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Short Communication

Prevalence of Stunting among Pre-school Children in Food Insecure Rural Households in Sri Lanka

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ABSTRACT: *This study was conducted to identify the relationship between food security status and prevalence of under nutrition in preschool children. A sample of 380 households having at-least one child in the age between 2-5 years was selected from rural areas in three districts. Interviewer administered questionnaire, including USDA food security survey module was used to assess the household food security status and anthropometric assessment was used to assess the nutritional status of children. The prevalence of stunting, wasting and under-weight in children were 15.0%, 21.8% and 21.2%, respectively. Prevalence of food secure, food insecure without hunger, food insecure with moderate hunger and food insecure with severe hunger in households were 48.9%, 40.5%, 8.7% and 1.8%, respectively. Prevalence of stunting of the preschool children is significantly associated with their household food security status.*

Keywords: *Household food security, nutritional status, preschool children, stunting*

INTRODUCTION

Food security is the most important element to ensure the wellbeing of people at national and household level. If a household has limited or uncertain physical and economic access to secure sufficient quantities of nutritionally adequate and safe foods in socially acceptable ways to allow household members to sustain active and healthy living, that household is considered as food insecure household (FAO,1997). Food security is considered as important factor to determine dietary intake, nutritional and health status of household members.

The nutritional status of preschool children is a key indicator to assess the nutritional and health status of a population, because children are the most vulnerable to nutritional imbalances (Custodio ***et al.,*** 2008). In Sri Lanka among the children under 5 years, 25.1% are underweight, about 21.5% are wasted and 13.2% are stunting level (Ministry of Health and UNICEF, 2013). According to the food and Nutrition security survey conducted in Sri Lanka, 0.5% of the households were severely food insecure, 11.8 % were moderately food insecure and 87.6% were food secure (MRI and UNICEF, 2009). In this study food insecurity levels were determined according to food consumption score described by the world food programme (MRI and UNICEF, 2009). However, the multiple dimensions of household food security status, such as food availability, and energy and nutrient utilizations

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were not measured in this survey. This has hindered the possibility of identifying the factors affecting the household food security.

The objective of the study was to determine the association between child malnutrition and household food security status among preschool children in selected Grama Niladhari divisions (GN divisions), from Kurunegala, Puttalam and Matale districts as some GN divisions in these districts showed very poor economic status (Department of Census and Statistics, 2008).

METHODOLOGY

Sampling and subjects

A multi-stage random cluster sampling method was used to select the households. A total of 380 households having at least one child aged 2-5 year were chosen from randomly selected 12 Grama Niladhari divisions (GN) from three Divisional Secretariats (DS) across three districts (Puttalam, Kurunegala and Matale districts) in two provinces (North Western and Central provinces).

Data collection

An interviewer administered household survey questionnaire which included general characteristics, socio-economic characteristics, health and sanitation of the households was used in this study. Food insecurity was measured using the modified version of 18 item United States Department of Agriculture's (USDA) food security survey module (Bickel *et al*., 2000), which was adopted to Sri Lanka previously (Malkanthi *et al.,* 2007). Weight and height of the children were measured. Body weight was measured using a calibrated electronic digital scale (Seca, UK) to the nearest 100 g. Height was measured using a stadiometer (Invicta, England) to the nearest 0.1 cm.

Data analysis

Three hundred and eighty (380) households together were considered as a rural cohort. Households were categorized into 4 levels of food insecurity status according to the scores of USDA food security survey module (Bickel *et al.,* 2000). The Z scores of height for age (HAZ), weight for height (WHZ) and weight for age (WAZ) were calculated for the children using Anthro 2005- software. Two standard deviations below the median (-2SD) of reference population was used as the cut-off values to determine the prevalence of under nutrition (WHO, 2006). Binominal regression analysis (odd ratio) was used to determine the relationship between food security and nutritional status.

RESULTS AND DISCUSSION

Characteristics of the sample

Table 1 shows the major characteristics of the study sample. The total sample of 2-5 year old children consisted of 193 males and 187 females. Average household size was 4.2. Mean household income was Rs.30575 (SD 20442).

Table 1. Characteristics of the sample

Characteristics	Categories	N	%
Gender	Male	193	50.8
	Female	187	49.2
Age of Children (months)	24-35	136	35.8
	36-47	126	33.2
	48-60	118	31.0
Average family size	-	4.2	-
Mean monthly household income (Rs.)	-	30575 (20442)	-

Household food security level

Prevalence of food secure, food insecure without hunger, food insecure with moderate hunger and food insecure with severe hunger in households was 48.9%, 40.5%, 8.7% and 1.84%, respectively.

Nutritional status of children aged 2- 5 year

The prevalence of stunting, wasting and under-weight of the children in sample population was 15.0%, 21.8% and 21.0% respectively. The prevalence of stunting, wasting and under-weight of children in food insecure households was 56%, 54% and 61%, respectively.

Table 2. Relationship of nutritional status of children with household (HHs) food security

Factors	Odds ratio	P value	95% confidence interval	
			Lower CI	Upper CI
Stunted	1.55	0.035	1.03	2.32
Not stunted (ref)	1.00			
Wasted	0.69	0.079	0.46	1.04
Not wasted (ref)	1.00			
underweight	0.72	0.122	0.48	1.09
Not underweight (ref)	1.00			

Children in food insecure households are 1.5 times more likely to be stunted than children in food secure households. There was no significant association between wasting and underweight with household food security status ($p<0.05$).

The results of the study showed that the prevalence of stunting and wasting was higher than that of national level (Ministry of Health and UNICEF, 2013). Wasting and stunting prevalence indicate that substantial fraction of this study population had both chronic and acute under nutrition. Stunting is caused by inadequacy of food and nutrient supply during foetal development and thereafter provision of low quality complementary foods (Malkanthi *et al*., 2007). It is a good indicator to evaluate chronic nutritional problems. Wasting indicates severe weight loss due to inadequate food intake recently or chronically. Underweight is a good indicator for both current and past nutrition. Wasting and underweight changed with several factors, such as food consumption, household income and

expenditure, sanitary condition and etc. High prevalence of poor nutritional status in selected rural households indicates that presence of less food accessibility, availability and utilization in the past and/or at present. In a previous study, high prevalence of under nutrition among children under 5 years and high prevalence of household food insecurity was reported among rural subsistence paddy farming communities (Malkanthi ***et al***., 2007). According to the USDA food security survey module, 51% of the households experienced food insecurity status in Sri Lanka. Which is different from the prevalence indicated in national study (MRI and UNICEF, 2009) and it may be due to different methodology and sample size used. Derrick son ***et al.,*** 2000 indicated that, although using USDA food security survey module in developing countries has some doubts, it has been successfully used in national surveys and the reliability and validity for use with low income families in developing countries were well established. However, other factors contributing to food security and child malnutrition have to be explored.

CONCLUSION

Prevalence of food secure, food insecure without hunger, food insecure with moderate hunger and food insecure with severe hunger among the rural households in the selected districts are 48.9%, 40.5%, 8.7% and 1.84%, respectively. The prevalence of stunting, wasting and under-weight of the children are 15.0%, 21.8% and 21.0%, respectively. Stunting of children is significantly associated with household food security status.

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