Letter to the Editor

Influence of family environment on childhood stunting

To the Editors,

In her editorial, Onyango (2013) states that 'the most critical investments for healthy growth and development are made at the household level, and these include the care and nurturing that the home environment affords to the mother and child'.

The family environment is one of the factors that determine the provision of adequate conditions for nutritional status and child development (Miranda *et al.* 1999; Santos *et al.* 2010).

To investigate the association between stunting in children and their family environment, we conducted a pilot case-control study that compared 30 cases [(stunted child-mother pairs) of the Center for Nutritional Recovery and Education (CREN), Maceio, Brazil] with 33 controls (mother-eutrophic child pairs) living in the same neighbourhood under the same socio-economic conditions. Stunting was defined as height-for-age *z*-scores below ≤ -2 SD according to the World Health Organization (WHO 2006).

To evaluate the family environment, we employed the instrument Inventory Home Observation for Measurement of the Environment (HOME) version for Early Childhood (EC-HOME: 3-6 years). This questionnaire examines the behaviour of parents and other physical and social aspects of the family environment to assess the characteristics of the stimuli and support provided to the child (Caldwell & Bradley 2001).

This instrument has been used to verify the association between family environment and the child's nutritional status (Carvalhoes & Benício 2006; Februhartanty *et al.* 2007; Santos *et al.* 2010). The version used in the current study contains 55 items divided into eight subscales: (1) stimulation through toys, games and materials; (2) language stimulation; (3) physical environment: safe, clean and fostering development; (4) pride, affection and care; (5) stimulation of academic behaviour; (6) offer of models and encouragement of maturity; (7) varieties of stimulation; and (8) absence of physical punishment.

We also collected socio-demographic [socio-economic status (SES)] variables through a structured questionnaire that our team developed; this questionnaire included maternal and paternal education, number of children and social class.

For the statistical analysis, we used logistic regression (backward Wald method), including variables with $P < 0.20$ in the bivariate analysis. Stunting was the dependent variable.

Among all HOME's subscales, 'stimulating academic behaviour' was positively and statistically associated with stunting [odds ratio (OR) = 4.94, 95% confidence interval (CI) = 1.11-21.9, $P = 0.03$]. The 'stimulation of academic behaviour' refers to 'the incentive granted to the child learning through the environment'. Among SES variables, only the level of paternal education was statistically significant (OR = 5.85, 95% CI = 1.29-26.5, $P = 0.02$).

Therefore, both lower levels of 'stimulating academic behaviour' and 'paternal education' are associated with increased child stunting.

These results indicate that aspects of the family environment are associated with child stunting and suggest the need for prospective studies. Such studies shall aid researchers in gaining a deeper understanding of the family role in stunting events and shall help establish whether different kinds of stimulation are associated with child nutrition in certain age categories.

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