

ABSTRACT

Background: Micronutrient deficiencies are of global importance to disease morbidity and mortality. Of particular importance are vitamin A, the leading cause of preventable blindness in the world, and iron deficiency, the most prevalent micronutritional deficiency globally. In the Caribbean, overt vitamin A deficiency is rare, however subclinical deficiencies are suspected to exist. Iron deficiency, is known to exist in the Caribbean. This study investigates the extent and magnitude of these deficiencies in vulnerable populations of four Caribbean countries.

Objective: To determine the status of vitamins A, E, and iron in four Caribbean countries.

Countries Studied: Jamaica, St. Vincent and the Grenadines, Dominica, and Antigua.

Participants: Pregnant women, pre-school children (1-4 years old) and children of school age (5-16 years old).

Study Design: The study was a cross-sectional country survey, using

representative samples of the target groups for each country.

Main Outcome Measures: A 4-8 millilitre blood sample was taken from each study participant and analysed for vitamins A, E, beta-carotene, and iron. Vitamins A, E, and beta-carotene were analysed using High Performance Liquid Chromatography (HPLC). The United States National Health and Nutrition Examination Survey (NHANES) cutoffs were used in classifying the levels of deficiency found. Iron deficiency was determined by measuring haemoglobin and serum ferritin levels. Haemoglobin was analysed using either a Coulter Counter or the cyanomethaemoglobin method, and serum ferritin, using Enzyme Linked Immunosorbent Assay (ELISA). Anthropometric Assessments were also performed on the Jamaican study participants. World Health Organization (WHO) cut-offs were used for determining both nutrition/anthropometric and iron status.

Major Findings: Of the micronutrients investigated iron deficiency was the most prevalent. It was detected in all target groups and ranged in prevalence from 8.8%-30.3%. Overt vitamin A deficiency was very low, 0.7%-1.1%, however, subclinical deficiencies were found in the Jamaican

target groups, 58.1% in children 1-4 years, 33.6% in pregnant women and 18.8% in school age children. Vitamin E deficiency was detected in more than 20% of the Jamaican, Vincentian and Antiguan pre-school children.

Anthropometric measurements using weight for height Z-scores (WHZ) on preschool (children 1-4 years old) Jamaican study participants showed underweight and overweight to be 5.2% and 4.1%, and children 5-9 years 9.3% and 0.0% respectively. In children aged 10-16 years Body Mass Index (BMI) percentiles were 16.5% for underweight and 15.1% for overweight.

Conclusion: Overt vitamin A deficiency is very rare in the Caribbean countries studied, however marginal/subclinical deficiencies exist in Jamaica, and Antigua. Iron deficiency of public health significance is prevalent in all target groups of the countries studied.

Despite programmes to combat iron deficiency, it still persists in the Caribbean.