

Presence of protozoans and helminths in quilombola children from Agreste region of Pernambuco, Northeast Brazil

Presença de protozoários e helmintos em crianças que residem em comunidades quilombolas, localizadas na cidade de Garanhuns, Pernambuco

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ABSTRACT

The aim of this research was to verify the occurrence of intestinal parasites in children aged between two and twelve years in four quilombola communities located in the city of Garanhuns, Pernambuco. The investigation was carried out between August 2008 and July 2009. Five visits were made to the communities in order to analyze the environmental sanitation, personal hygiene and socio-economic conditions of the families. After that, fecal samples were collected from 115 children from the communities to perform the coproparasitological exams, using the method of Hoffman, Pons & Janer to search for larvae or eggs of helminths and protozoan cysts. From this, a general prevalence of 51.30% of enteroparasitosis was evidenced in the samples collected, identifying six species of protozoa and four of helminths. Thus, it was concluded that there is a need to monitor the health conditions of this population and the continuous search for sanitary improvements, in the offer of antiparasitic treatment and in health education.

Keywords: Child, Helminths, Enteroparasitosis, Prevalence, Protozoa

RESUMO

O objetivo desta pesquisa foi verificar a ocorrência de parasitas intestinais em crianças entre dois e doze anos de idade em quatro comunidades quilombolas localizados na cidade de Garanhuns, Pernambuco. A investigação foi realizada entre agosto de 2008 e julho de 2009. Foram feitas cinco visitas às comunidades a fim de analisar o saneamento ambiental, a higiene pessoal e as condições sócio-econômicas das famílias. Depois disso, foram coletadas amostras fecais de 115 crianças das comunidades para realizar os exames coproparasitológicos, utilizando o método de Hoffman, Pons & Janer para procurar larvas ou ovos de helmintos e cistos protozoários. A partir disto, uma prevalência geral de 51,30% de enteroparasitose foi evidenciada nas amostras coletadas, identificando seis espécies de protozoários e quatro de helmintos. Assim, concluiu-se que existe a necessidade de monitorar as condições sanitárias desta população e a busca contínua de melhorias sanitárias, na oferta de tratamento antiparasitário e na educação sanitária.

Palavras-chave: Child, Helminths, Enteroparasitosis, Prevalence, Protozoa.

1 INTRODUCTION

The enteroparasitosis or intestinal parasites are a serious problem of public health. The lack of preventive measures associated with the low educational levels and basic sanitation became the pillars for such diseases to be considered endemic in several developing countries

(MATSUCHITA et al., 2017). Brazil has high rates of social inequality, with about 25,4% of the population living below the poverty line. The northeast region is even more affected, with about 43,5% of the individuals in these conditions (IBGE, 2017). With these circumstances, the strategies to fight parasitic diseases end up in the background. Among the main causes of enteroparasitic infections, those from protozoans and helminths are the majority (CASAVECHIA et al., 2016). About 267 millions and 568 millions of children at pre-school and school age, respectively, are in active and intense areas of helminths transmission (WHO, 2020). These represent one of the main risk groups, as they constantly come in contact with the soil and water, which can represent sources of contamination, besides frequently performing insufficient hygiene and representing the immune system still under development (ARAUJO et al., 2011; ZEMENE et al., 2018).

Deficiency in basic sanitation, educational, economical and social conditions, the inadequate treatment of garbage, the soil, water and food contamination, in addition to the rate of population agglomeration continue to be a serious problem in low-income populations.

Quilombola communities, population groups reminiscent of the old quilombos, which mainly house black people, are examples of these populations, where intestinal parasites are diseases that are frequently encountered but little studied and not effectively combated, either by healthy authorities or by society. In Brazil, the public politics and the health services for these people are few and do not materialize in everyday life, even with a population of 55,8% self-declared black or brown (IBGE, 2018).

This work consists of the investigation of intestinal parasites in children living in quilombola communities, located in the city of Garanhuns, Pernambuco, evaluating the prevalence of enteroparasitosis in local children and young students, the main risk group for the acquisition of intestinal infections and the one where, generally, the greatest physical, mental and social problems associated with these infections are observed (MELLO et al., 1988).

2 MATERIALS AND METHODS

The study was approved by the ethics committee of the Centro de Ciências da Saúde (CCS) of the Universidade Federal de Pernambuco (UFPE), CAAE (Certificate of Presentation of Ethical Appreciation): 19640213.0.1001.5208, involving only children whose parents and/or guardians read and signed the informed consent form, authorizing the performance of the coproparasitological exam in their children. The authors assert that all procedures contributing to

this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

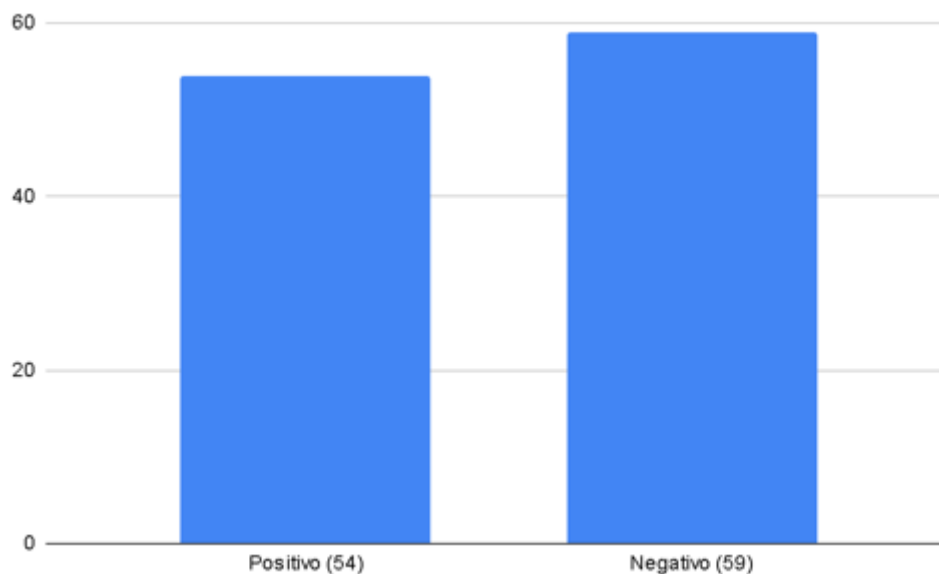
The research involved analysis of samples from 113 children, aged between 2 and 12 years old, from quilombola communities located in the city of Garanhuns, located in the agreste region, in Pernambuco. The samples were collected from August 2008 to July 2009. Plastic collectors containing 10% formaldehyde were distributed to collect the material, which were later sent to the laboratory of the Departamento de Medicina Tropical da UFPE, by employees of the Posto de Saúde da Família (PSF) in the city of Garanhuns.

The samples were analyzed at the Laboratório de Parasitologia do Departamento de Medicina Tropical da UFPE. The method of Hoffman, Pons & Janer was used as a direct examination of feces for the investigation of protozoan cysts, as well as eggs and helminth larvae. During the research, five visits were made to quilombola communities in Garanhuns, to analyze the socioeconomic profile and the basic conditions of environmental sanitation and personal hygiene of families. An explanatory lecture was also given to the children at the end of the research. With the results of the research, the parasitological exams were delivered to the PSF nurse in the city to provide treatment for the parasitized children.

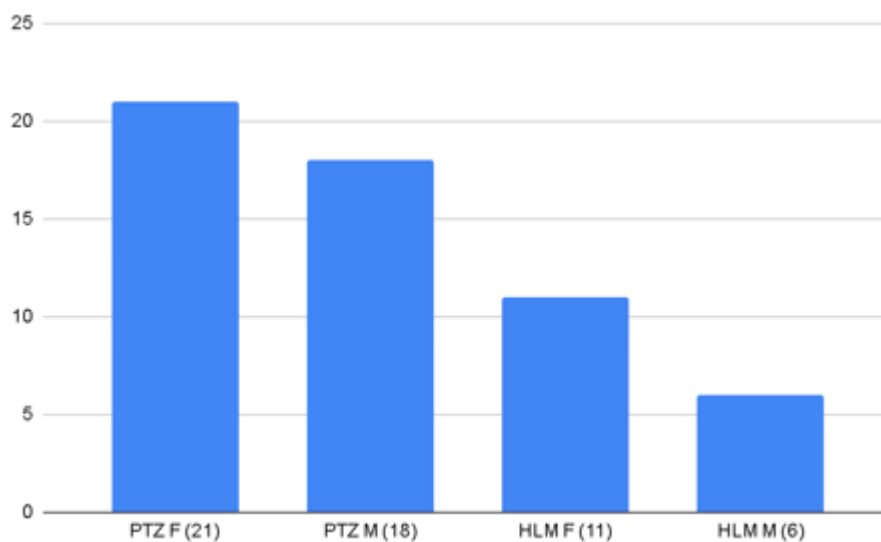
3 RESULTS

In this research, 113 samples were analyzed (Graphic 1). Of these, 39 were positive for protozoa, being 21 samples from male patients and 18 from female patients. There were also 17 positive samples for helminths, 11 of them in male children and 6 in female children (Graphic 2). The male gender had a general prevalence of 57.14%, against 42.86 % in the female one.

Graphic 1: Frequency of positive samples for intestinal parasites found in the research



Graphic 2: Frequency of protozoosis and helminthosis in the children by gender



PTZ F: Protozoosis in female children; PTZ M: Protozoosis in male children; HLM F: Helminthosis in female children; HLM M: Helminthosis in male children.

The general coefficient of prevalence of enteroparasitosis was 51.30%. Seventeen cases of helminthosis (15.35% of the children) were recorded, with the following species being found (Table 1): *Ascaris lumbricoides* (13 samples, 72.22%), Hookworm (2 samples, 11.11%), *Trichuris trichiura* (2 samples, 11.11%) and *Hymenolepis nana* (1 sample, 5.55%).

Table 1: Prevalence of protozoosis in 113 samples analyzed.

Protozoosis	N°	%
<i>Endolimax nana</i>	14	24.14
<i>Entamoeba coli</i>	16	27.59
<i>Entamoeba histolytica/dispar</i>	2	3.45
<i>Blastocystis hominis</i>	3	5.17
<i>Giardia lamblia</i>	22	37.93
<i>Isospora belli</i>	1	1.72

There were also 39 cases of protozoosis (35.13% of the children), with the presence of the following species (Table 2): *Giardia lamblia* (22 samples, 37.93%), *Entamoeba coli* (16 samples, 27.59%), *Endolimax nana* (14 samples, 24.14%), *Blastocystis hominis* (3 samples, 5.17%), *Entamoeba histolytica/dispar* (2 samples, 3.45%), *Isospora belli* (1 sample, 1.72%).

Table 2: Prevalence of helminthosis in 113 samples analyzed.

Helminthosis	N°	%
<i>Ascaris lumbricoides</i>	13	72.22
<i>Ancilostomídeo</i>	2	11.11
<i>Trichuris trichiura</i>	2	11.11
<i>Hymenolepis nana</i>	1	5.55

In this study, the number of people investigated for co-infection was 44. Of this total, 8 people were diagnosed with co-infection, corresponding to a percentage of 18.18% of the total investigated. In the analysis of the samples of the diagnosed individuals, there was a higher prevalence of the class of protozoa compared to the class of helminths, found in 75% and 25% of the samples, respectively. Among the species of enteroparasites that were found in the exams, the highest prevalence was *Entamoeba coli* (75%), *Endolimax nana* (50%), and *Giardia intestinalis* (50%); and in a smaller percentage, *Blastocystis hominis* (12.5%), *Ascaris lumbricoides* (12.5%), *Isospora belli* (12.5%) and *Ancilostomidae* (12.5%) were found.

4 DISCUSSION

Different methodologies have been adopted to determine the prevalence rates of intestinal parasites, from direct determination during necropsies (ALMEIDA et al., 1991) to the collection of routine data at health centers (CARDOSO et al., 1995), which makes it more difficult to compare the results of different works. In this research, the method of Hoffman, Pons & Janer was used, a technique of good efficiency and low cost.

Although *Giardia lamblia* has been the most frequent parasite, this result could be greater since the ideal would be to perform three stool tests on alternate days.

In the 1970s, Vinha (1971) already emphasized the need to develop a national health policy to combat intestinal parasites, since infections are linked to underdevelopment, lack of environmental sanitation, failures in education and health information. These conditions are quite common in quilombola communities where intestinal parasite infections are problems often found, but receive little research attention and are not effectively combated; either by health authorities or by society. Faced with the results presented, it is concluded that there is a need for routine monitoring of the health conditions of the less favored populations located in landless settlements.

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