ABSTRACT

Health, Nutrition and Social Determinants of School Achievement in Rural Jamaican Primary School Children

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Poor achievement levels among primary school children continue to be a problem in developing countries and poor health and nutrition may contribute to this. The objective of this study was to determine whether nutritional status, anaemia and geohelminth infections were related to school achievement after controlling for social variables.

Eight hundred children were randomly selected from those enrolled in grade 5 in sixteen rural primary schools in Jamaica. School achievement was assessed by the Wide Range Achievement Test (WRAT). Children's heights, weights and haemoglobin concentrations were measured. Stool samples were assessed for *Trichuris trichiura* and *Ascaris lumbricoides*. Socioeconomic variables were assessed by questionnaire and observation. School attendance was obtained from the class registers.

The mean height-for-age of the children was -0.37 ± 1.0 SD, with 4.9% having heights-for-age below -2 SD of the NCHS references. Anaemia (Hb concentration < 11.0 g/dl) was present in 14.7% of the children, 38.3% were infected with *T. trichiura* and 19.4% with *A. lumbricoides*. Children attended school approximately 70% of days. On the morning of the

interview, approximately 10% of the children reported missing breakfast. Achievement levels were generally low, with children performing at a grade 3 level. Girls performed better than boys on all measures of achievement.

Height-for-age ($p<0.01$) and weight-for-age ($p<0.05$) were positively correlated with scores on the WRAT. *T. trichiura* and *A. lumbricoides* infections ($p<0.01$), and anaemia ($p<0.001$, except in arithmetic) were associated with lower scores. In multiple regression analyses, after controlling for attendance, school attended and the social background variables, the achievement of children with *T. trichiura* infections was significantly worse than that of uninfected children in spelling and reading ($p<0.001$). Height-for-age ($p<0.001$) and anaemia ($p<0.05$) contributed significantly to the variance in arithmetic. School materials, in particular textbooks, made significant contributions to the variance in achievement ($p<0.001$).

Although the level of undernutrition was mild and geohelminth infections were generally of low intensity, they were still associated with poor achievement levels. This suggests that efforts to increase school achievement levels should include strategies to improve children's health and nutrition.