Household food security and child malaria in Haiti

Summary of published research

Malaria is endemic in Haiti. The 2006 Demographic and Health Survey (DHS) found that 28% of children under 5 years had malaria within 2 weeks preceding the survey. The population of Haiti as a whole has little, if any, access to malaria prevention (insecticide-treated nets, intermittent preventive treatment among pregnant women), proactive screening, and treatment options (anti-malarial combined therapy). Malaria in Haiti occurs within the context of widespread poverty, poor health and food insecurity. To find out if food security and malaria are associated with each other, a study was conducted involving a convenience sample of 153 women with children between 1 to 5 years in Camp Perrin, South Haiti.

The plausibility for a relationship between household food insecurity and malaria is high. Previous studies have documented an increased risk of malaria associated with micronutrient deficiencies, including zinc and vitamin A deficiencies. This may reflect compromised cell-mediated and humoral immune systems. Also, food insecurity may impact on maternal stress and suboptimal psycho-emotional human development. It is plausible that endocrinal changes in the developing child, resulting from household mental stress induced by food insecurity, may also compromise the child's immunological system and ability to prevent malaria. There is a scarcity of studies examining the relationship between household food insecurity and malaria.

Household food insecurity was assessed with the 16-item 'Escala Latinoamericana y Caribena de Seguridad Alimentaria (ELCSA) scale' previously validated in the target communities. The scale was translated from Spanish to English and French and then to local Creole prior to application. ELCSA's reference time period was the three months preceding the survey and it was answered by the mother. Households were categorised as either food secure (2%; ELCSA score range: 0), food insecure/very food insecure (42.7%; ELCSA score range: 1-10), or severely food insecure (57.3%; ELCSA score range: 11-16). A total of 34% of women reported that their children had malaria during the two months preceding the survey.

Multivariate analyses showed that severe food insecurity was a risk factor for perceived clinical malaria (odds ratio: 5.97; 95% CI: 2.06-17.28). Additional risk factors for perceived clinical malaria were as follows: not receiving colostrum, poor child health (via maternal self-report), a child Body Mass Index (BMI) < 17 kg/m2, and child vitamin A supplementation more than once since birth. The finding that severe household food insecurity was associated with malaria risk even after controlling for child BMI suggests that dietary quality may be playing a role and that micronutrient deficiencies may be leading to compromised immune function. The cut-off point for risk identified in the study was a BMI of 17 kg/m2 and corresponded to the 65th BMI percentile of the study.
sample. If this finding is confirmed in future studies, it would suggest that the cut-off points usually recommended for identifying children at risk of under-nutrition may miss a large proportion of children at risk of malaria. The findings also suggest that food insecurity may increase the risk of malaria through several stress-related pathways. These include adversely affecting immunity and maternal mental health thereby impairing mothers' ability to successfully employ measures to prevent malaria in their children.

The findings with respect to colostrum are the first time that this has been documented. Given the proven health benefits of colostrum feeding and the potential for the prevention of malaria later on in life, it is important to conduct further research in Haiti to better understand the barriers against colostrum feeding and how to overcome them. The relationship between more frequent vitamin A supplementation and malaria was unexpected. The authors hypothesise that children with more access to these campaigns are also more likely to be diagnosed with this condition.

The authors acknowledge several study limitations. With the exception of anthropometry, all data were self-reported by the children's mother. Furthermore, the study was cross-sectional so it is not possible to determine whether severe food insecurity led to malaria, or if malaria in children prevented other household members working and generating income needed to ameliorate food insecurity. Future longitudinal cohort studies are needed to understand the temporal sequence of events.

The authors conclude that policies and programmes that address food insecurity are also likely to reduce the risk of malaria in Haiti.

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2 The first breastmilk produced by the mother in the early days around birth.