Urinary schistosomiasis outbreak in Cabo Verde: the first description in the country, May-June, 2022

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Background

Schistosomiasis (SCH) is a neglected tropical disease that disproportionately affects poor rural communities lacking access to safe water and sanitation, with women and children being most at risk through daily domestic and recreational activities in contaminated water. The disease is caused by trematodes of the genus Schistosoma, with *S. mansoni*, *S. japonicum*, *S. mekongi*, and *S. intercalatum* responsible for intestinal schistosomiasis, while *S. haematobium* causes urinary schistosomiasis, a major but underrecognized contributor to chronic kidney disease in Africa. Transmission depends on the presence of infected freshwater snails, whose populations and cercarial output are strongly influenced by seasonal and environmental factors (Ex: rainfall, flooding, and water management projects). SCH remains a persistent global health problem, particularly in sub-Saharan Africa, where it causes chronic morbidity, limits productivity, and perpetuates poverty.

Cabo Verde, a West African country with no previous human SCH reports despite the presence of potential hosts, detected its first *S. haematobium* case on May 5th, 2022, prompting a public health investigation by the National Institute of Public Health to confirm the outbreak, identify sources of transmission, and implement prevention and control measures.

Methods

Study design: An outbreak investigation of urinary schistosomiasis in Cabo Verde was conducted between May 10th and June 7th, 2022, through prospective and retrospective descriptive studies. The prospective study used a snowball sampling case series starting from the index case, with interviews and urine collection. The retrospective study involved medical record reviews to identify suspected cases between September 2021 and May 2022.

Case definition: A suspected case was any person with hematuria during the study period in the North Santiago Sanitary Region, while confirmed cases required laboratory detection of *S. haematobium* eggs.

Study area: The investigation was conducted in six municipalities of the North Santiago Sanitary Region, with the first case reported in Cutelo Gomes, São Miguel district.

Data collection and analysis: Face-to-face and telephone interviews, using structured questionnaires on sociodemographic data and exposures, were combined with urine sample collection. Data were analyzed with Epi Info 7.2, Excel 2013, and QGIS 2.18 for spatial mapping.

Laboratory methods: Urine samples were collected under conditions to maximize egg excretion and examined using a sedimentation technique with microscopic identification of S. haematobium eggs. Results were confirmed by reference laboratories, and cystoscopy with biopsy was performed in persistent symptomatic but egg-negative cases.

Environmental investigation: Freshwater snails, potential intermediate hosts, were collected during field surveys, identified morphologically, and examined for larval trematodes using dissection and cercarial shedding tests under light and heat exposure.

Ethics statement: Verbal informed consent was obtained from all participants or legal guardians. Confidentiality was ensured, and findings were intended to support outbreak response, future preparedness, and national and international policy development.

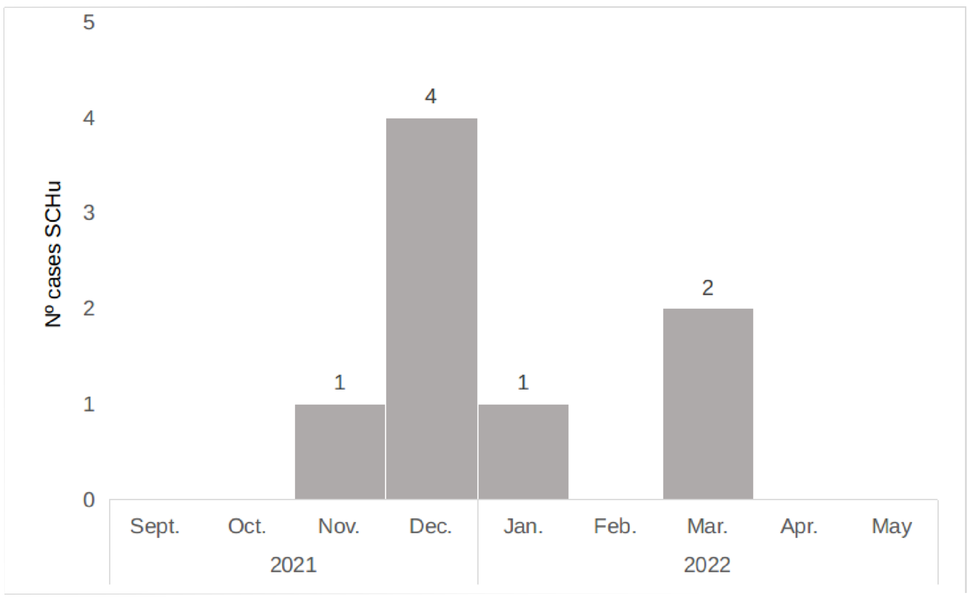
Results

A total of 11 prospective cases of *Schistosoma haematobium* infection were identified in São Miguel, with 8 confirmed positive (of wich 1 by bladder biopsy), mainly school-age males (median age 15 years), and hematuria as the most frequent symptom. Retrospective record review (n = 19,299) revealed 49 suspected cases, of which 4 were confirmed. Risk exposures included children swimming in water tanks, walking barefoot in small creeks and no water treatment. No deaths were reported. Environmental investigation collected 267 molluscs but no intermediate host snails were identified, due to dry season.

Summary of key risk factors found in the confirmed cases:

- Walking barefoot in water collections near homes (57.1%).
- Swimming in water reservoir tanks (75%).
- See snails in or near water tanks (49.2%).
- Lack of water treatment for drinking (75%).
- Poor sanitation infrastructure:

Molluscs collected according to taxonomy by families: A) Planorbidae; B)Hydrobiidae; C) Lymnaeide; D) Thiaridae



Epidemic curve according to the onset month of symptoms, São Miguel, Cabo Verde.

Conclusions and Recommendations

This study reports the first human schistosomiasis outbreak in Cabo Verde, in the rural community of Cutelo Gomes, São Miguel district. The event signals the emergence of a neglected tropical disease in a previously unaffected area and underscores the need for coordinated public health action.

Key recommendations: Treat all confirmed cases with praziquantel and investigate persistent hematuria through appropriate diagnostic pathways; Implement regular snail and environmental surveys, particularly during the rainy season, complemented by epidemiological inspections in schools and communities; Enhance water safety through alternative supply or treatment options and promote behavioral interventions to reduce exposure to infested water, especially among children and youth.

Although initial investigations did not detect the snail host, Bulinus was later identified, in November 2022, after the rainy season, confirming the local transmission pathway.

Bulinus found after the rainy season

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