NUTRITIONAL STATUS OF PRE-SCHOOL CHILDREN AGED BELOW 5 YEARS IN MANMUNAI SOUTH D.S. DIVISION OF BATTICALOA DISTRICT

Saravanan. T [1] and Mahendran.T [1]

ABSTRACT

A study was conducted to assess nutritional situation of pre-school children aged 0 to 5 years in Manmunai South D.S. Division of the Batticaloa district. A sample of 150 subjects was selected from the entire refugee Camps through multi-stage sampling techniques. A structured questionnaire was developed to elicit information on demographic details, anthropometric characters, health history, dietary assessments and socio-economic status. Anthropometric measurements were performed using standardized procedure on the pre-school children. Weight and height were measured and anthropometric indices such as height for age, weight for height, and weight for age were generated. Information on socio-economic characteristic of household and dietary pattern of children was gathered by an interview schedule, which includes food frequency questionnaire. The study indicated that 75% boys and 74% of girls of the children are under-weight (low weight-for-age) showing the state of acute malnutrition. Both, boys and girls of 64% are stunted indicating the chronic malnutrition. Prevalence of malnutrition is higher in most of the refugee camps. Among the tested individuals, 65% of the families had been displaced due to Tsunami and still 27% of families live in refugee camps. Fifty four percent of children's families receive food aids or food stamps from government. Most of their parent's income level was under the poverty line of LKR: 3,000/month. About 41% of parent's education level is below the G.C.E. (O/L) and the rate of illiteracy is <11%. The student's frequency of intake of meat is at monthly basis and they consume egg, milk and fruit at fortnightly basis. Nutritional status of pre-school children aged between 0 to 5 years in the Manmunai South D.S. Division of the Batticaloa district is poor and the civil unrest to be associated with malnutrition of children.

Key words : Anthropometric indices**, c**hildren, diet therapy, malnutrition, stunting, wasting

INTRODUCTION

Nutrition refers to the process in the body for utilizing food. It includes eating the appropriate kinds and amount of foods, digestion of food, absorption of the nutrient into the blood stream, use of the individual nutrient by the cell for production of energy, growth and maintenance of cells, tissue and organs and elimination of waste products form the body (Weigley *et al*., 2007).

Malnutrition has been identified as a major health problem in post independent Sri Lanka. In spite of the many achievements reported in demographic characteristics such as the drastic reduction in fertility rates, maternal and infant mortality levels and improvement in educational attainments particularly of women, malnutrition continues to be a serious health concern. According to the Demographic and Health Survey conducted in 2007, about 22% of ever married women in the reproductive age group are malnourished, with 17% of children less than five years have been born as low birth weight babies (UNICEF, 2008). Obviously mother's nutritional status affects the unborn child, and a low birth weight child would show a higher vulnerability to ill health and retarded mental and physical growth in the most decisive years of life and tend to become an anemic woman in later years, if the child happens to be a female (Ekvall, 2008).

The nutritional status of a person depends largely on the quantity and quality of food viable in the market, purchasing power of the household which would determine the accessibility to food, and the distribution of food within the household. According to Income and Expenditure Survey conducted in 2003, nearly one fourth (23.9%) of the households in Sri Lanka falls into the category of "poor households" in terms of adequacy in energy intake, which provides ample evidence to the insufficient food intake (WHO, 2004). Although food intake influences the nutritional status

[1] Department of Agricultural Chemistry, Faculty of Agriculture, Eastern University, Sri Lanka. (thevamahen@yahoo.com)

of an individual to a great extent, it is not the only critical factor responsible for malnutrition particularly in the case of children under five years of age.

Living standards, water and sanitation, birth weight, birth interval, parity, sex of child, weaning practices and mother's education, are a few of the important contributory factors which have been identified from the findings related to this research studies. However, dietary inadequacy is the basic cause of malnutrition in pre-school children among the above identified factors which are directly or indirectly contribute to the status of malnutrition. Therefore, the evaluation of nutritional status is an essential component of any comprehensive health evaluation. It is used as an indicator of the success or failure of nutrition intervention programme, which would help to assess the current state of malnutrition of an individual or a community (UN, 2007). Methods of assessing the nutritional state of children in the field have generally been described under three categories of clinical, biochemical and anthropometric assessment.

In clinical assessment, changes in body (especially skin and hair) are difficult to be assessed and interpret. Biochemical measurements or tests need blood samples. But those are beyond the scopes of surveys or large scale of screening. The malnutrition status also can be evaluated by anthropometric assessment. It can be defined as "Indices such as weight and height are constructed from measurements usually relating an observed measurement to its counterpart in the reference population" (WHO, 2004). Some indices, however are single ratios, such as mid-upper arm circumference, chest circumference, head circumference and body mass index (weight/height^2) which is widely used for the assessment of adults. Age (A), weight (W), height, length or stature (H), Mid-Upper Arm Circumference (MUAC) are the valuable anthropometric measurement used in this assessment.

The nutritional status of the pre-school children should be adequate to produce well educated, skilled full persons to drive our country in the correct way for a bright future. Therefore, it is essential to assess the nutritional status of pre-school community and to take care in order to improve their nutritional level. This study was carried out to assess the nutritional status of the pre-school children aged between 0 - 5 years in Manmunai South and Eruvil Pattu (MS and EP) D.S. Division through their anthropometric measurements by means of weight, height and mid-upper arm circumference and to evaluate the socio-economic status of the children.

METHODOLOGY

Sampling

The study was conducted among the pre - school children in all schools of MS & EP D.S.Division. Villages affected by tsunami were selected for the study from Manmunai South Eruvil Pattu (MS & EP) D.S. Division in Batticaloa District. Total of 150 children aged between 0 to 5 years were selected for this study based on their age and gender.

Data Collection

A structured questionnaire was developed to elicit information on demographic details, anthropometric characters, health history, dietary assessments and socioeconomic status to evaluate the state of malnutrition among children in this study population. Several pre-test were conducted to study the selected population and gain information on related aspects. Structured questionnaire was prepared accordingly before the definitive study was conducted to assess the nutritional status of the children.

Measurement of Growth Indices

Anthropometric data consisted of weight and height of children. Weight was measured by using 'Solar Digital Weighing Scales' of bathroom beam balance scale, developed by SECA (Germany). The balance was placed on a leveled cement floor and adjusted to the zero point before each measurement was taken. The students were weighed individually without shoes or slippers and with the minimum clothing. The weighing was done in day time between 10.00 am to 12.00 noon before having their lunch.

Height was measured by using a 'Microtoise'. The children was held stand on the flat floor by the scale after removing shoes or slippers, with the feet paralleled to buttocks, shoulders, and the back of the head touching the upright. Head was kept comfortably, erect arm hung at sides in the natural manner. The head-piece of plastic block was kept on the head crushing the hair and making contact with the top the head.

Children's health history was obtained through a part of the structured questionnaire. Information about their health condition was considered for last two months

from the data collection period. A structured questionnaire was used to collect information about the amount and type of food consumed by individuals. The frequency of intake of various sources in meals such as cereals, legumes, fruits, vegetables, livestock products and tuber crops and other snack food items were taken into consideration.

By holding the interview schedule of questionnaire, researcher gathered information on family income level, parents' education level and family size by interviewing them through house hold visits.

Calculation of Indicators

The indicators such as height-for-age, weight-for-height and weight-for-age were computed as indicators of stunting, wasting and under weight, respectively.

RESULTS AND DISCUSSION

Malnutrition

This study was conducted using standard methods approved by the FAO/WHO to assess the nutritional status of the young children aged between 1-5 years. The level of median minus 2 SD is usually taken as the cut-off point or threshold, below which state of malnutrition exists (WHO, 2004). As shown in Figure: 1, comparison of the state of children's nutrition revealed that they are in high risk of under-weight (75% of boys and 74 % of girls) and stunting level (64% of boys and 74 % of girls) therefore an immediate nutritionally enriched food programme is urgently needed for them.

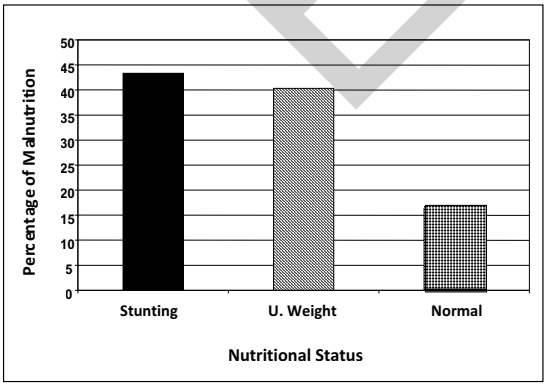

Figure 1: Nutritional States of Pre-School Children Aged Below 5 Years

In nutritional assessment, the particular nutrient for growth failure or weight loss cannot identify but can be assumed as protein constituents. The response to a long standing deficiency of protein is progressive stunting with acute deficiency, in either younger child or older child (Ekvall, 2008). There is a loss of tissue in the severity of the deficiency and its duration will determine the relative amount of stunting and wasting produced (Walter and Smith2008). Chronic deficiencies are more common than severe, acute deficiencies because of the prevalence of stunting is more common than wasting.

The results of the studies showed as both 64% of boys and 74% of girls of age between 0 – 5 years are stunted (low height-for-age) indicating the chronic malnutrition. Prevalence of stunting (low height-for-age) in the study area is alarming. After the tsunami all the water bodies were polluted and therefore sea and inland fishing industries were spoiled and also people were not willing to eat fish which were produced from tsunami area. This led to the unavailability of animal protein to the victims because fish is the inexpensive source of animal protein than the other products (Brady, 2006). Most of the agriculture sectors were damaged due to tsunami and therefore all the food items were shortage and price of the products are also increased. This greatly affects the poor people to get enough food supply for their children.

The findings revealed that 75% boys and 74% of girls are under-weight (low weight-for-age) showing the state of acute malnutrition. These children did not get proper vaccination and medicine therefore most of the children were affected by much kind of diseases. This is one of the reasons for the under weight of the children. The children also got low nutritious and low amount of food which led to the under weight condition.

Health Status

Most of the children found with frequent diarrhea once a month, cold, cough and fever, especially during the rainy season. This is due to the low level of hygienic condition and contaminated environment. The living situation also led to poor level of health status among those children, as well as malnutrition especially in refugee camps due to poor sanitary conditions. Diarrhea is also an illness which has a negative effect on growth and development in early childhood years. Diarrheal diseases are still very common among children in Sri Lanka although case fatality rates have dropped greatly in the past two decades. According to the Demographic and Health Survey conducted in 2007, 12% of children fewer than five years of age, had suffered from at least

one attack of diarrhea in the two week reference period (UNICEF, 2008). Prevalence rates are highest and stand at 23% for children in the 2-3 years age group.

Frequency of Food intake

The consumption patterns of food items in the main meal were investigated. Information were collected on, how often the children receive foods such as starches (rice, maize, bread and potatoes), pulses (dhal, soybeans), meat, egg, fish, vegetables and fruits (Figure 2). They consumed food items such as bread, rice and green vegetables daily.

Living Conditions

The information gathered on general living situation and their family back ground were analyzed to check their relationship on their living standard. On average, a household consist of three children in a family. Considerable number of the household are female headed. Most of them are affected from displacement especially children still live in temporary shelter refugee camps.

Household Characters

On average, a household consists of 5-6 members and most of the household were female-headed households where either father may be died or in abroad.

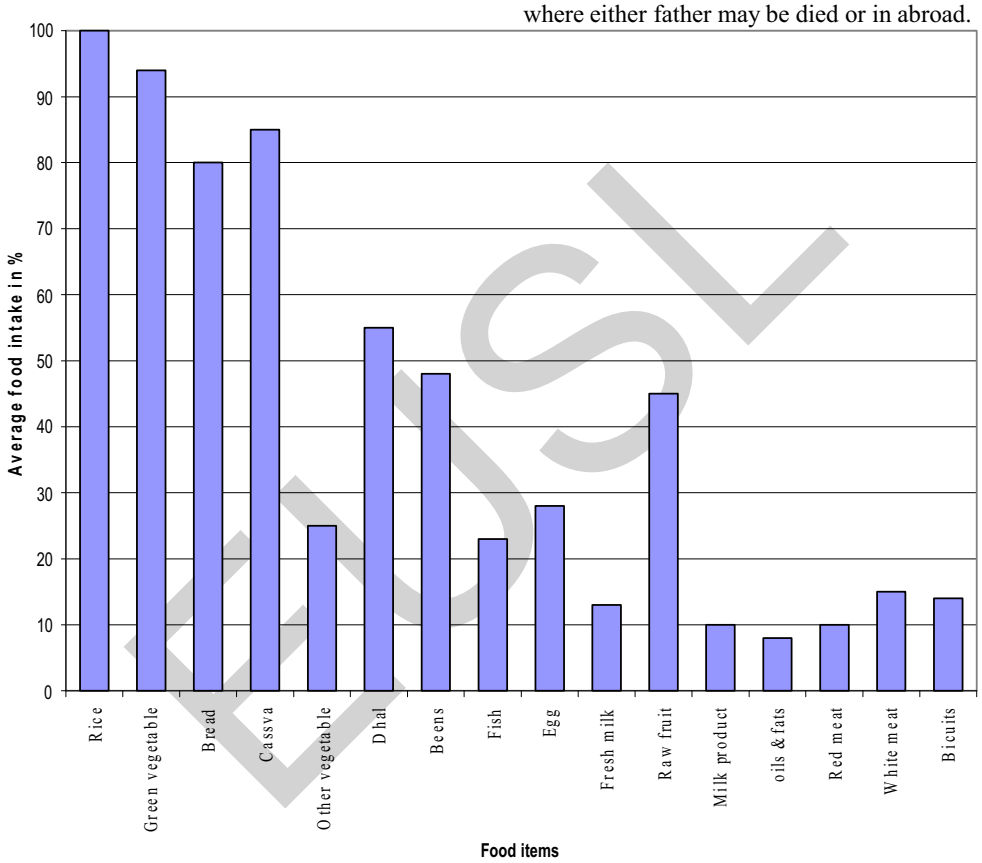

Figure 2 : Consumption Pattern of Different Food Items by the Children

Cassava, dhal and vegetable are consumed regularly in their daily meals. Consumption of fresh milk, raw fruits and milk products are at fortnightly basis. Consumption of red meat, white meat and biscuits, snack foods and chocolates is on monthly basis. Certain types of food items such as desserts were never consumed by them. Consumption of protein rich foods has direct effect on the Protein-Energy-Malnutrition among children. This study revealed that frequency of intake of protein rich food was low among children.

Displacement

Families were highly affected from displacements due to Tsunami disaster. Nearly 65 % of families have been displaced due to Tsunami disaster and civil war last 5 years and 25% of them have been resettled and 15% of them are still in the refugee camps. Unsettled conditions created by this situation seems to be resulted nutritional deprivation in the community. This can be long term reflected in high percentage of stunted children in the community. It produces malnourished child community with stunting disorder.

Education Levelof Parents

In considering the formal schooling education level of the parents, 6% of the fathers and 17% of the mothers cannot be able to read and write. Forty-three (43%) percent of the fathers and 38% of the mothers are able to read and write. Forty-nine percent of the fathers and 43% of the mothers had followed advanced level. Unfortunately none of them follow higher studies in Colleges or Universities. There was a little difference between the educational level of men and women (father and mother). When we consider the literacy level of mothers it was 17%. This can directly affect their families' nutritional situation since usually in these communities, mothers play major role in selecting and preparing meals for the whole family.

Income Sources

Forty-seven percent of the sample employed in farming as one of their main income source. Forty-one percent of the sample households employed as non-permanent labours (daily labours). Food stamp or food aid plays an important role within the family income since 54% mentioned that food aid or food stamp as one of their main income. However, this indicates the high dependency on government aids. Other important income sources are fishing (28%), government employed or non-government employment (16%), as well as small business (8%). Income from firewood, cattle or other animal and animal products play only a minor role. On the other hand most of the families earn income more than from one source. Twenty-nine percentages of families have farming and fishing in combination. The amount of wages may be fluctuated by the uncertainty of the job opportunities. Farming families get average income of round LKR. 3000 on monthly basis in farming they get low level of income due to poor marketing facilities. Even though they had high harvesting from their farms, farming could not expect high degree of profit margin. Farming families may also face the problem of providing of nutritious food products to their families. Without having enough profit margins they are unable to purchase other nutritious food items from the market to improve their household nutritional status, through a diversified meal.

CONCLUSION

Most of the families are refugees and 17% of them are still living in temporary shelters, and camps. The rest of the populations were re-settled in various places in the Batticaloa district. As the families have displaced, their children were suffered form chronic malnutrition of stunting as well as acute malnutrition. Effective long term food security programme should be needed from governmental as well as non-governmental organizations to improve the nutritional status of the children. Nutritional awareness programmes should be conducted targeting children for example nutritional related clinic could be provided for children. Parents of those children are not educated; the nutrition intervention programme should be introduced to improve their health status. A proper family planning programmes assisted by the Department of Health should be conducted so that to ensure a family having low number of children. Advanced nutritional related research programmes are essential to asses the effectiveness of meal planning for children in terms of good nutrition and health.

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