

A study for the Assessment of Nutritional Deficiency Status of the School Going Girls

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ABSTRACT

Nutrient deficiencies are prevalent worldwide. Nutritional status refers to a person's overall health, which is impacted by nutrient intake and use in the body. Children between the ages of 6 and 12 are commonly regarded to be of school age, and this might be a second chance to make up on growth. Children's nutritional condition reflects not only the family's financial position and community's social well-being but also the health-care system's productivity and the effect on the surroundings. The present study reveals that the school going girls are suffering from different nutritional deficiencies like- anaemia, underweight, overweight, obesity, stunting, iodine deficiency etc. These deficiencies are emerging health problems and become the major epidemic cause of serious health problems in India. Children's diets in India, like those in many other wealthy nations, are often imbalanced, with an overabundance of calories and protein and insufficient amounts of numerous minerals and vitamins.

Keywords- Overweight, Obesity, Stunting, Iodine Deficiency, Anemia.

I. INTRODUCTION

Nutrition is the science of how nutrients as well as other chemicals in food interact with one another in relation to an organism's maintenance, development, reproduction, health, and sickness. Food intake, absorption, assimilation, biosynthesis, catabolism, and excretion are all involved in this process. Diet refers to the food that an organism consumes, and it is mostly governed by food availability, processing, and palatability. A balanced diet includes food handling and storage procedures that protect nutrients from oxidation, heat, and leaching while also reducing the risk of food-borne disease.

As per the UNICEF report, "Nutrition is the core pillar of human development and concrete, large scale programming not only can the burden of undernutrition and deprivation in countries but also can advance the progress of nations". The global level of child malnutrition remains intolerable, with Asia and Africa accounting for 90 percent of the world's chronically

undernourished (stunted) children. "In September, (2015) UNICEF, WHO, and World Bank Group released updated joint child malnutrition estimate for the 1990-2014 period, approximately 1 out of every 13 children in the world was wasted. 159 million were stunted, 49 million were overweight and 50 million were lost.

Most of the school-aged slum children in our study had low nutritional status, according to Srivatava et al (2012). Skills-based nutrition education, food fortification, appropriate infection control, community healthcare worker training, and the implementation of integrated programs are all suggested.

According to Khetrapal (2015), a child's diet should emphasize fresh, natural bases of energy and minerals. Extreme fasting should be circumvented. From a young age, a favorable attitude toward healthy eating should be cultivated. School-aged girls can improve their health by eating a good diet and doing yoga on a daily basis. Sixty girls in the age range of 7-9 years old from the Yamuna Nagar area of Haryana were randomly assigned to the control (C) and investigational (E) groups.

The experimental cluster consisted of 30 girls and their mothers who received diet counseling, and yoga instruction twice a month for four months. Before and after nutrition counseling, a nutritional assessment was performed. At the start of the trial, participants in the C and E groups were 116.1cm and 117.1 cm tall, respectively, and at the conclusion, they were 116.2cm and 117.9 cm tall. The average weight of the individuals in both groups was 20.1 kg at the start, however following dietary counseling, the E group's weight climbed to 21.7 kg. All of the indices, however, were lower than the conventional values. As a result, dietary counseling would be provided for a longer period of time and should be part of the school curriculum.

Further, Sasikala et al (2016) worked on the idea that "Nutrition is the intake of food to meet the body's dietary Needs through different sources namely vegetarian and non-vegetarian foods". They claimed that adequate nutrition and a well-balanced diet are appropriate when combined with frequent physical activity. Poor nutrition reduces an individual's immunity; on the other side, overnutrition increases susceptibility to a wide range of diseases, damages physical and psychological progress, and reduces efficiency. The goal of this work is to determine the dietary condition of school-aged boys and girls in Government schools in the Rompicherla Mandal in Andhra Pradesh's Chittoor district. They are, as we all know, the future of our country. Given the significance of children's health care, about 40% of the Indian population is under the age of 15 years. A total of 613 Government school-aged youngsters were chosen for the study in order to analyze anthropometric indicators among them. The youngsters were given a thorough physical examination, which was documented. In the current study, 49.43 percent of 613 school-aged children had overall normal nutritional status, 24.14 percent had Grade I, 16.48 had Grade II, and 9.95 had overall Grade III. Grade-I malnutrition was found in 23.59 percent (92) of the boys in the Government Schools, while Grade-II malnutrition was found in 16.15 percent (63) and Grade-II malnutrition was found in 11.80 percent (46) of the boys in the study region. In the research region, 51.12 percent (114), 25.11 percent (56), 17.04 percent (38), and 6.73 percent (15) of girls had malnutrition, respectively. Nutritional status was shown to be strongly linked to personal cleanliness and socioeconomic position in this study. Personnel hygiene and nutrition must be taught and promoted in schools.

Rao et al. (2021) recently published cross-sectional research on the dietary condition of school-aged children aged 6 to 8 years in South Andaman, Port Blair India. With this in mind, a cross-sectional study was conducted to determine nutritional status among 200 children aged 6 to 8 years old from South Andaman district, Port Blair, Andaman and Nicobar Islands, using four frequently used anthropometric pointers: wasting (low weight for height), stunting (low height for age), underweight (low weight for age), and thinness (using

body mass index-BMI). In conclusion, they stated that these children's general health was better than in previous studies conducted in India in recent years.

II. PURPOSE OF THE STUDY

This work reveals that school-going children are facing different nutritional shortages like- malnourished, overweight, stunting, anemia, obesity, iodine deficiency, xerophthalmia etc. these deficiencies are emerging health problems and become the major epidemic cause of serious health problems in India. Children's nutrition in India, like that of many other modern countries, is typically imbalanced, with an overabundance of calories and protein, as well as an insufficient supply of many minerals and vitamins. So, this study was to find out the causes, symptoms, diagnosis and treatment of nutritional disorders in school-going children for improving the children's health and status. The objective of this work is basically designed:

1. To study the socio-economic and demographic profile of children.
2. To know the factor associated with nutritional deficiencies among children.

III. NUTRITIONAL STATUS OF CHILDREN

Nutritional status:

Nutritional levels in the body and their capacity to maintain adequate metabolic integrity are examples of dietary impacts on the status of the body in these areas. The state of an individual's health as influenced by nutrient intake and use in the body is referred to as nutritional status. Children between the ages of 6 and 12 are frequently regarded to be of school age. School-age can be another chance to catch up on growth; particularly in terms of nutritional consumption, the odds are in your favor (Dr. Sultan 2014). Stunted youngsters account for more than 200 million school-aged children.

IV. NUTRITIONAL STATUS OF CHILDREN AND THEIR IMPORTANCE

Nutrition is vital for everyone, but it is especially vital for children since it is connected to all aspects of their progress and development, as well as elements that will have a direct impact on their health as adults. For example, a youngster who consumes the recommended amount of omega fatty acids in their daily diet has a far greater chance of developing a more stable foundation for their brain activity and skills later in life. Similarly, even if heart disease runs in your family, a youngster who follows a low-fat, low-cholesterol diet on a regular basis greatly increases their chances of avoiding a heart attack (children's heart center).

As per WHO (2014) report, the intake of food in relation to the body's nutritional requirements is known as nutrition. A decent, well-balanced diet, as well as regular physical activity, are essential components of optimal health. Poor nutrition can lead to lowered immunity, increased illness sensitivity, stunted physical and mental growth, and diminished productivity. Children's nutritional status reflects not only the family's financial level and the community's social well-being, but also the effectiveness of the healthcare system and the impact on the surroundings (Srivastava 2012). Good nutrition also aims to alleviate eating disorders, obesity, dental cavities, iron deficiency anemia, and a variety of other ailments such as marasmus and kwashiorkor in children and teenagers.

V. NUTRITIONAL DEFICIENCY IN CHILDREN

When it comes to nutritional deficiencies, it is a condition in which the body does not have enough nutrients to operate correctly. Nutritional insufficiency can impact one or more body systems, and the severity of the condition can vary substantially. A lack of a certain vitamin can cause the body to act abnormally in a variety of ways. For example, a calcium and phosphorus shortage can damage bone structure, nails, and hair, but a protein shortfall can impact muscle and energy levels. A bad intake can lead to deficiency disorders such as anemia, blindness, preterm delivery, scurvy, stillbirth, and cretinism, as well as health-threatening conditions such as metabolic syndrome, obesity, and chronic systemic diseases such as cardiovascular disease, diabetes, and osteoporosis. In acute cases of malnutrition, a low diet can produce kwashiorkor wasting, while chronic malnutrition can cause marasmus stunting.

VI. SOME COMMON NUTRITIONAL DEFICIENCIES IN CHILDREN

Protein-energy malnutrition (PEM):

PEM refers to a group of illnesses including protein deficit and calorie (energy). Such illnesses are common in underdeveloped nations where individuals do not have access to enough food. The disorders kwashiorkor and marasmus fall under this type of malnutrition. Youngsters are particularly vulnerable to these illnesses, with up to half of children in starvation-inclined nations not making it to their fifth birthday. Adults seldom develop protein shortage illnesses unless there is an issue with amino acid absorption in the intestines.

Kwashiorkor:

It is a disease triggered by a protein deficiency in the food. When a baby is weaned and no protein-rich food (such as milk, legumes, or meat) is obtainable, he or she will become tired, muscularly deteriorating, and

edematous (water preservation). The child's skin and hair lose their color, the skin turns out to be scaly, and he or she may have diarrhoea and anemia.

Vitamin Deficiencies:

Vitamins A, C, D, E, K, and eight B vitamins are all needed for proper growth, development, cell function, and metabolism (collectively B complex vitamins). Except for vitamins D and K, which the body may make under certain conditions, all vitamins must be obtained from outside food sources.

Marasmus:

It is a deteriorating away of body tissue caused by a diet lacking in both protein and calories. A youngster with marasmus is irritable and grumpy, and he or she is thin rather than swollen from edema.

Vitamin A, (Xerophthalmia, and Night blindness):

Vitamin A is required for retinal protection as well as appropriate skin and membrane cell development and health. A lack of vitamin A can lead to night blindness, a disease in which the eyes are unable to adapt to the dark due to retinal issues. The deficiency can also cause "glare" blindness, which occurs when the eye is exposed to too much light or when the quantity of light changes suddenly when going inside a darkened room. Xerophthalmia is a disease caused by a lack of vitamin A. Eye dryness and thickening of the surface of sections of the eye are signs of this condition. Xerophthalmia can lead to blindness if left untreated. Vitamin A is obtained in yellow and green vegetables and fruits such as apricots, oranges, cantaloupe, peaches, broccoli, turnip greens, collards, carrots, kale, squash, sweet potatoes, and as well as carotene, a chemical found in apricots, oranges, cantaloupe, collards, peaches, broccoli, kale, turnip greens, sweet potatoes, carrots, and squash. In the body, carotene is transformed into vitamin A.

Vitamin B1 (beriberi):

Beriberi is a cardiac, stomach, and nerve system disorder. It is caused by a deficiency in vitamin B1 (also known as thiamin) in the diet. Thiamin is a B vitamin that aids in the production of energy in the body. Meats, whole grain, wheat germ, enriched bread, legumes, almonds, peanuts, and peanut butter are all good sources of this vitamin. Fatigue, loss of appetite, and a numb, tingling sensation in the legs define the early stages of beriberi.

Vitamin B3 (pellagra):

Pellagra is a condition caused by a lack of vitamin B3 (commonly known as niacin). Liver, whole-wheat products, lean meat, eggs, fish, white meat or poultry, roasted peanuts, avocados, figs, dates, kidney, prunes, wheat germ, and brewer's yeast are all good sources of niacin. Pellagra can originate the "four D's": diarrhoea, dermatitis, dementia, and death, and it affects the skin, mental system, and digestion. Pellagra can make a person feel weak and weary, cause sleeping problems, and cause weight loss. Skin that has been visible to the sun may become scaly, rough, and reddish, and painful sores in the mouth may form. There is an appetite loss, as well as indigestion and diarrhoea. Headaches, dizziness,

and muscle tremors are all possible symptoms of pellagra. Mental diseases (or dementia) might arise at any time.

Other B complex vitamins:

Cobalamin (B12) is a B vitamin that protects against anemia and mental disorders. Anemia, skin issues, and irritability can all be prevented with vitamin B6.

Vitamin C (scurvy):

Blood arteries, skin, connective tissue, gums, red blood cells, wound healing, and iron absorption are all affected by vitamin C. Scurvy is caused by a vitamin C deficiency. Scurvy is characterized by hemorrhaging or bleeding beneath the skin, which results in many bruises. Swollen and inflamed gums are another symptom of scurvy. Wounds take a long time to heal, and bleeding in or near essential organs can be deadly.

Vitamin D, (Rickets, and Osteomalacia):

Vitamin D aids in the regulation of certain bone-forming minerals (calcium and phosphate) in the circulation, which is necessary for optimal bone production. Vitamin D is present in foods like sardines, salmon, and tuna, as well as milk and newborn formula. The skin also produces vitamin D in reaction to sunshine exposure. A person can acquire rickets, a condition marked by bone abnormalities, if they don't get enough vitamin D. Rickets can origin the legs to bend under the weight of the body, as well as thickening of the wrists and ankles. Teeth are significantly damaged and take much longer to come in than usual. When there is insufficient calcium and phosphorous for bone growth and development, it affects all bones.

Vitamins E and K:

Vitamin E aids in the prevention of reproductive issues as well as the maintenance of healthy skin health. Vitamin K aids in the production of fibrinogen and other clotting proteins, promoting regular blood coagulation.

Iodine, (Goitre and Hypothyroidism):

Iodine is required for the thyroid gland to operate properly, which regulates the body's metabolic rate and generates important hormones. Deprived of enough iodine in the diet, the thyroid begins to grow its cells in order to make hormones, which can lead to a goitre, a swelling in the front of the neck.

Iron (Anemia):

Iron metal is required for the production of a number of enzymes and proteins. One such iron-dependent protein is haemoglobin, which is the oxygen-transporting protein in the blood. Anemia and a deficiency of oxygen in the blood can result from iron deficiency, which can lead to fatigue and other complications. Liver, legumes, lean meats, dried fruits, and green leafy vegetables are all good sources of iron.

Mineral Deficiencies:

25 commonly found mineral elements are simple salts. Macrominerals are those that occur in huge quantities, whereas microminerals are those that occur in a minute or negligible amounts. Calcium, cobalt, phosphorous, copper, iodine, fluorine, salt, and iron are all considered to be necessary minerals for a healthy body.

The severity of a mineral deficit is determined by the mineral that is lacking in the diet.

VII. PREVALENCE OF NUTRITIONAL SHORTAGE

The prevalence of underweight children in India is about 48% and is almost twice as high as the average [5]. Nutritional deficits at this age can cause stunted growth, anemia, decreased immunological function, and poor motor and cognitive development, all of which can have a negative impact on academic achievement due to decreased learning abilities.

VIII. FACTORS INFLUENCING CHILD HEALTH AND NUTRITIONAL STATUS

Individual and household characteristics (mother education, mother height, family wealth, and so on) , as well as community-specific variables all, have a role in determining nutritional status (like provision of health services, etc.). The education of the mother is one of the most important elements affecting the nutritional condition of children. All indices of nutritional status have a substantial adverse connection with maternal education. A high degree of maternal education has the potential to reduce childhood malnutrition by increasing understanding of healthy behavior, sanitation practices, and a more equal distribution of family resources in favor of children. Another crucial influence is a father's education, which has a good impact on a child's health and nutritional condition. Because the father is often the family's primary income and decision-maker, his higher level of education is critical to ensuring that children's nutritional needs are met.

Such other factors are:

1. Food safety
2. Food insecurity
3. Faulty dietary pattern
4. Nutrients quality of food
5. Lack of knowledge
6. Poverty
7. Number of siblings
8. Nutritional Inadequacies
9. Socio-economic factors
10. Parental attitude
11. Lack of sanitation
12. Environmental factors etc.

IX. NUTRIENTS REQUIRED DURING CHILDHOOD

Each stage of life has distinct nutritional requirements; infancy, childhood, and adolescence are the periods of greatest physical development. Between the ages of one and five, children develop critical

development and learning pathways, as well as improve their immune systems. Protein, calcium, zinc, vitamin D, and B vitamins are the most important nutrients for development and cognitive function throughout this time. Children, on the other hand, are especially sensitive to the dangers of malnutrition at this important age, which may have a long-term impact on their health and mental development.

X. CONCLUSION

After having the assessment we can state that the nutritional status of children belonging to low socio-economic groups is more severe. Children are not gaining the required percentage of weight and height because of lack of knowledge, inadequate food intake, low literacy rate etc. Therefore on the basis of the above facts, we observed that:

- The parents must be cautious about the children's health and development.
- The focus should be on qualitative and quantitative improvements in the diet (increased intake of energy, protein, and micronutrients) with increased awareness of the importance of preventing undernutrition.
- Mothers should be educated and aware of the importance of a balanced diet.
- Consumption of food like cereals, pulses, green leafy vegetables, roots and tubers, milk and milk products and fruits etc., should be promoted.
- The government should provide free vitamins, minerals and phytonutrients to the population, especially pregnant women and children.

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