High Prevalence Of Giardia Lamblia And Other Gastrointestinal Parasites In Children From Urban Bissau, Guinea-Bissau

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BACKGROUND AND AIM

In Guinea-Bissau, Western Africa, one of the poorest countries in the world, intestinal parasitic infections remain a major health concern. Current prevalence and impact of these infections is unknown. In the present cross-sectional study, we investigated the prevalence of intestinal parasites among children in the capital Bissau. We further aimed to identify risk factors for infection, to determine potential future health interventions.

METHODS

Population: 1.274 participants aged 2-15 years were included between August 2015 and February 2017 at local health centres.

Microscopy: Fecal samples were examined for all gastrointestinal parasites locally, using conventional light microscopy.

Statistics: Risk factors were identified by logistic regression. P-values <0.05 were considered statistically significant. Analyses were performed using STATA/IC 15.0 (StataCorp, Texas, USA).

Ethical permission: The project was approved by the ethics committee in Guinea-Bissau (ref. 0029/CNES/INASA/2015).

RESULTS

Distributions of major intestinal parasite species in two age groups are shown in Figure 1. Overall prevalence of intestinal helminths and protozoa were 11.5% (95% confidence interval (CI): 9.7% - 13.2%) and 44,0% (95% CI: 41.3% - 46.8%), respectively.

Potential risk factors are shown in Table 1. Poor hygienic standards were found to be major risk factors for infections with hookworm and Giardia lamblia.

Figure 1 – microscopy results

CONCLUSIONS AND PERSPECTIVES

- We found an overall high prevalence of intestinal parasites among children in Bissau.
- Older children were more susceptible to infection with hookworm and *Ent. histol./disp.*, younger children to infection with *Giardia lamblia*.
- The low prevalence of helminth infections may be due to mass drug treatment campaigns.
- Microscopy-positive samples were dominated by protozoan infections, especially *Giardia lamblia* and *Entamoeba* spp.
- Future improvement of sanitation standards and education of both children and adults should aid to lower the prevalence.

Table 1 – identification of potential risk factors

	Hookworm (N=99/1274)	E. histol./dispar (N=220/1274)	Giardia lamblia (N=304/1274)
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Gender			
Male	1,00	1,00	1,00
Female	1,56 (1,03-2,36)	0,84 (0,63-1,13)	1,17 (0,91-1,52)
Age group			
2-7 years	1,00	1,00	1,00
8-15 years	3,56 (2,33-5,44)	1,51 (1,12-2,04)	0,52 (0,38-0,69)
Children in house			
0-1	1,00	1,00	1,00
2-3	1,42 (0,82-2,44)	1,17 (0,82-1,67)	1,18 (0,87-1,61)
≥4	2,05 (1,16-3,64)	1,27 (0,85-1,90)	0,98 (0,69-1,41)
Children sharing bed			
0	1,00	1,00	1,00
1	0,80 (0,48-1,32)	0,73 (0,52-1,02)	0,83 (0,62-1,11)
≥2	1,78 (1,08-2,92)	0,94 (0,64-1,37)	0,90 (0,64-1,26)
Malaria infection			
Positive RDT	3,41 (1,78-6,55)	0,84 (0,42-1,68)	0,25 (0,1-0,62)
Water source			
Poor	1,00	1,00	1,00
Good	0,54 (0,35-0,81)	0,69 (0,52-0,93)	0,94 (0,72-1,22)
Toilet source			
Public latrine	1,00	1,00	1,00
Toilet	0,29 (0,14-0,6)	1,35 (0,97-1,88)	0,69 (0,5-0,97)