

**Prevalence of Malaria, Schistosmiasis and Soil-Transmitted Helminthiasis in School  
Children of Nyamatongo in Sengerema District, Northwest Tanzania**

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## ABSTRACT

Infections with malaria parasites, schistosomes and soil-transmitted helminths are widespread in sub-Saharan Africa and pose an enormous challenge on the socio-economic development of the region. Polyparasitism involving malaria and helminth infections is common and often associated with severe morbidities and mortalities. Co-infections of malaria, schistosomiasis and soil-transmitted helminth exist in parts of Tanzania, however, very little is known about their prevalence. A cross-sectional survey was conducted in the Nyamatongo ward of northwest Tanzania near Lake Victoria and a total of 400 primary school children from four schools were examined for *Plasmodium falciparum*, the malaria parasite, *Schistosoma mansoni*, the bilharzia parasite and soil-transmitted helminths. Stool specimens obtained from the children were processed on microscope glass slides using the Kato-Katz method and were examined for helminth eggs under a compound microscope. Giemsa-stained thick and thin blood smears were also prepared from finger prick blood samples and examined under a microscope for malaria parasites. Hemoglobin levels were determined from the finger prick blood samples using the Hemocue system (HemoCue AB, Ängelholm, Sweden) and organomegaly (liver and spleen enlargement) was determined by clinical examination of the study subjects.

Prevalence of *P. falciparum* was 13.5% (95%CI, 10.2-16.8) while *S. mansoni* was 64.3% (95%CI, 59.6-68.9). The soil-transmitted helminths present in the study children were hookworms with a prevalence of 38% (95%CI, 33.2-42.8). Apparently, *A. lumbricoides* and *T. trichiura* were absent. About 26.5% (95%CI, 21.9-30.6) of the children examined harbored two (2) parasite species with *S. mansoni* and hookworm co-infections being the most common at 69% (95%CI, 60.2-77.8) followed by *S. mansoni* -*P. falciparum* co-infections at 22.6% (95%CI, 14.7-30.5), and hookworm - *P. falciparum* co-infections at 5.7% (95%CI, 1.3-10.1). The

prevalence of co-infection of *P. falciparum*, *S. mansoni* and hookworm was 2.8% (95%CI, 1.15-4.4). The overall prevalence of co-infections with these parasites was 29.3%.

Prevalence of anaemia (<11g/dL) was 20% (95%CI, 15.9-23.7) and about 61% (95%CI, 50.2-71.8) of the anaemic children were infected with one or more of the parasites in the present study. Prevalence of hepatomegaly, splenomegaly or hepatosplenomegaly were 22% (95%CI, 17.9-26.1), 11.5% (8.4-14.6) and 7.5% (95%CI, 4.9-10.1) respectively. About 41% (95%CI, 31.6-50.4) of the children with organomegaly were infected with one or more parasite species in the study.

In conclusion, the findings of this study suggest that *S. mansoni*, hookworm and *P. falciparum* are prevalent among the school children in the study area and co-infections are common. The findings support the need for initiatives to implement a new framework for an integrated approach in disease management. Longitudinal studies which will clearly identify the associations between parasites and associated morbidities are required.