

## **Nutritional status as contributor to the high prevalence of anemia in Suriname's interior schoolchildren**

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**Background:** anemia prevalence in schoolchildren 4-14 years living in the tropical rainforest interior of Suriname, a low and middle-income country situated in the North of South America, is high (60%) compared to similar aged children in Latin America and the Caribbean. Childhood anemia may result in poor motor and cognitive development with reduced school performance and work capacity later in life. Nutritional status is a potential contributor to childhood anemia. We evaluated the association between anemia and nutritional status in Surinamese schoolchildren.

**Methods:** Medical Mission Primary Health Care Suriname 2014-2015 school screening data from 3846 children ages 4-14 years, living throughout Suriname's interior, were analyzed using a cross-sectional retrospective design. Anemia and nutritional status were defined according to WHO guidelines corrected for age. Body Mass Index (BMI) was calculated as a measure of nutritional status, malnutrition was defined as BMI < -2SD, overweight as BMI > +1SD. Determinants of anemia were assessed using logistic regression analysis.

**Results:** 1696 (44.1%) children were anemic of which 49.3% were male, 46.6% were 4-8 years old compared to 53.4% 9-14 years, Odds Ratio (OR)=1.38 (95% Confidence Interval (CI):1.22-1.57), p<0.001. In the anemic and non-anemic children median BMI was 16.1 (Interquartile range (IQR): 14.9-18.0) and 15.9 (IQR: 14.6-17.6) respectively, 4.2% versus 4.6% children were malnourished, OR=1.08 (CI:0.79-1.48) and 15.3% versus 13.3% had overweight, OR=0.86 (CI:0.72-1.03), p=0.212.

**Interpretation:** we found no association between the presence of anemia and nutritional status in these schoolchildren. In addition to nutritional status and other well-known causes of anemia (e.g. iron deficiency), mechanisms such as heavy metal exposure influencing hematopoiesis should be considered, especially because of the abundant mercury use during artisanal goldmining activities in the areas where these children reside. Studies examining the effect of mixed metals exposure on hematopoiesis in these children are underway.

Demonstrate that both malnourished and overweight children may suffer from anemia

Identify other causes of pediatric anemia in addition to nutritional status

Examine other causes of pediatric anemia than the well-known ones in children living in areas where artisanal goldmining takes place.