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Nutritional status and food insecurity among the children in Northern Sri Lanka

Karthigesu Kandeepan[a,*], Sandrasegrampillai Balakumar[a] , Vasanthy Arasaratnam[a]

[a]*Department of Biochemistry, Faculty of Medicine, University of Jaffna, Sri Lanka*

Abstract

Consumption of adequate nutritious food is the most important element to ensure healthy living of children. The objective was to assess the nutritional status and food insecurity among the children aged 1-5 years in the Jaffna District. A descriptive cross-sectional study design was used. Height and weight were used to compute age and sex specific Z-scores for malnutrition. Food insecurity was assessed by cross-tabulating the Household Food Consumption Adequacy Score (HFCAS) and food access (assessed by food expenditure as a % of the total household expenditure), as specified by the World Food Program. The Socio-demographic factors and dietary pattern were obtained by using interviewer administered questionnaires. Sample size was 846 children [414 (49%) males].The prevalence of wasting, underweight and stunting were 21.6 (n=184), 33.1 (n=282) and 26.4 % (n=223) respectively. Among the subjects, 41.6 (n=351), 48.3 (n=408) and 10.1% (n=85) of children had good, average and poor food access respectively with a mean (±SD) of 75 (±13.6)%. The mean (±SD) HFCAS was 60.9 (±8.2) % with a range from 39 to 87% and all the children had adequate HFCAS (>35.1%). The mean HFCAS was significantly higher in urban children (67.5%) than in rural children (58.8%). Based on food access & HFCAS, food insecurity of Jaffna district was 10.1%. The prevalence of anaemia was 36.4 % (n=308) and it was higher [44.7% (n=38)] in food insecure than in food secure households [35.5% (n=269)]. In this population, 27.2% of the children had protein deficiency (<3.5g/dL) and it was observed as high (30.6%) among food unsecured children. Household income ($p<0.001$), expenditure for foods ($p<0.05$), and Hb concentration ($p<0.05$) were higher in food secure than in food insecure households. This study concludes that, the household food insecurity is prevalent and it was increased with income and expenditure for food in Jaffna district. Even though food insecurity was low in Jaffna it has a significant influence on undernutrition and anaemia in children.

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Keywords: Food insecurity; anaemia; anthropometry; food access; malnutrition.

*Corresponding author.
E.mail address: kande_karthigesu@yahoo.com

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1. Introduction

In spite of the many achievements reported in demographic characteristics such as the drastic reduction of infertility rates, maternal and infant mortality levels, and improvement in educational attainments the under nutrition continues to be a serious health concern throughout Sri Lanka[1]. This is due to many years of conflict in the past, economic, humanitarian crises, and lack of resources such as fertile land for cultivation, variety disease free crops, water for irrigation and agricultural farms in Jaffna. Furthermore, rising food prices over the past years coupled with sustainable low incomes have increased the risk of malnutrition, especially among children in Sri Lanka.

Further, more than 1 in 5 under-five year olds are underweight in the country[1&2]. Nearly 1 in 6 babies born has a low birth weight. Children in the rural sector are twice as likely to be underweight than children in the urban sector. Despite countless initiatives to alleviate malnutrition over the years, child nutritional levels have improved only marginally in the country[1].

This is because there are deep rooted causes such as unavailability of food diversity, consumption of insufficient, unsafe, innutritious food. The majority of the population in the district practices subsistence farming, primarily the cultivation of rice and vegetables, with limited animal husbandry. However, unpredictable climatic conditions and seasonal flooding limit agricultural productivity in the area. However, inadequate data exist on the association between household food insecurity and the nutritional status of children. Therefore, this study was conducted in children aged one to five years in Jaffna district, with the objective of assessing nutritional status and the household food insecurity of children aged 1-5 years in Jaffna district.

2. Methodology

2.1 Subject

The study was conducted in children aged 1 to 5 years in Jaffna district. A cross sectional descriptive study design was used and samples were selected based on the multistage clustering method. To find out the sample size, the formula of $[z^2p(1-p)/d^2]$ was used, where p is the highest proportion of underweight from the previous studies[3]. With a z value of 1.96 (at 95% confidence level with type 1 error=0.05), margin of error of 5%, 10% of non-respondent and design effect of 2, minimum required sample size of 846 was derived.

2.2 Ethics

Ethical clearance was obtained from Ethical Review Committee of Faculty of Medicine, University of Jaffna. Informed written consent was obtained from mothers to include their children in the study.

2.3 Study instruments

The study instrument consisted of anthropometric data, biochemical data and interviewer administered questionnaire which was used to get the information on socio demographic, socio economic and dietary data. Dietary data obtained with semi-quantitative food frequency questionnaire were analyzed to obtain the total calorie intake. Weight and height were obtained according to standard WHO procedures[4]. The weight and height of the children were used to compute age-and sex-specific z-scores to derive underweight, wasting, and stunting. Haemoglobin and albumin concentration were obtained to determine anaemia [haemoglobin<11g/dL] and protein deficiency [albumin<3.5g/dL] respectively.

Food insecurity was assessed based on the 'Nutrition and Food Security Assessment in Sri Lanka[5]. It was assessed by cross-tabulating the Household Food Consumption Adequacy Score (HFCAS) and food access (assessed by food expenditure as a % of the total household expenditure), as specified by the World Food Program[6]. HFCAS was calculated based on food groups consumed during 1 week prior to survey by taking eight food groups such as staple/starchy foods (rice/rice based products/wheat and wheat based products and tubers and roots), pulses/legumes, vegetables (including leaves), fruits, animal protein (fish/dry fish, meat, and eggs), sugar/Jaggery, dairy products (curd, yoghurt, cheese, ghee and milk), and oils/fats (coconut oil, vegetable oil, fats, coconut products) were used to calculate the food consumption adequacy score.

The number of days the food items consumed during the previous week was summed in each of the 8 food groups. The food score of each household was calculated as follows: