

Analysis of Nutritional Status of School Children in Ayagama

By

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DECLARATION

“The work described in this thesis was carried out by me under the supervision of Prof. Authur Bamunuarchchi and Dr. K.K.D.S. Ranaweera, and a report on this has not been submitted in whole or in part to any university or any other institution for another Degree/ diploma”

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I certify that the above statement made by the candidate is true and that this thesis is suitable for submission to the University for the purpose of evaluation”



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Analysis of Nutritional Status of School Children in Ayagama

By K.A.N. Tharanganie

ABSTRACT

The present study was carried out to ascertain the nutritional status of school children in Ayagama in the Sabaragamuwa Province.

The procedure consists of interacting with children, parents and school teachers in a randomly selected sample using a prepared questionnaire where the questions were targeted to collected relevant information.

A total of 150 students were interacted with in the period of two weeks to gather information in their food consumption pattern. Data related to socio economic status of the families were collected from parents assisted by the teachers. The data obtained were subjected to analysis by statistical methodologies such as descriptive analysis, Chi-squared testing and other statistical significance testing.

Study revealed that 71% of school children in Ayagama were malnourished and rest of them were in normal nutritional level. There were no obese students in this area. From boys, 77.8% of were malnourished and 22.2% were nourished, while from girls 62.3% were malnourished and 31.7% were nourished. Age, Sex, RDA, Mother's education level, Mother's employment status, Source of drinking water, Number of dependents were identified as the major affecting factors for the Nutritional status of school children in Ayagama.

The minimum and maximum of BMI distribution were recorded as 10.89kg/m^2 and 21.63kg/m^2 respectively. The average value of school children's BMI was 14.59kg/m^2 , and the standard deviation was 2.40kg/m^2 .

Study reveals that poor education of parents, their work status (about 63% state labours), income level directly affected to the nutritional status of the children. Baseline results demonstrated, that more children were malnourish than normal.

1. INTRODUCTION

Nutrition is one of the main basic requirements for human life. Nutrition is about food and how it affects our health. It includes how the body digests food and uses the nourishment and excrement of waste through urine or bowel movements. Different people and different age groups need different food.

Schooling age of children is between 6-18 years of old. The food pattern is very essential in this age and it is found to be that the food pattern during this age is the main influence on the children's daily energy and nutrient intake. Breakfast and snacks are to be relatively greater importance meal as a source of energy and nutrient because children activities are too high in their schooling time.

Poor nutrition in school children is known to compromise their health and learning capacity and healthy children learn things more easily. Good nutrition maintains the current nutritional status of young people as well helping to prevent the onset of future health problems.

Nutrition status of children directly depend on food style and indirectly depend on family size, work status of parents, type of dwelling place, source of drinking water, type of latrine, education level of mother, some other factors like environment (natural) disasters (eg. floods, heavy rain fall, landslides,...), because they cause to water born diseases.

Schoolaged children are still growing. Growth requirements combined with physical activity play a role in determining a child's nutritional needs. Genetic background, gender, and body size and shape are other factors. The nutrients needed by children are same as for adult but the amounts vary.

Carbohydrates and fats provide energy for growing and physical activity. Through the school years children will hit periods of rapid growth. During those times, appetites expand. When growth slows, appetites diminish and children will eat less food at meal times. Protein builds, maintains and repairs body tissue. It is especially important for growth.

If school children fail to get all the nutrients they need, this is called malnutrition and insufficient food energy causing starvation, this is called undernutrition. So we have to pay special attention for identify nutritional problems with related to their food habits.

1.1 Study Area

Ayagama secretarial division is located at Rathnapura district in Sabaragamuwa province. Among all secretarial divisions in Rathnapura district, Ayagama is one of the most underprivileged, remote secretarial division. Its area is about 151 square kilometers (15170ha) and contains 21 Grama Niladari divisions and 76 villages. Throughout secretarial divisions in Rathnapura district Ayagama is a most difficult area. Mainly agrarian region special crops are tea and rubber. Very suitable climatic condition has in this area for agricultural purposes. Fruits and vegetables mostly come from the outside, but large scale agriculture farms are not established, Fish and dry fish come from coastal area but fresh fish are not freely available in market but poultry products are available. Multi national communities can be seen and they are mainly Sinhalese and Tamil living together.

According to the statistics from "Sampath Pathikada" done by Muthunayaka, the mean annual rainfall is over 3000mm. Heavy rain falls during the south-west monsoon that runs between May and September. The mean annual temperature range is between 26.8°C to 28.6°C and average temperature is 25.5°C, and February and March are the warmest months. Natural disasters like floods and landslides are common in this division. Generally, total population of the area is about 261.26 per 1 square Km and 53% of the total populations live in Galatura, Singhalagoda, Ayagama, Katepola because these villages located near the bus road.

Education: According to the information obtained from Gramaniladari regarding education in 2006, about 16.75% of people passed grade eight, 7.63% of people passed G.C.E(O/L), 2.71% passed G.C.E (A/L) and 0.16% of people are graduates.

Work force: Throughout the total population, about 63.33% families are state laborers, 5.6% doing government jobs, 16.40% doing non-government jobs, about 1.154% doing foreign jobs, about 13.43% doing self employments.

Source of drinking water: They use water for bathing, drinking and washing by water falls, tube wells, gutter, ponds, canals, uncovered wells or wells rather than pipe bore water. There are about 12.8% unsafe wells in this area. (See the Appendix)

Sanitary facilities: Usages of toilets among the people in this area are water sealed latrines, pit latrines and absence of toilets. As a percentage, about 80.99% families have water sealed latrines, and about 13.1% families have pit latrines and 5.9% families do not have toilets in total population. (See the Appendix)

Monthly income: Less than 25% of families obtain about Rs 7,500 as a monthly income while More than 75% of families in this area obtain about Rs1,500 and among them 62% families got Samurdhi benefits. (See the Appendix)

Education: There are 25 schools in this area and contain one central college. 4649 children are study these schools. 92 female children and 188 male children in schooling age whose are not entered the school. (See the Appendix)

1.2 Significance of study

There have been a number of studies in recent years into the dietary habits of school children in urban areas but relatively little work on school-children in rural areas which are specially located in natural disaster zones in Sri Lanka. This study was conducted to find the nutritional status of school children (11-13 year-olds) in Ayagama Secretarial Division in Rathnapura District. Because, it is a one of the most underprivileged, remote secretarial division. This area has many geographical barriers, due to poor transportation facilities, health facilities and flood in several times in every year as a results occurrence of different health problems like chikun-gunya, dengue, diarrhoea etc. The research also examined the relative importance to total energy and nutrient intake of food provided at home, breakfast, snacks, lunch and dinner additionally whether there were any differences between dietary intakes, heights and weights of children and number of dependence in the family, parent's income, maternal education level, source of drinking water, toilet facilities, maternal sanitary practices from various socio-economic backgrounds.

1.3 Objectives of this research

1. To identify information on the nutritional status of 11-13 years of age school children in Ayagama Secretarial Division.
2. To find the affecting factors (socio-economic parameters) for the nutritional status of school children.
3. To find the energy intake status of school children.
4. Examine the relationship between the selected variables and the incidence of under nutrition.
5. Use small area estimation methods to estimate under nutrition state of Ayagama.

2. LITERATURE REVIEW

Hettiarachchi, M et al (2006) carried out on nutrient intake and growth of adolescents in Southern Sri Lanka. It showed that 21.3% of boys and 21.1% of girls were stunted (14.9%) children were both stunted and wasted. Mean body mass index of girls was significantly higher than boys at all ages. High rate of growth deficiency and under nutrition among adolescents mandates innovative nutritional intervention strategies.

Department of Nutrition, Medical Research Institute Colombo carried out on Prevalence of challenging Nutritional problems among adolescents in Sri Lanka. The prevalence rates of underweight, stunting, and overweight were 47.2%, 28.5%, and 2.2%, respectively. The prevalence rates of anemia and vitamin A deficiency were 11.1% and 0.4%, respectively. During the previous 6 months, 10.4% of the subjects had usually not eaten breakfast before going to school. During the week before the interview, 24.4% of the children had not consumed green leafy vegetables, 26.6% had not consumed fruit, 19.0% had not participated in physical activities, and 27.5% had watched television for more than 2 hours per day. The nutritional problems of adolescents aged 10 to 15 years should be addressed through the schools. Specific policies should be developed in collaboration with the Ministry of Health and Education to control nutritional problems among adolescents. (Jayatissa & Ranbanda 2006)

Dietary survey done by Wickramasinghe, VP et al (2004) of Seven schools situated in the city of Colombo were randomly selected. They showed a fair representation of children of all social levels. Anthropometric data of 1 224 children (48% boys), and feeding practices and behaviour pattern data of 1 102 children (44% boys) were analysed. Obesity prevalence among boys (4.3%) was higher than in girls (3.1%). The prevalence of thinness was 24.7% in boys and 23.1% in girls. 5.1% of boys and 5.2% of girls were stunted. 7.0% of boys and 6.8% of girls were underweight. 66% of obese children and 43.5% of overweight children belonged to high-income category (monthly family income more than Rs. 20,000). Apart from family income, behaviour patterns did not significantly influence the nutritional status. Although the data are not representative of the entire country, nutritional transition is evident in the city of Colombo. Obesity and overweight in older children are some emerging nutritional problems

that may be the consequence of emerging patterns of the lifestyle and diet in response to social and cultural changes. (Wickramasinghe et al, 2004)

Department of Biochemistry Faculty of Medicine University of Colombo carried out Iron status of adolescent females in three schools in an urban area of Sri Lanka. Ninety-three females in the age group 14-18 years were randomly selected from three schools in Colombo. Their iron and nutritional status was assessed using clinical, anthropometric, haematological, and biochemical parameters. Haemoglobin levels less than 12 g/dl were seen in 3.7 per cent of adolescent females. Free erythrocyte protoporphyrin levels greater than 70 micrograms/dl and serum percentage transferrin saturation values less than 16 per cent indicate iron deficiency and were seen in 10 per cent and 14 per cent of the subjects, respectively. Serum ferritin levels less than 12 micrograms/l indicate depleted iron stores and were seen in 59 per cent of the subjects studied. Our results suggest that although overt anaemia was not common among the subjects studied, a large number of subjects belonging to the lower socio-economic groups were in the early stages of iron deficiency and had depleted iron stores. These subjects are, therefore, at risk of developing clinical manifestations of iron deficiency when the demand for iron is increased, as in pregnancy. (Atukorala & DeSilva 1990)

Nestel et al (2004) carried out on the use of iron-fortified wheat flour to reduce anemia among estate population in Sri Lanka. The use of flour fortified with 66 mg/kg of electrolytic or reduced iron to reduce the prevalence of anemia was determined in a two-year, double-blind, controlled trial. The trial was conducted in Sri Lanka among preschoolers between 9 and 71 months old, primary schoolers 6 to 11 years old, and nonpregnant women. At baseline, 18.4% of the preschoolers had low hemoglobin (Hb) concentrations. Neither electrolytic nor reduced iron had an effect on Hb concentration among preschoolers. Only 7% of the primary schoolers were anemic at the start of the trial and, again, fortification had no effect on Hb concentration. Twenty-nine percent of women had a low Hb at outset and there was no evidence that fortification had an effect on Hb in this group. The findings from this study suggest that fortification of flour with electrolytic iron or reduced iron was not beneficial in reducing anemia in this population. This was probably due to the low prevalence of anemia and low bioavailability of the fortificant iron. Fortification with either iron fortificant was acceptable. (Nestel et al 2004)