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Letter to the Editor

Urinary Schistosomiasis in the Urban Community of Zinder (Niger): The Permanent Pond of In'birgui, an Epidemic Focus

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Dear Editor-in-Chief

Schistosomiasis is a waterborne disease caused by trematodes (1). Children and those exposed to contaminated water are at the highest risk. Urbanization, migration, and climate change facilitate its spread in cities (2,3).

In Niger, schistosomiasis is endemic and classified as a neglected tropical disease (4). The last survey in Zinder was in 1995, (5) and the most recent mass treatment campaign was in 2012 (4). The city has 12 permanent ponds with poor water quality, but no parasitological analysis has been conducted. (6). An outbreak of urinary schistosomiasis in Zinder was identified through a survey conducted in 2022

among frequent visitors to the In'birgui permanent pond

Urine samples were collected from school-age children and adults engaged in professions or activities involving direct contact with the pond after obtaining informed consent. The urine was examined microscopically for the identification of eggs.

A total of 111 male individuals were studied for urinary schistosomiasis. Out of 111 urines examined, prevalence of urinary schistosomiasis was 26.1%. The age group [10-18 years] had the highest prevalence (72.4%). The results also showed that 51.7% of individuals with positive urine microscopy had very frequent contact with the pond. The frequency of contact with the pond and



period of contact with the pond had a statistically significant ($P < 0.05$) and direct

proportional relationship with urinary schistosomiasis (Table 1).

Table 1: Distribution of schistosomiasis diagnosis by risk factors among pond visitors in Inbirgui, 2022

<i>Variables</i>	<i>Positive</i>	<i>Negative</i>	<i>Total</i>	<i>P-value</i>
Age Group (yr): 0 to 10	3	7	10	0.472
AG: 10 to 18	21	65	86	
AG: 18 to 30	4	9	13	
AG: 30 to 50	0	1	1	
AG: 50 and above	1	0	1	
Frequency of Contact (FC): Very Frequent	15	15	30	0.002
FC: Moderately Frequent	8	39	47	
FC: Less Frequent	6	28	34	
Period of Contact (PC): All Year Round	16	21	37	0.010
PC: During Holidays	10	38	48	
PC: After the Rainy Season	3	23	26	
Parental Monitoring (PM): Responsible	1	0	1	0.041
PM: Moderate	18	63	81	
PM: None	10	14	24	
PM: Total	0	5	5	

This survey found 26.1% *S. haematobium* in frequent In'birgui pond visitors, confirming urban Zinder focus, moderate endemicity (8). Interestingly, despite the passage of 27 years since the last survey on urinary schistosomiasis conducted in schools located in the In'birgui pond area, the epidemiological situation has not improved. The prevalence has increased from 11.3% in 1995 to 26.1% in 2022, indicating a shift from a hypo-endemic to a moderate endemic area.

The increase in the prevalence of urinary schistosomiasis in the city of Zinder, despite interrupted control campaigns, can be attributed to a lack of control measures, population growth, and inadequate urbanization. Zinder's uncontrolled urbanization and poor urban management have contributed to the spread of the disease (9). The study indicates that male adolescents are the most affected by *S. haematobium* schistosomiasis during this outbreak, likely because they are more active and frequently engage in activities that expose them to infested ponds, increasing their infec-

tion risk. The study's findings support this hypothesis, with about half of those with positive urine microscopy having frequent pond contact. Correlation analysis confirms a link between schistosomiasis presence, frequent pond contact, and the duration of contact. This study underscores the prevalence of urinary schistosomiasis in impoverished areas (10).

Urgent treatment with praziquantel is needed to prevent morbidity and transmission of schistosomiasis in Zinder.

Conflict of Interest

The authors declare that there is no conflict of interests.

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