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Prevalence of intestinal parasites in children from four to twelve years in the city of Itapetim- PE Brazil

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The intestinal parasitosis constitutes one of the main problems of public health, presenting itself endemic in several areas of Brazil. They may be closely related to socio-demographic and environmental factors; and the child population is often hardest hit. In this context, the objective of this study was to analyze the prevalence of intestinal parasites in children aged 4 to 12 years belonging to the city of Itapetim-PE. All fecal exams performed from April 1, 2013 to November 12, 2014, totaling 178 exams were analyzed. The selected exams were based on the methods of Hoffman, Pons and Janer. The samples were analyzed as positive and negative, where a percentage of 20% was obtained for the positive samples, and the female was predominant in this result with 61% of the cases. It was also detected that the infections occurred more by protozoa than by helminths, which represented only 5% of the cases with the agent *Ascaris lumbricoides*; And in contrast to other agents, *Endolimax nana* was the most representative, accounting for 48% of the cases analyzed.

Key words: Intestinal parasites, prevalence, basic sanitation.

INTRODUCTION

According to Neves et al. (2012), parasitism is an association between living beings, in which only one of them benefits in the relationship, and the host suffers constant spoliation, providing food and shelter for the parasite. Such a relationship tends to balance, as it would be detrimental to the parasite and cause the death of its host.

According to the same author, the presence of parasitic disease requires some factors, such as the number of specimens (Teixeira and Heller, 2006), size, location, virulence and metabolism. In the host, the factors are: age, hygiene habits (Castro et al., 2004), nutrition, immune response, association with other diseases, habits, use of drugs (Neves et al., 2012). All of these factors will determine whether the host is a "sick" or "asymptomatic carrier."

In this context, intestinal parasitic diseases represent a public health problem in Brazil, as well as in other developing countries, since they affect a large number of people, however, requiring greater attention when it affects children, especially with food shortages. In the present study, the presence of enteroparasites may lead to malnutrition, in the same way that malnutrition may facilitate the occurrence of enteroparasite infections

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Figure 1. Some types of eggs and cysts of parasites. Source: Authors.

(Nestlé Nutrition Service, 1999; Brito, 2003).

Intestinal parasites are diseases whose etiological agents are helminths or protozoa, which, in at least one of the stages of the evolutionary cycle, are located in the digestive tract of man, and can cause several pathological alterations (Ferreira et al., 2004). This is one of the main causes of child death in our country (Strufaldi et al., 2003). This is a problem that causes a series of organic alterations, many of them are serious. Figure 1 illustrates some eggs and parasitic cysts found in Brazil.

It can also be emphasized that the problem involving intestinal parasitoses is more serious than it is presented, since there is still no serious and consolidated health education policy. Several factors may increase the risk of infection, but the absence of basic sanitation and the establishment of hygiene practices are important conditions in favoring parasitic diseases in humans (Teixeira and Heller, 2006). The decrease in the presence of these parasitoses or even their eradication requires improvements in socioeconomic conditions, basic sanitation and health education, as well as certain changes in cultural habits (Tavares-DIAS and Grandini, 1999).

Based on the above, this study aims to survey parasitological cases in children aged 4 to 12 years, living in the city of Itapetim-PE, located in Brazilian territory; and thus constitute an important source of local epidemiological information, highlighting the lack of this type of work. This may facilitate the development of prophylactic programs in this same community, and that way can minimize the occurrence of infestations of this population.

MATERIALS AND METHODS

Area of study

The study was carried out in the city of Itapetim, located in the northeast region of the state of Pernambuco, circumscribed between the geographic coordinates: 36° 59' 01.8" at 37° 16' 58.7"

Figure 2. Location of the city of Itapetim in the State of Pernambuco (Google Maps, 2014).

west longitude and 7° 16' 28.8'' to 7° 29'48.2'' south latitude (Figure 2), with a population of approximately 14,766 inhabitants (Ibge, 2014).

Data collection and analysis

The research is quantitative in nature and descriptive - exploratory in character; with bibliographic procedures, where reference was made to the area through books, websites, articles queries; and documentary, in which all the records of parasitological examinations of children with ages ranging from four to twelve years were analyzed by the Laboratory of Clinical Analysis (LACLIN) accredited to the prefecture of this locality, in the period of one year and seven months.

Data were collected on the sex and age of the patients, the positivity of the tests and the species presented in each exam, as well as the parasite with the highest frequency. The selected exams were based on the methods of Hoffman, Pons and Janer (spontaneous sedimentation). The methods of Hoffman, Pons and Janer are not a complex procedure. It is based on spontaneous sedimentation in water, in which it can find cysts of protozoa, eggs and larvae of helminths. The processes are:

a) Approximately 2 g of feces are placed in a Borrel bottle, with about 5 ml of water, and ground with a glass stick.
b) Additional 2 mL of water was added.
c) The suspension was filtered into a conical chalice of 200 mL capacity, by means of a metallic or nylon screen with about 80 to 100 meshes per cm², or surgical gauze folded in four; The debris retained was washed with another 20 mL of water, constantly stirring with the glass stick, and the washing liquid must be collected in the same chalice.
d) The volume of the chalice was completed with water.
e) This suspension was allow to stand for 24 h.
f) Next, the appearance of the supernatant was observed, taking one of the two choices: if the liquid is cloudy, discarded carefully without raising or losing the sediment, more water was added to the previous volume and left to stand still for more 60 min; If the liquid is clear and good sediment, a sample of the sediment was taken for examination.
g) There are two techniques for collecting sediment for examination. The first is to insert a pipette obliterated by the index finger into the sediment contained in the bottom of the chalice, withdraw the finger and let a small portion of the sediment rise; the finger was replaced and the pipette removed; The second is to carefully discard the supernatant liquid, homogenize the pellet and collect one drop of the pellet (this procedure is best since the collected pellet is more representative of the pellet).
h) Part of the sediment was placed on a slide and a smear was made. After, it was examined with the 10x and / or 40x objective, examining at least two slides from each sample.
i) For "identification of protozoan cysts and helminth larvae, the preparation was stained with lugol" (Neves et al., 2012).

The results of the data collection were elaborated in a table through the program Excel, where each variable was crossed in order to obtain new data. Absolute and relative frequency calculations were also performed, and the information found are presented in the form of graphs.

RESULTS

A total of 1350 examinations were performed between April 1, 2013 and November 12, 2014, of which 178 individuals, aged 4 to 12 years were selected. Of these 178, 36 were positive, corresponding to 20% of this sample and the negative ones were 142, thus representing 80% of this same sample (Figure 3).

It was also observed that the parasitosis occurred in a greater number in female children, representing 22 of the cases, which is equivalent to 61%; While males presented 14 cases, or 39%, as found in other studies (Matos and Cruz, 2012) (Figure 4).

From the analyzes performed, there were only 5% cases representing helminths, by *Ascaris lumbricoides* and the rest being part of the protozoa; Being represented by *Giardia lamblia*, 13% cases; *Entamoeba histolytica*, 8% cases; *Entamoeba coli,* 21% cases; *Endolimax nana*, which presented the highest index, being represented by 48% of the cases examined and although it is not considered a pathogenic species, its prevalence may indicate poor quality of hygiene and health; and

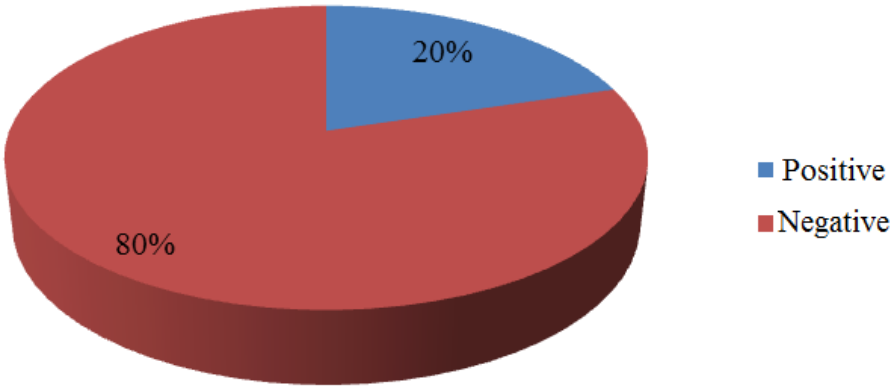

Figure 3. Prevalence of parasitosis. Source: Authors.

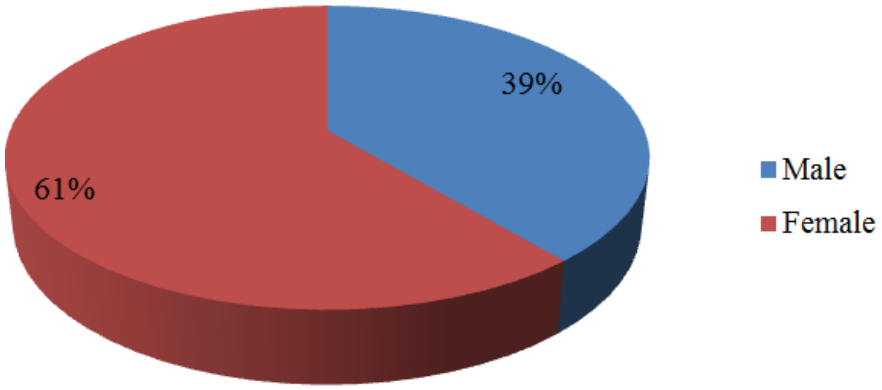

Figure 4. Representative by sex. Source: Authors.

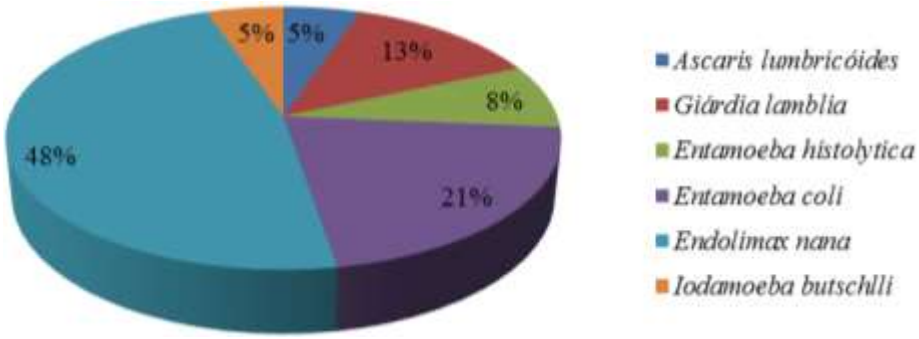

Figure 5. Number of People Versus Parasites. Source: Authors.

Iodamoeba butschlli (5% cases) (Figure 5).

Based on the children's age group, they were selected from four to twelve years old, presenting the following result: Four years presented 2 cases; Five years 4 cases; Six years 4 cases; Seven years 4 cases; Eight years 8 cases; Nine years 5 cases; Ten years 6 cases; Eleven years 2 cases and twelve years 1 case (Figure 6).

In the present work, the predominance of infections was confirmed by a single species of parasite, a characteristic also observed in several studies (Mascarini and Yoshida, 1999). In contrast, for biparasitism, only 8% of the cases were found and although polyparasitism was very common, there was no representation of it (Figure 7).

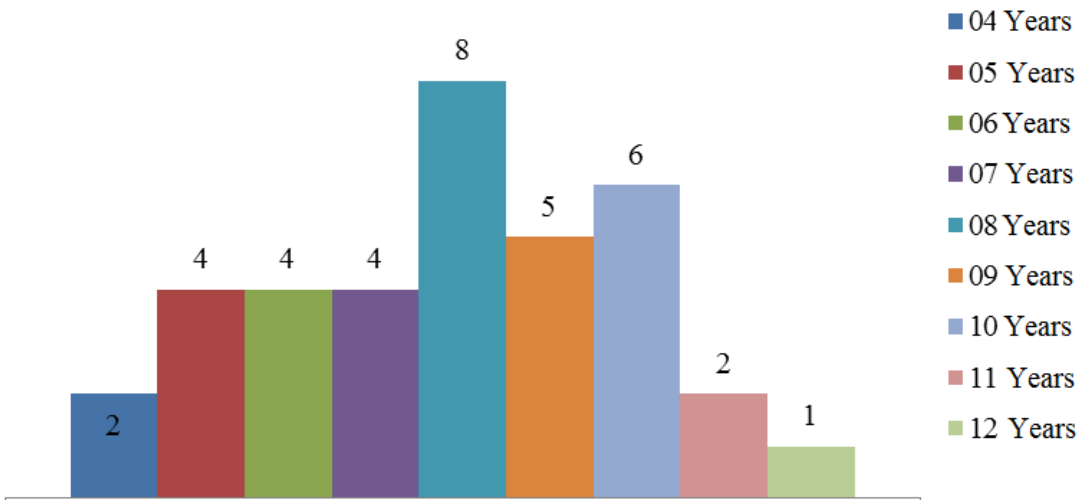

Figure 6. Age range versus infected individuals. Source: Authors.

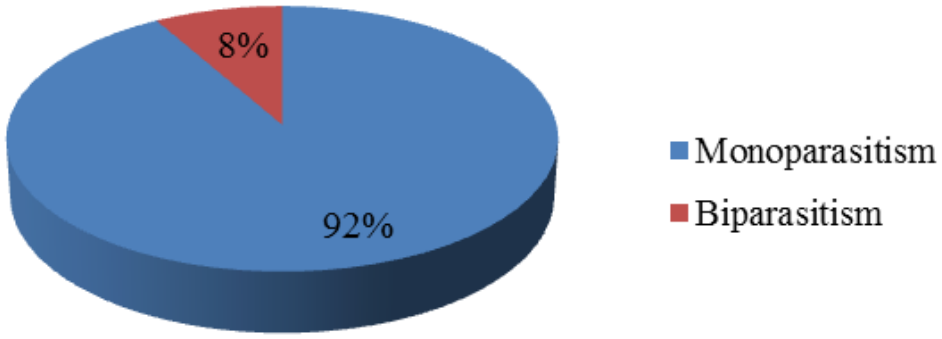

Figure 7. Number of parasites. Source: Authors.

Conclusion

Despite the low result for positive intestinal parasitosis in contrast with the results of other studies, for example, north and northeast is representatives of high rates as compared to other regions (Araújo et al., 1999; Alves et al., 2003). There is attention on one of the abiotic factors considered of great importance for the transmission of cysts of protozoa, eggs and larvae of helminths in water.

It should also be considered that some species of helminths, even when carried by water, need to remain in the soil for a period of time to become infectious and that man's contact with parasites may occur periodically, not only by water, but by other elements that favor dynamic transmission, such as contaminated objects (Levai et al., 1986), or even through the consumption of vegetables, which according to Shuval et al. (1984), is due to the fact that they are consumed without proper care (proper washing and/or cooking).

Importantly, the agents have their infecting form that remains for a long time in the external environment. All these factors leads to the high indexes in the literature and that in turn, when adopted, adequate control measures reflect in pictures where these parasitoses occur in smaller scale.

It was found in this study that the prevalence of helminths was lower than that of protozoa, and only *A. lumbricoides*, a cosmopolitan intestinal parasite, was found. This helminth is the most prevalent species of all enteroparasites that affect man in countries with low socioeconomic conditions (Carrillo et al., 2005). In Brazil, coproparasitological surveys have shown that *A. lumbricoides* is the helminth that occurs most frequently among the different communities studied (Macedo, 2005).

The prevalence of monoparasitism also evidenced may be related to the fact that the parasites compete for the same niche, leading to the exclusion of one of the species. Or it may be associated with the low frequency with which the host comes in contact with the contaminated medium with different species, or may also, with the degree of immunocompetence of the host.

Despite the low representativeness of affected children, it is important to emphasize that this is not a common framework, becoming one of the few exceptions in the country's reality, which in many studies have high rates, especially among children and the elderly.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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