

Abstract

Background: Schistosomiasis severely affects children in most of the endemic settings including in Kenya. Much research has been done for school-aged children as they carry the highest risk of infection and associated morbidity including undernutrition. Childhood undernutrition is also a global problem. The nutritional status during the period of the “First 1,000 days”, from conception to the second birthday of a child, has a great impact on their short- and long-term health. Despite the growing evidence that infants and very young children can be also infected with schistosomes, its health and nutritional impacts during and after the first 1,000 days have not been investigated. This study, with a special focus on children under two years of age, aimed at strengthening the evidence base to inform effective future schistosomiasis control policies for this neglected, yet vulnerable population.

Objectives: The aim of the study is to clarify the influence of schistosome infection on nutritional status in early childhood. To achieve this, the study objectives include: to determine the prevalence of the infection by Kato-Katz and point-of-care circulating cathodic antigen (POC-CCA) methods among children from 6 months to 2 years of age; to determine the risk

factors of *S. mansoni* infection; to examine the association between *S. mansoni* infection and nutritional status; and to determine the risk factors of child undernutrition.

Methods: A cross-sectional study was conducted enrolling 361 children under two years of age living in Mbita, along the east coast of Lake Victoria, western Kenya. *S. mansoni* infection was examined by two tests 1) the Kato-Katz test, conventional parasitological method; and 2) the POC-CCA, a new immunological test. Univariable and multivariable analysis was applied to identify the risk factors of *S. mansoni* infection and undernutrition.

Results: The prevalence of *S. mansoni* infection was 3.6% determined by the Kato-Katz test, and 90.5% by POC-CCA test. Geographical area was identified as an independent risk factor of *S. mansoni* infection determined by the Kato-Katz test (adjusted odds ratio; AOR 7.1, 95% confidence interval; CI 1.4-35.2 for Rusinga West vs Gembe). Age (AOR 7.8, 95% CI 1.8-32.6 for 12-17months vs 6-11 months) and breastfeeding (AOR 3.4, 95% CI 1.3-9.0 for breastfeeding vs no breastfeeding in the past 24 hours) had a significant association with POC-CCA positivity. The prevalence of stunted, underweight, and wasted children were 9.7%, 5.1%, and 3.5%, respectively. Cough and abdominal pain in the past seven days were associated

with underweight. There was no association between *S. mansoni* infection and nutritional status among our study population.

Conclusion: We found an extremely high prevalence of *S. mansoni* infection among children under two years of age. Further research is required on accurate diagnostic tools to detect light infection among young preschool-aged children, and their long-term health and nutritional impacts, as well as effective public health strategies. The evidence generated by further research should inform the future schistosomiasis control policy that universally covers all those affected by schistosomiasis including young children who have received little attention to date.