

## Abstract

Nutrition is the science of food and its relationship to the health of a human being. The nutritional requirements vary in pregnancy, infancy and childhood, adolescence, elderly population, disease status and recovery, and disasters. Growth and development are fundamental, distinctive biological processes of childhood. They are complex processes that are interrelated, which begin at conception, and continue throughout childhood and adolescence until maturity. Under-nutrition occurs when a child is not given nutrients that it needs for an extended period of time and it includes stunting, wasting, underweight and micronutrient deficiencies.

All three dimensions of under-nutrition among under-five children remained relatively unchanged from 2000 to 2007 in Sri Lanka, irrespective of several interventions. Therefore, the present study was undertaken to determine the prevalence of under-nutrition; to identify determinants for chronic under-nutrition; to determine the attributable risk percent for each identified risk factor; and to describe socio-cultural factors associated with under-nutrition among under-five children living in the estate community in the District of Badulla.

A cross sectional descriptive study was conducted among a community based sample of 1369 under-five children and their biological mothers living in the estate sector of the District of Badulla. The study sample was selected through a simple cluster sampling method and the data were collected using an interviewer administered questionnaire and, measuring weight and height of the selected children. The overall non-response rate was 3.6%. The point prevalence of under-nutrition among under-five children living in the estate sector of the District of Badulla was estimated as overall underweight 40.0% (95%CI 37.4-42.7), severe underweight 11.0% (95%CI 09.0-12.8), overall stunting 46.3% (95%CI 43.6-49.0), severe stunting 14.6% (95%CI 12.8-16.6), overall wasting 12.8% (95%CI 10.6-15.3) and severe wasting 1.5% (95%CI 0.9-2.3).

A pair matched case control study using a randomly selected sample of 260 cases and 260 controls, identified as the prevalence study progressed, was carried out. Bivariate and multivariate analysis using conditional logistic regression technique was used to identify determinants of chronic under-nutrition among under-five children. In the multivariate analysis, five variables showed statistically significant association with the occurrence of stunting among under-five children. They were the low birth weight (<2500g) of the child (OR=8.92, 95% CI 4.569-17.397), having three or more children in the family (OR=1.59, 95% CI 1.170-2.150), the mother's pre-pregnancy BMI < 18.5 (OR=1.11, 95% CI 1.024-1.200), the father's low level

of education (< Grade six) (OR=1.29, 95% CI 1.078-1.550) and the absence of home gardening (OR=1.95, 95% CI 1.211-3.142). However, interpretation of the absence of home gardening as a determinant (related to household food security) of chronic under-nutrition among under-five children should be cautious due to nature of the relationship between the two conditions.

Attributable risk percent of each of those determinants were calculated and showed the low birth weight as 88.8%, having three or more children in the family as 37.1%, the mother's pre-pregnancy BMI<18.5 as 10.7% and the father's low level of education as 22.5%.

Six focus group discussions on nutrition and physical activity during pregnancy, breast feeding, complementary feeding and, growth and development of the child were conducted among purposively selected sample of mothers having an under-five child, grand mothers, caregivers other than the mother or the grand mother and care providers (field Public Health Midwives, Child Development Officers and Social Welfare Officers). It was identified that there was a gap between the old and new knowledge, an uncertainty of existing knowledge, an inequity in knowledge and practice related to different types of care practices and non conducive environment with regard to care behaviours considered in the study.

Most of the findings in the present study were compatible with previous studies done in other countries as well as in Sri Lanka. There is evidence that the prevalence of under-nutrition among under-five children vary significantly from region to region and that the prevalence is higher among vulnerable populations like the estate sector compared to other parts of the country. Some of the identified determinants of chronic under-nutrition among under-five children can be addressed through the existing health care delivery system in Sri Lanka. However, it may be necessary to further improve the existing health care services and the quality of those services in the community, and to make appropriate changes in the existing working rules in the estate sector. This highlights the need for policy makers and programme planners to consider different approaches aimed at reducing the under-nutrition among under-five children in different parts of the country. Long term interventions such as improving nutritional status of the 'girl child' using life cycle approach involving multiple sectors are to be considered.

**Key words: under-nutrition, under-five children, stunting, determinants of chronic under-nutrition**