 4% were recorded as any other signs of skin. On the other hand, among girls, the normal, flaky, dryness and any other signs of skin was recorded as 94.6 %, 0 %, 4 % and 1.4 % respectively.

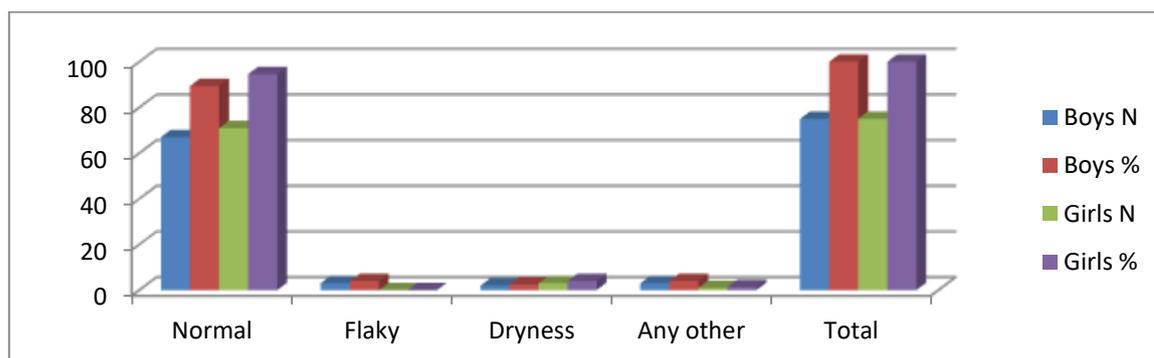
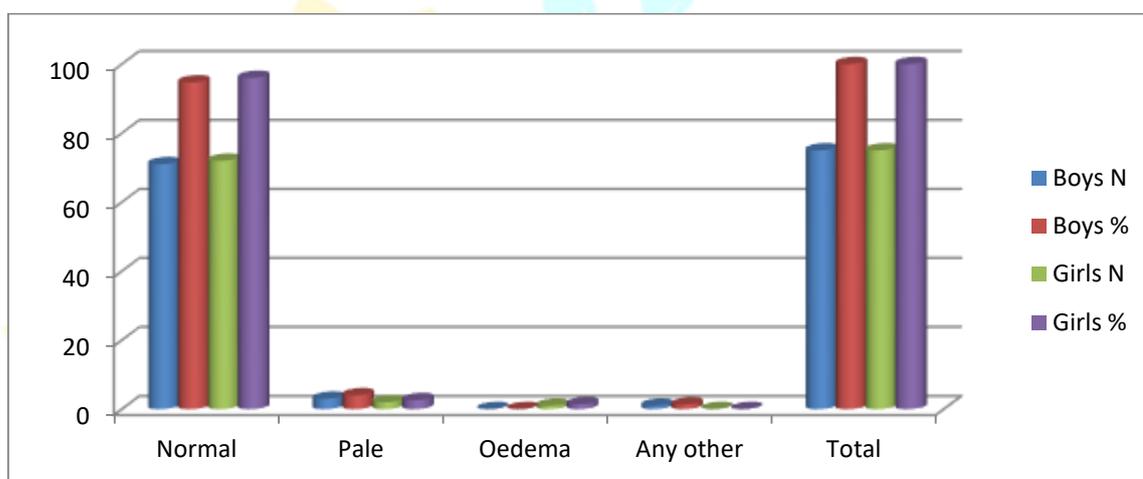


Table 1.2 : Distribution of respondents according to Tongue

Clinical Signs	Boys		Girls	
	N	%	N	%
Normal	71	94.7	72	96
Pale	3	4	2	2.6
Oedema	0	0	1	1.4
Any other	1	1.3	0	0
Total	75	100	75	100

Table 1.2 reveals the distribution of respondents according to Tongue. Among boys, 94.7 % were recorded as normal, 4 % were recorded as pale, 0 % was recorded as oedema and 1.3 % were recorded as any other signs of tongue. Similarly, among girls, the normal, pale, oedema and any other signs of tongue was recorded as 96 %, 2.6 %, 1.4 % and 0 % respectively.

**Table 1.3 :** Distribution of respondents according to Hair

Clinical Signs	Boys		Girls	
	N	%	N	%
Normal	54	72	64	85.3
Lack of lustre	8	10.6	5	6.8
Thinness and sparseness	5	6.8	4	5.3
Any other	8	10.6	2	2.6
Total	75	100	75	100

Table 1.3 reveals the distribution of respondents according to Hair. Among boys, 72 % were recorded as normal, 10.6 % were recorded as lack of lustre, 6.8 % were recorded as thinness and sparseness and 10.6 % were recorded as any other signs of hair. Similarly, among girls, the normal, lack of lustre, thinness and sparseness and any other signs of hair was recorded as 85.3 %, 6.8 %, 5.3 % and 2.6 % respectively.

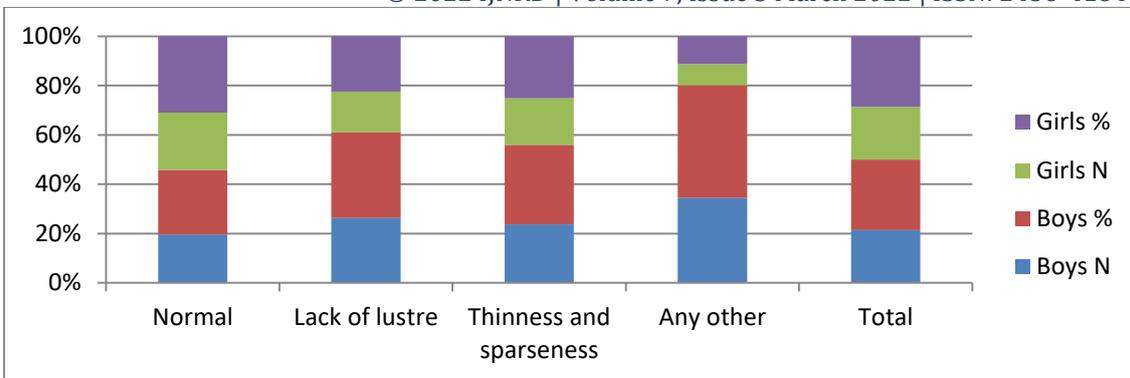


Table 1.4 : Distribution of respondents according to Eye

Clinical Signs	Boys		Girls	
	N	%	N	%
Normal	71	94.8	73	97.4
Itching	2	2.6	0	0
Slightly Dry	2	2.6	2	2.6
Total	75	100	75	100

Table 1.4 reveals the distribution of respondents according to Eyes. Among boys, 94.8 % were recorded as normal, 2.6 % were recorded as itching and 2.6 % were recorded as slightly dry. Similarly, among girls, the normal, itching and slightly dry signs were recorded as 97.4 %, 0 % and 2.6 % respectively.

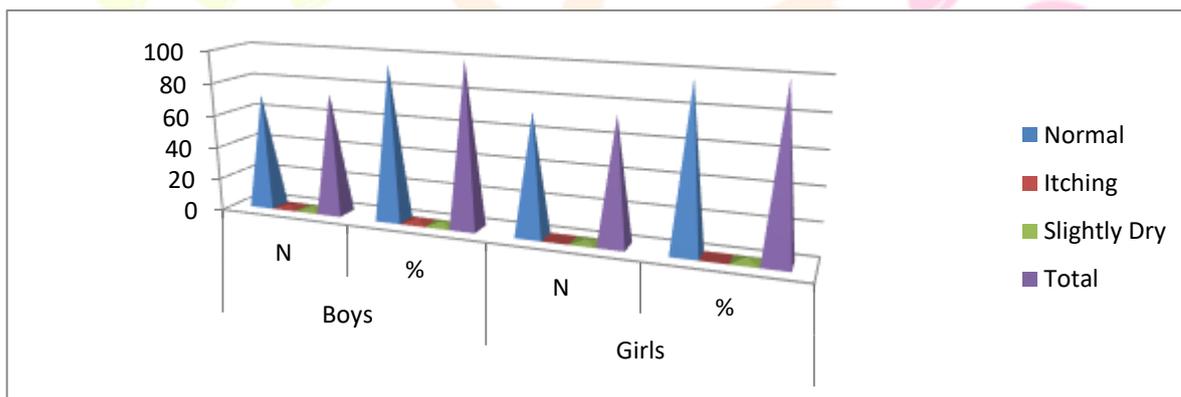
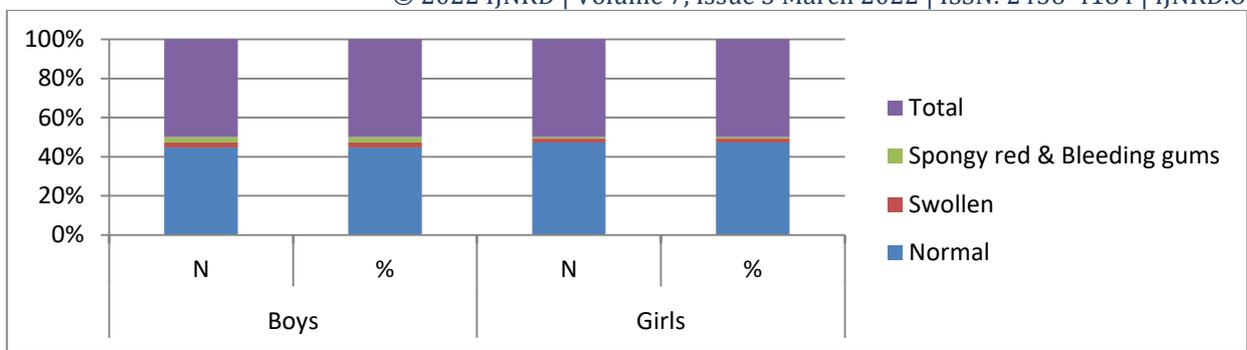


Table 1.5 : Distribution of respondents according to Gums

Clinical Signs	Boys		Girls	
	N	%	N	%
Normal	67	89.4	71	94.6
Swollen	4	5.3	3	4
Spongy red & Bleeding gums	4	5.3	1	1.4
Total	75	100	75	100

Table 1.5 reveals the distribution of respondents according to gums. Among boys, 89.4 % were recorded as normal, 5.3 % were recorded as swollen and 5.3 % were recorded as any other signs of gums. On the other hand, among girls, the normal, swollen and spongy red & bleeding gums were recorded as 94.6 %, 4 % and 1.4 % respectively.



Discussion

Some of the most obvious signs of a trace mineral deficiency are anemia, fatigue, or irregular heartbeat. Poor digestion and appetite, as well as chronic fatigue and brain fog, could also be signs that your body lacks trace minerals, such as iodine. Micronutrient deficiencies can cause several serious health issues. A lack of iron, folate and vitamins B12 and A can lead to anaemia. Anaemia is a condition in which there is a reduced number of red blood cells or haemoglobin concentration, causing fatigue, weakness, shortage of breath and dizziness.

There are now strong links between low intakes of particular nutrients and the risk of developing chronic disease including some cancers, heart disease, diabetes, osteoporosis and depression.

Conclusion

The study concludes trace element and micronutrient deficiencies are prevalent among some of the adolescence age groups having partial immunization. This appeals effective implementation of national health programmes, which can play a crucial role in addressing the hidden hunger. Correcting micronutrient deficiencies can significantly reduce childhood mortality and morbidity.

There are several interventions to improve the micronutrient status including fortification of foods, supplementation and treatment of underlying infections. Implementation of appropriate micronutrient interventions has several benefits, including improved cognitive development, increased child survival, and reduced prevalence of low birth weight.

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