

## M.Phil. in Biochemistry

### **A study on Malnutrition and associated factors among children aged 1 to 5 years in Jaffna District. Karthigesu Kandeepan**

#### **Abstract**

**Introduction:** Despite remarkable achievements in health, malnutrition continues to be a major public health problem in Sri Lanka.

**Objective:** Objective was to determine the prevalence of malnutrition and associated factors among children aged 1-5 years in Jaffna District.

**Materials and methods:** A multi-stage cluster sampling method was used. A total of 846 children aged one to five years were selected from February, 2010 to May, 2012. Anthropometric measurements and biochemical parameters were obtained and associated factors were recorded with interviewer administered questionnaires and analysed with SPSS-IBM version 21. Bivariate and multivariate logistic regressions were used to identify associated factors.

**Results:** Of the total of 846 children, 414 were males (48.9%). The mean ( $\pm$ SD) age was 34.73 ( $\pm$ 13.14) months. The prevalence of wasting, underweight, stunting and overweight were 21.6, 33.1, 26.4 and 3.4% respectively. Among the children, 8.6 and 11.5% had less Head circumference-for-age and less Mid upper arm circumference-for-age respectively. Prevalence of wasting and underweight of children were under 'very high public health significance' in Jaffna District. Prevalence of severe forms ( $<$ -3SD) of wasting, underweight and stunting were 3.7, 5.9 and 4.3% respectively while low prevalence of obesity (0.4%) was observed. The prevalence of low albumin levels ( $<$ 3.5g/dL) was 27.2%. Prevalence of anaemia (Haemoglobin level  $<$ 11g/dL) was 36.4% and it was under 'moderate public health significance'. Prevalence of Iron deficiency (Serum ferritin level  $<$ 12ng/mL) was 33.4% and 31.7% were with both anaemia and iron deficiency. Among the anaemic children ( $n$ 308), the mean ( $\pm$ SD) dietary iron intake [10.0 ( $\pm$ 5.2) mg/day] was significantly lower than that of non-anaemic children [17.2 ( $\pm$ 8.3) mg/day] ( $p$  $<$ 0.05). Median urinary iodine concentration was 149.8 ( $\pm$ 53.3)  $\mu$ g/L and 17.8% were with low urinary iodine levels ( $<$ 100 $\mu$ g/L). However, prevalence of goitre was 0.4%. Mean ( $\pm$ SD) calorie consumption by the children aged 12-23, 24-35, 36-47 and 48-59 months was 782.6 ( $\pm$ 150.3), 918.6 ( $\pm$ 142.5), 998.5 ( $\pm$ 139.2) and 1055 ( $\pm$ 173.5) kcal/day respectively and were lower than Recommended Dietary Allowance (RDA) ( $p$  $<$ 0.05). Among the children, 85.5 and 30.4% consumed low levels of calorie and protein respectively. Risk of wasting (OR: 8.2, 95% CI; 3.1-21.9), underweight (OR: 19.8, 95% CI; 6.4-61.8) and stunting (OR: 3.3, 95% CI; 1.8-5.8) was high in children with calorie deficiency when compared with normal children. Among the children, 11.1, 29.2, and 30.3% were affected with frequent gastroenteritis, respiratory tract infection and fever respectively. Rate of Exclusive breastfeeding (EBF) was 63.9%. Under multivariate logistic linear model, children from poor wealth class (Adj.OR 14.36, 95%CI; 1.6-123.2;  $p$  value=0.015), rural sector (Adj.OR 7.47, 95%CI; 1.59-35.04;  $p$  =0.011), low birth weight group (Adj.OR 6.7, 95%CI; 2.94-15.34;  $p$ =0.001), non-exclusively breast fed group (Adj.OR 3.25, 95%CI; 1.82-5.78;  $p$ =0.001) and frequent infection (Adj.OR 2.87 95%CI; 1.4-5.73;  $p$ =0.003) were at risk of being undernutrition.

**Conclusion:** This study revealed that, high prevalence of undernutrition (33.1%) is identified with calorie deficiency (85.5%). The causative factors for undernutrition such as wealth, rural sector, born as low birth weight and fail to receive EBF, frequent infection can be minimized in Jaffna District by proper remedy measures. High prevalence of anaemia could be controlled with iron supplementation.