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# THE OCCURRENCE OF ENTEROPARASITES IN INDIVIDUALS OF THE HUMAN POPULATION OF THE MUNICIPALITY OF SÃO JOSÉ DOS BASÍLIOS – MA

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**Artur da Silva Martins[1] and Hébelys Ibiapina da Trindade[2]**

## ABSTRACT

Enteroparasitosis continues to be a major challenge to global public health, affecting millions of people worldwide. Especially those who are in a situation of social vulnerability. In Brazil, the North and Northeast regions have the highest rates of infection by enteroparasites, making this issue a significant concern for public health. This study analyzed the occurrence of enteroparasites in individuals treated by the public health service in the city of São José dos Basílios - MA. The research adopted a qualitative-quantitative approach, analyzing 1,812 parasitological stool tests (EPFs) performed between 2022 and 2023, considering variables such as age, sex, area of residence, and types of parasites identified. The data revealed that 33.17% of the samples analyzed presented positive results for enteroparasites, with protozoa such as *Entamoeba histolytica* and *Giardia duodenalis being* the most comprehensive. Helminths have also been found, such as *Ascaris lumbricoides*, although to a lesser extent. Children were identified as the most vulnerable group due to exposure to contaminated environments and poor hygiene practices. In addition, the rural area had a higher incidence of cases compared to the urban area, highlighting structural challenges such as lack of sanitation and treated water. Between 2022 and 2023, there was a reduction in the infection rate, from 40% to 25.47%. This decrease can be attributed to educational actions and specific improvements in basic sanitation, although structural challenges still persist. The study suggests the need for integrated strategies, such as improvements in basic sanitation, access to drinking water, educational campaigns and contributes to future public policies, highlighting that parasitosis reflects social and structural inequalities, and is expected to inspire actions to improve the health and quality of life of the population.

**Keywords:** Enteroparasites. Public health. Protozoa. Helminths. Basic sanitation.

[1] Degree in Biological Sciences
Federal Institute of Education, Science and Technology of Maranhão – Codó campus
E-mail: artur.martins@acad.ifma.edu.br
ORCID: https://orcid.org/0009-0002-8355-9194
Lattes: http://lattes.cnpq.br/7703556231536720
[2] Dr. in Animal Sciences
Federal Institute of Education, Science and Technology of Maranhão – Codó campus
E-mail: hebelys.trindade@ifma.edu.br
ORCID: https://orcid.org/0009-0004-6674-718X
Lattes: https://lattes.cnpq.br/7228932226470608

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## INTRODUCTION

Enteroparasitosis continues to be a major challenge to global public health, affecting millions of people worldwide. Especially those who are in a situation of social vulnerability. The prevalence of these infections is alarming, especially in developing countries, where factors such as inadequate sanitary conditions and low income favor their spread. In Brazil, the North and Northeast regions have the highest rates of infection by enteroparasites, making this issue a significant concern for public health (Marques; Gutjahr; Braga, 2020).

The relationship between parasitosis and precarious socioeconomic conditions is widely discussed in the literature. Zardeto-Sabec *et al*. (2020) point out that the lack of adequate infrastructure, especially in basic sanitation, directly influences the spread of these diseases, compromising fundamental rights, such as access to health and sanitation (Teixeira *et al*., 2020). In addition, Ramos, Assis, and Moreira (2023) highlight that fecal contamination of food and water, associated with environmental, behavioral, and biological factors, enhances the spread of intestinal parasites, especially in low-income populations with a lower level of education.

Another crucial aspect in the spread of enteroparasitosis is the lack of knowledge about personal hygiene and food safety. According to Nunes and Matos-Rocha (2019), negligence in hand hygiene and food handling increases the risk of infection. Sousa *et al*. (2019) reinforce this idea by stating that inadequate practices in the preparation and consumption of food play a fundamental role in the transmission of these diseases. As parasites usually originate from outside the human host, their ingestion through contaminated food represents one of the main routes of transmission, especially affecting vulnerable groups, such as the elderly, pregnant women, children, and immunocompromised individuals (Macena *et al*., 2018).

Due to Brazil's territorial extension and social inequalities, the epidemiological spread of intestinal parasitosis occurs in different regions of the country (Silva *et al*., 2021). In the state of Maranhão, for example, the incidence of these infections is significantly high when compared to other locations. According to Dávila *et al*. (2023), this scenario stems from multiple factors, including the low income of the population, the precariousness of water treatment, inadequate sanitation, and limited access to health services. In addition, the high illiteracy rate compromises the dissemination of information on hygiene and prevention, perpetuating the cycle of transmission of parasitic diseases.

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In this context, health education emerges as an essential tool for reducing the incidence of these infections. Simple measures, such as the proper use of toilets, hand hygiene, consumption of treated water, and correct cleaning of food, are accessible and effective strategies in mitigating intestinal parasitosis (Zardeto-Sabec *et al*., 2020). Based on this premise, this study aimed to analyze the occurrence of enteroparasites in individuals attended by the public health service of the municipality of São José dos Basílios – MA.

## METHODOLOGY

### CHARACTERIZATION AND LOCUS OF THE RESEARCH

The research was a documentary analysis of the health records of the municipality of São José dos Basílios (MA), with the aim of analyzing the occurrence of enteroparasites in the population in question. According to the classification of Dalfovo, Lana and Silveira (2008, p. 04), this study is characterized as documentary and descriptive. According to them, descriptive research seeks to "describe a phenomenon and record the way it occurs". A qualitative-quantitative approach was adopted in this research. According to Ensslin and Vianna (2008), this type of study is seen as an effective tool to deepen issues that are still poorly structured, explore unmapped areas and reach unknown horizons, especially in problems involving complex actors, contexts and processes.

The present study was developed in São José dos Basílios, a municipality belonging to the Central Maranhense Mesoregion and has a population of 6,957 inhabitants. The area of the municipality is 353,720 km², resulting in a demographic density of 19.67 inhabitants per km². São José dos Basílios is bordered by the municipalities of Esperantinópolis, Presidente Dutra and Santo Antônio dos Lopes, and is located 27 km north-west of Presidente Dutra. Located at an altitude of 94 meters, the municipality has the geographic coordinates of latitude 5° 3' 11" South and longitude 44° 32' 17" West, according to data from the Brazilian Institute of Geography and Statistics (IBGE) in 2022.

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**Figure 1 –** Location of the Municipality of São José dos Basílios, Located in the State of Maranhão.

**Source:** https://pt.wikipedia.org/wiki/Ficheiro:Maranhao_Municip_SaoJosedosBasilios.svg

## DATA COLLECTION AND DESCRIPTIVE ANALYSIS OF RESULTS

The study analyzed data from the population served by the Luís Ferreira de Sousa General Health Hospital, in the municipality of São José dos Basílios – MA, during the period from January 2022 to December 2023. The results of parasitological fecal tests (EPFs) performed on users of the Unified Health System (SUS) were examined, ensuring the anonymity of patients. Data collection included variables such as age, sex, area of residence (urban or rural), types of parasites found (helminths and protozoa), number of parasites per person, and the total number of positive and negative samples.

The data were organized into age groups: 0 to 5 years, 6 to 10 years, 11 to 15 years, and 16 years or older. In addition, variations in the distribution of enteroparasites according to the sex of the patients were considered. This study was authorized by the Municipal Health Department of the municipality of São José dos Basílios - MA, ensuring ethical compliance and confidentiality of the information analyzed.

The collected data were separated into positive and negative totals, and the parasites found and their frequency in the results were analyzed, according to different age groups, sexes and areas of residence (rural and urban). Word and Microsoft Office Excel® programs were used to tabulate the data in tables and figures, in order to facilitate the interpretation of the information. In addition, the results were described in order to identify the main causes associated with the presence of enteroparasites and their impact on public health in the municipality.

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## RESULTS

A total of 1,812 parasitological fecal tests performed between January 2022 and December 2023 in the municipality of São José dos Basílios - MA were analyzed. Of these, 33.17% tested positive for enteroparasites, while 66.83% were negative. In 2022, the positivity rate was 40%, reducing to 25.47% in 2023. This reduction suggests possible advances in preventive and sanitation actions, as shown in Table 1.

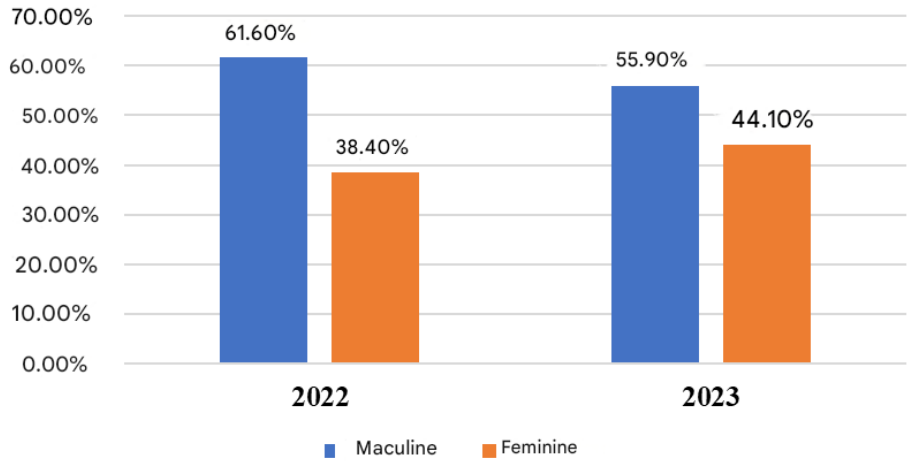
**Table 1** – Comparison of positive and negative parasitological test results by year (2022 and 2023).

| Year | Total Exams (n) | Positive (n/%) | Negative (n/%) |
|---|---|---|---|
| **2022** | 960 | 384 (40,00%) | 576 (60,00%) |
| **2023** | 852 | 217 (25,47%) | 635 (74,53%) |
| **Total** | 1812 | 601 (33,17%) | 1211 (66,83%) |

**Source:** survey data (2025).

The distribution of cases by sex indicated that, in 2022, 61.6% of those infected were male and 38.4% female. In 2023, this difference decreased, with 55.9% of male cases and 44.1% female (Figure 2). Similarly, the age analysis showed greater vulnerability among children, especially those aged 0 to 5 years, who had the highest infection rates (Figure 3).

**Figure 2 –** Comparison between sexes in parasitological test results by year (2022 and 2023).




**Source:** Survey data (2025).

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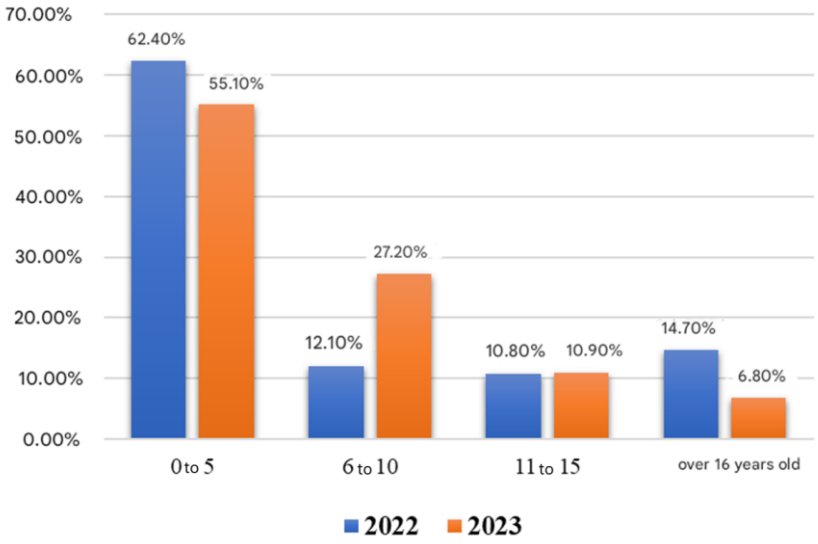
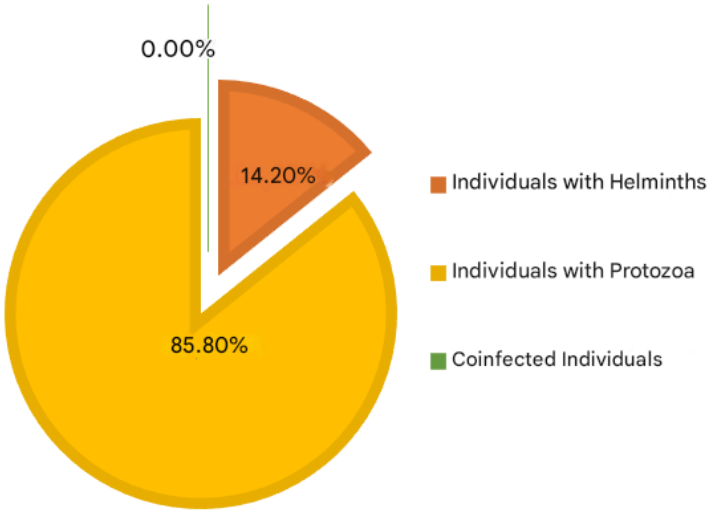
**Figure 3 –** Distribution of results by age group (2022 and 2023).




**Source:** survey data (2025).

Protozoa were more prevalent than helminths, with *Entamoeba histolytica being* the most frequent, followed by *Giardia duodenalis*. Among the helminths, Ascaris lumbricoides was the most found. Figure 4 shows the detailed distribution of the identified parasites.

**Figure 4 –** Distribution of protozoa or helminths in patients with no records of parasitic coinfection.




**Source:** survey data (2025).

The analysis of the geographic distribution revealed a higher prevalence of cases in rural areas, highlighting the relationship between infections and inadequate sanitary conditions (Figure 5). In addition, the distribution of the most common parasite species in

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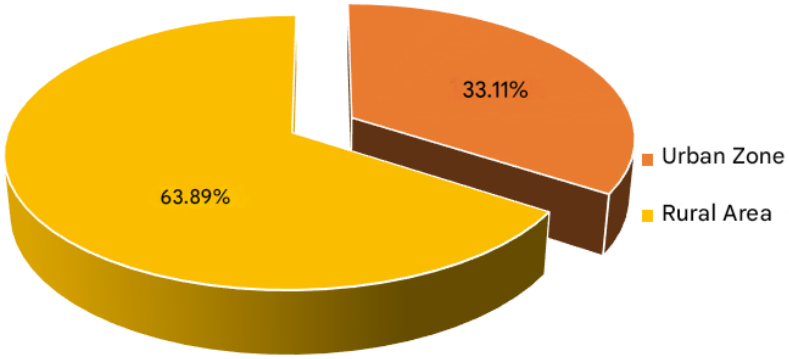
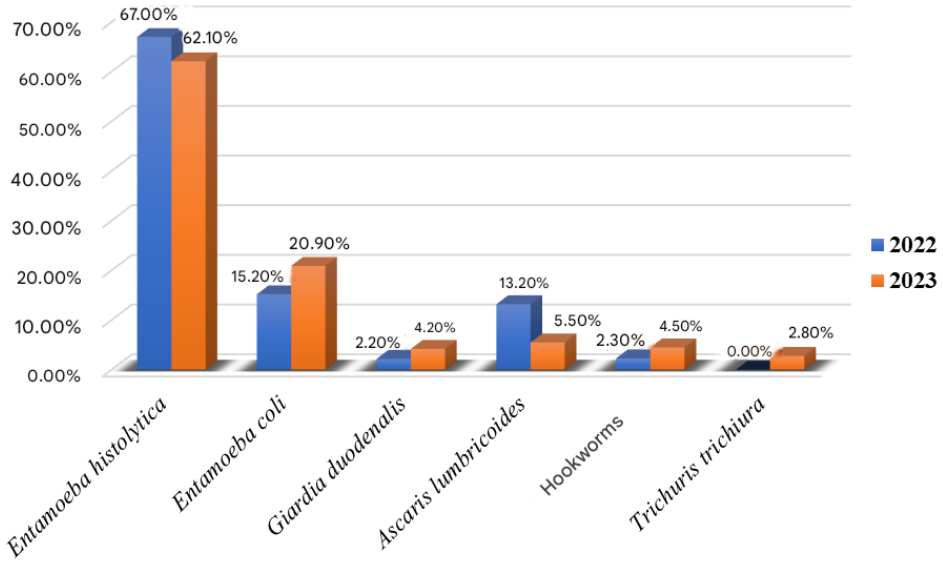
the analyzed period, with emphasis on the predominance of *Entamoeba histolytica* and *Ascaris lumbricoides*, is represented in Figure 6.

**Figure 5** – General distribution of cases by area of residence (urban and rural) 2022 and 2023.




**Source:** survey data (2025).

**Figure 6 –** Recurrent enteroparasites in 2022 and 2023.




**Source:** survey data (2025).

## DISCUSSION

The findings of this study demonstrate that enteroparasitosis continues to be a public health problem in the city of São José dos Basílios - MA. The high rate of infection recorded, especially among children, reinforces the need for effective interventions aimed at health education and improvements in basic sanitation (Figure 3). These findings corroborate the results of Santos and Merline (2010), who reported an inverse relationship

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between age and parasitic infection rate, due to the development of immunity and better hygiene habits.

The reduction in the infection rate between 2022 and 2023 can be attributed to preventive measures, such as educational campaigns and occasional improvements in access to treated water. However, the persistence of a significant number of cases shows that structural challenges still remain. As pointed out by Teixeira *et al*. (2020), the precariousness of basic sanitation and the lack of infrastructure are determining factors in maintaining the spread of enteroparasitosis.

The predominance of protozoa in relation to helminths suggests that the main route of transmission is associated with the consumption of contaminated water and food, reinforcing the importance of implementing public policies aimed at water security (Figure 4). Silva *et al*. (2019) observed a similar pattern in Corumbá (MS), where protozoa accounted for 86.9% of the infections detected. In addition, the disparity in the geographic distribution of cases, with a higher incidence in rural areas, highlights the inequality in access to adequate sanitation conditions (Figure 5), as observed in studies such as those by Lima *et al*. (2024), who reported greater vulnerability of the rural population due to the absence of adequate sanitary infrastructure.

Differences in infection between the sexes are also relevant, with a higher incidence among men, especially in 2022 (Figure 2). This factor may be related to behavioral habits, such as lower adherence to hygiene practices and greater exposure to risky environments. According to Biscegli *et al*. (2009), differences in daily and occupational habits can directly influence the prevalence of parasitic infections between the sexes. However, the decrease in this difference in 2023 suggests possible changes in population habits or greater effectiveness of preventive measures adopted.

The analysis of the identified species reinforces that *Entamoeba histolytica* and *Ascaris lumbricoides* are the most prevalent parasites in the municipality (Figure 6), suggesting that specific measures aimed at controlling these species should be prioritized in local public health policies. Vieira and Benetton (2013) pointed out that the predominance of these species is associated with factors such as poor water quality and deficiencies in sanitary infrastructure.

Thus, the results obtained reinforce the need for continuous strategies to combat enteroparasitosis, including the strengthening of basic sanitation actions, educational campaigns and constant epidemiological monitoring. The development of public policies

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that promote universal access to drinking water and improvements in sanitary infrastructure can contribute significantly to reducing cases and improving the quality of life of the population.

## FINAL CONSIDERATIONS

This study analyzes the occurrence of enteroparasites in individuals attended by the public health service of the municipality of São José dos Basílios – MA, highlighting their impact on public health. In 2022 and 2023, 33.17% of stool samples were positive, indicating the need for continued intervention. The infection rate fell from 40% in 2022 to 25.47% in 2023, reflecting advances in prevention, but still highlighting structural challenges. Socioeconomic conditions, poor sanitation and limited access to treated water are determining factors.

Children were identified as the most vulnerable group, due to poor hygiene practices and contact with contaminated environments. The rural area had a higher incidence of cases, due to the lack of basic infrastructure. Protozoa, such as *Entamoeba histolytica* and *Giardia duodenalis*, were the most frequent parasites, highlighting the importance of improving water and food quality. The presence of helminths, although less frequent, remains a concern, especially among children.

The study suggests the need for integrated strategies, such as improvements in basic sanitation, access to drinking water, and educational campaigns. Epidemiological surveillance must also be strengthened, ensuring rapid diagnoses and accessible treatments. This work contributes to future public policies, highlighting that parasitosis reflects social and structural inequalities, and is expected to inspire actions to improve the health and quality of life of the population.

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