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TITLE

ASSESSMENT OF THE EFFECT OF SANITARY CONDITIONS ON THE OCCURRENCE OF SCHISTOSOMIASIS: A PILOT STUDY

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ABSTRACT

From 2000 to 2020, schistosomiasis in Brazil showed an average annual positivity rate of 4.3%. Disease transmission is influenced not only by the presence of the intermediate host but also by water supply, environmental changes, hygiene practices, and local sanitary conditions. The disease disproportionately affects poorer populations who are more vulnerable due to limited access to water, sanitation, and hygiene (WASH) services. The study aimed to determine the prevalence of schistosomiasis using a more sensitive diagnostic method and to assess the association between various types of access to WASH services and the occurrence of schistosomiasis in a rural community in Alagoas, Brazil. Between March 4 and 8, 2024, 50 residents of the Usina João de Deus community were randomly selected for the study, including individuals aged seven and older, excluding pregnant and lactating women. After signing informed consent, participants completed a socio-epidemiological questionnaire and provided fecal samples. Each sample was used to prepare 18 Kato-Katz slides. After the microscopic analysis 20% of the slides were sent to Fiocruz Minas for quality control. Data on WASH conditions were correlated with the results of the fecal samples through estimations of Odds Ratio (OR) and Relative Risk (RR). Among the 50 participants (26 women and 24 men), aged between 10 and 79 years, 17(34%) were positive for *Schistosoma mansoni*, being 11 women and 6 men, with an average age of 54 years, all of them exhibiting low levels of parasitemia (≤ 99 eggs per gram of feces). The official community prevalence, according to the 2023 Schistosomiasis Control Program (SCP), was 2%, based on a single Kato-Katz slide per fecal sample. Analysis of environmental variables associated with the disease revealed that 76.5% (13/17) of infected participants reported frequenting water bodies, primarily for recreational activities. Furthermore, 94% (16/17) and 35.3% (6/17) of the positive cases reported a lack of piped water at home for consumption and other activities, respectively. Additionally, 41% (7/17) did not have a bathroom at home and 41% (7/17) practiced open defecation. These last four factors emerged as significant risks for the disease, with Odds ratio ranging from 1.6 to 5.07 and relative risk from 1.48 to 2.52. The results suggest that the prevalence reported by the SCP is underestimated due to the use of a single Kato-Katz slide per fecal sample, which, combined with low parasitemia, makes egg detection challenging and may cause false results. The findings also highlight the importance of environmental and infrastructural factors in schistosomiasis transmission, indicating that individuals without adequate WASH services are more prone to infection. Therefore, improving WASH infrastructure and employing accurate diagnostic methods are crucial for reducing schistosomiasis prevalence.

KEYWORDS

Schistosoma mansoni; Sanitation; Risk Factor; Prevalence

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