ANNEX Research Outputs

Prevalence of anemia in relation to food insecurity
Caribbean Health Research Council (CHRC) call for papers

All authors have approved the publication of the abstract in the West Indian Medical Journal.

M Webb,1 I Granderson,1 T Thompson-Colón,2 H Williams Roberts,3 L Phillip,2 K Gray-Donald2

1University of the West Indies, St Augustine, Trinidad and Tobago, 2McGill University, Montreal Canada, 3Ministry of Health, St. Kitts and Nevis,

Email: marquitta.webb@sta.uwi.edu

Objectives: To describe the level of anemia in children aged 6-9 y in St. Kitts, their situation of household insecurity and the link between household food insecurity and anemia in these children.

Methods: Cross-sectional survey of children aged 6-9 y selected from 7 government primary schools in St. Kitts. Anthropometry (height and weight) and a capillary blood sample for testing for anemia (Hemocue) were done at school and household food security was ascertained by questionnaire with the children’s caregivers.

Results: The prevalence of anemia was 37% using a hemoglobin cutoff of below 11.5 g/dL. The anthropometric measures showed no evidence of stunting or wasting. A total of 20 % of the children lived in food insecure households, 2% with very low food security. An examination of the link between food security status and anemia showed no association. Of food secure households 37.9% of the children were anemic and of those with food insecurity 36.8% were anemic. Despite these high rates of food insecurity and anemia we do not see any evidence of poor growth.

Conclusion: The high prevalence of anemia in children in St. Kitts is not explained by living in food insecure households.

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Introduction

Childhood nutrition in developing countries, including calories and specific nutrients, remains problematic and is more pronounced in households with lower-incomes (1). According to the Report, among the nutrient deficiencies is the lack of iron, which leads to anemia and caloric malnutrition resulting in slow growth. In the Caribbean Epidemiological Centre (CAREC) member countries, nutritional deficiencies, including nutritional anemia were among the top ten leading causes of death in the eighties (2). While most of nutritional deficiency diseases fell out of the top ten causes of death by 2000, due to the positive achievements of the health care system, anemia in pregnancy and young children is still a major concern in the region (2).

Reports have stated that food insecurity is associated with decreased nutrient intake and poor health, which can lead to nutrient deficiency in children, including iron deficiency and iron deficiency anemia (3, 4). Many children are at risk for anemia as a result of poor diet, intestinal disorders, infections, and other conditions. Iron deficiency and iron deficiency anemia are more prevalent and are caused by either the diet or blood loss. Other nutritional anemias, such as folate or B₁₂ deficiency, megaloblastic anemia may result from poor diet or from an inability to absorb vitamins in the gastrointestinal tract. Micronutrient deficiencies are important to public health outcomes, particularly in the developing world and are a major health concern for children. Both vitamin A and iron status are positively associated with socioeconomic status and anthropometric indices (5).

Although food insecurity is harmful to any individual, it can be particularly devastating among young children due to their increased vulnerability and the potential for long-term consequences. Cook et al. (6) cited that children who are food insecure are more likely to require hospitalization. Several researchers stated that children may be at higher risk for chronic health
conditions, such as anemia and asthma (3, 7, 8). Moreover, Casey et al. (9) reported that children may have more frequent instances of oral health problems, which is associated with poorer physical quality of life, and associated with poor physical quality of life. Further, several other researchers postulated that children may have other adverse effects from food insecurity, such as behavioral issues and social difficulties, including fighting (10); hyperactivity, aggression, anxiety (11); as well as mood swings and bullying (12). This present study was designed to describe the level of anemia in children aged 6-9 y in St. Kitts, their situation of household insecurity and the link between household food insecurity and anemia in these children.

**Methods**

The data come from the Community Health and Nutrition Household Survey 2012 (CHNHS 2012), collected in St. Kitts-Nevis during the months of June through September 2012. Survey data included anthropometric measurements and hemoglobin samples of young children, ages 6 to 9 years from seven schools in St. Kitts. Survey data were also collected from parents/caregivers of children in order to assess food security status and household socio-economic characteristics. The sample for this analysis consists of 185 children based on a selected match of children’s anemia data and household food security status. Participants with missing information on either hemoglobin sample or food security information were excluded from the analysis. Hemoglobin level was evaluated by Hemocue with a finger prick blood sample taken at the schools by a project nurse. The cut-off point for hemoglobin to identify anemia was <11.5 g/dL (13). Food security status was measured using a revised version of short 6-item scale developed by the USDA, US Household Food Security Survey module. Because these items do not directly ask about children’s food insecurity, one item was replaced to include a question that directly addressed children’s condition. Similar to the USDA scale, the food
security status was coded into three categories: food secure, low food security, very low food security.

Results

The prevalence of anemia in schoolchildren from 7 government primary schools in St. Kitts was 37% using a hemoglobin cut-off of below 11.5 g/dL. The anthropometric measures showed no evidence of any problems of stunting or wasting and on average children were slightly taller than the standards for WHO. The distribution of households with young children by food security status is shown in Figure 1. A total of 20% of the children lived in food insecure households, 2% with very low food security. An examination of the link between food security status and anemia showed no difference. Of food secure households 37.9% of the children were anemic and of those with food insecurity 36.8% were anemic. Despite these high rates of food insecurity, we observed no evidence of poor growth.

[Diagram: The distribution of households with young children by food security status.

Discussion

The prevalence of anemia in the school age children in St Kitts is high. This is considerably higher than our recent findings in Trinidad and Tobago. Anemia rates have not recently been tracked and our data point to a high prevalence and a better understanding of the
reasons for this high rate need to be determined. We examined the prevalence of food insecurity in St. Kitts and found 20% of households were food insecure but this was not related to anemia. This is in contrast to others who have found food insecure households to have more children with anemia (3). It would appear that anemia is present outside of conditions of food insecurity and the reasons need to be explored. In conclusion, we found no relationship between reported food insecurity and anemia. The association of food insecurity and child dietary intake needs to be explored as the relationship of diet to food security varies greatly from one setting to another.