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TITLE

DIFFERENT STRATEGIES FOR SCHISTOSOMIASIS DIAGNOSIS AND IMPLICATIONS FOR MASS DRUG TREATMENT RECOMMENDATION

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ABSTRACT

 Schistosomiasis is the second most significant parasitic infection in the world in terms of public health and economic impact (WHO, 2021). Brazil, as a signatory to the 2030 Agenda, has committed to eliminating neglected diseases, including schistosomiasis, by the end of this decade. To achieve this goal, two fundamental pillars are essential: effective diagnosis and appropriate environmental interventions. In the context of endemic areas, Brazilian Ministry of Health recommends the preparation and examination of two Kato-Katz slides per stool sample. Additionally, in situations where the infection prevalence exceeds 25%, mass treatment of the population with Praziquantel is recommended (Brazil, 2022). This study aimed to compare the prevalences obtained from analyzing two Kato-Katz slides with those obtained from analyzing 18 Kato-Katz slides, in order to inform the discussion about thresholds for mass drug treatment. The study included 50 participants randomly selected, aged seven years or older, of both sexes, excluding pregnant and lactating women, residing in the Usina João de Deus community in the municipality of Capela, Alagoas, Brazil In the municipality's routine schistosomiasis control program, one slide is prepared for each stool sample. In the past year, the prevalence in the João de Deus community was 2%. In this study, each participant provided a stool sample, from which 18 slides were prepared using the Kato-Katz method for parasitic diagnosis. To estimate the empirical distribution of prevalence in the case of using two slides (α = 5%), an algorithm was applied with the following steps: a) Randomly selecting two of the 18 slides for each individual; b) Considering the individual positive for the presence of the parasite if at least one of the slides indicated its presence; c) Estimating the total prevalence among the 50 participants; d) Repeating the previous steps 1,000 times. To ensure the reproducibility of the simulation, the seed used was the number of the first prize of the federal lottery drawn on June 1, 2024. At the conclusion of the analysis of 18 Kato-Katz slides, 17 participants tested positive for Schistosoma mansoni, resulting in a prevalence rate of 34%. According to statistical simulations, the prevalence rate obtained with a single Kato-Katz slide, as performed by the schistosomiasis control program, was 8.4%. In contrast, using two slides, as recommended by the Ministry of Health, yielded a prevalence rate of 12.8%. The confidence interval for this estimate did not encompass 25%. According to the Ministry of Health's guidelines, these results do not justify the need for mass drug treatment. However, the varying prevalence rates obtained with one, two, or 18 slides highlight the need for more effective and urgent measures for disease surveillance and control. These actions are crucial to meet the objectives outlined in the 2030 agenda and to enhance the living conditions of the population.

KEYWORDS

Schistosomiasis; Diagnostic; Kato-Katz; Treatment