ABSTRACT

Objectives: Childhood stunting has immediate and long-term consequences for health and development. This cross-sectional study aimed to identify the nutritional factors associated with the high levels of stunting in 2-5-year-old children from an impoverished South African setting where food is frequently eaten and vitamin A deficiency known to be absent.

Methods: Dietary intakes were assessed using a 24-h recall. Mean weights were measured, and an instrument was designed to assess breastfeeding history, habitual milk intake, birth weight, and substance use during pregnancy (n=150). The prevalence of stunting was 36.9%, and increased with age: 23% (2-3-year-olds); 40% (3-4-year-olds); 49% (4-5-year-olds).

Results: A positive significant correlation was found between children’s HAZ and nutrient intake (p≤0.003). The median duration of breastfeeding history was 117 months (IQR: 54, 60) and children were breastfed for ≥6 months (70%). Median age of initiation was 9.4 months (IQR: 3.2, 24) and no substance use during pregnancy was observed (p≤0.003). Children who habitually drank milk were significantly younger in the stunted children (p≤0.003). Intake of fat, calcium, phosphorus, vitamin D, riboflavin and vitamin B6 significantly lower in stunted children (p≤0.003). Breastfeeding initiated in 94%; 70% were breastfed for ≥ 6 months (p≤0.003), 68% used vitamin A (µg RE) and 63% used zinc (µg). Vitamin A intake was significantly higher in children who habitually drank milk compared to those who did not (p≤0.003).

Conclusions: Intake of fat, calcium, phosphorus, vitamin D, riboflavin and vitamin B6 significantly lower in stunted children; milk a good source of these nutrients (8 children that ate liver the previous day were excluded from the analysis).

INTRODUCTION

Childhood stunting has immediate and long-term consequences for health and development.

WHO global nutrition target for 2025: to reduce the number of stunted children below 5 years by 40%.

National prevalence of stunting in South African 1-6-year-old children is 22%.

South Africa, however, a diverse country: a study in an impoverished Northern Cape community showed a 40.5% stunting prevalence, but no vitamin A deficiency.

This nutritional paradox due to frequent consumption of sheep liver, an available and affordable source of meat for the poor in this area - liver eaten by 85% of children.

OBJECTIVES

To examine the nutritional factors other than vitamin A status that may have contributed to the high prevalence of stunting.

Substance use during pregnancy, birth weight, and socio-economic factors were also assessed.

METHODS

Population: 2-5-year-old children from an impoverished South African community in the Hantam district of the Northern Cape province (n=150).

Anthropometric data:
- Height of mother and child, expressed as Z-scores, using the 2006 WHO growth standards
- Birth weight obtained from clinic card

Socio-economic information: household size, household income, assets in the household, mother’s education level and employment status.

Dietary intake:
- Breastfeeding History
- Child’s current source of milk
- Single 24-h recall
- Alcohol and tobacco use during pregnancy

RESULTS

The prevalence of stunting was 36.9%, and increased with age: 23% (2-3-year-olds); 40% (3-4-year-olds); 49% (4-5-year-olds).

Low birth weight was present in 28% of children.

26% of mothers were stunted (using the WHO reference values for 18-year-old girls).

Maternal height, as well as birth weight, correlated significantly with child’s HAZ (p=0.3, p=0.0001 and r=0.25, p=0.003, respectively).

Household size (n=0.24), household income (n=0.21) and asset score (n=0.30) correlated significantly with child’s HAZ (p=0.01).

SUMMARY AND CONCLUSIONS

The intake of micronutrients conventionally linked to stunting, i.e. zinc, iron and vitamin A was adequate.

Intakes of calcium and vitamin D were markedly inadequate, and significantly different between stunted and non-stunted children - even if children with low birth weight were excluded from the analysis.

HAZ was significantly higher in children who habitually drank milk than in those who did not.

The results suggest that low intake of calcium and vitamin D, presumably due to inadequate intake of milk after weaning, may have contributed to the high levels of stunting in this population.