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PATHOLOGICAL ENTEROPARASITES IN CHILDREN OF PRESCHOOL AGE

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ABSTRACT

Parasitism is the association between living beings, where there is unilaterality of benefits. The intestinal parasitoses still present a high prevalence among the population of low socioeconomic level, representing an important public health problem, mainly due to the effects that can cause on the nutritional status and the physical development of the children population. Considering the harmful effects of enteroparasitoses on infant development and the benefits of early prevention and treatment, the present study aimed to review the literature regarding pathological enteroparasites and its impacts on children of preschool age. Children attending daycare centers are more susceptible to infections than those who are kept in their homes because of the large interpersonal contact provided by collective environments.

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INTRODUCTION

Parasitism is the association between living beings, where there is unilaterality of benefits, which means, the host is plundered by the parasite, as it provides food and shelter for it (Barbosa et al., 2009; Neves, 2011). They can be allocated in the most diverse systems of the human body, but they have great clinical repercussions in their intestinal distribution. The intestinal parasites most commonly found in humans are: *Ascaris lumbricoides*, *Trichuris trichiura* and the hookworms *Necator americanus* and *Ancylostoma duodenale*. Among the protozoa are *Entamoeba histolytica* and *Giardia intestinalis* (Magalhães et al., 2013).

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Among other damages that enteroparasites can cause to their carriers include intestinal obstruction (*A. lumbricoides*), malnutrition (*A. lumbricoides* and *T. trichiura*), iron deficiency anemia (*Ankylostomia*), and diarrhea and (*E. histolytica* and *Giardia lamblia*), with clinical manifestations usually proportional to the parasite load presented by the individual (Lima et al., 2013). In contrast to the technological advances observed at the end of the millennium, intestinal parasites are still a major public health problem (Lima et al., 2013). According to the World Health Organization (2017), more than 1.5 billion people are infected with helminths worldwide, of which more than 267 million are pre-school children. For, as shown by Uchoa (2009), there may be a parasitic association, which is frequently observed, since the way of acquisition of several agents occurs by the same mechanism of transmission. In Brazil, parasitoses are of wide

geographical distribution, being found in rural or urban areas, with variable intensity, according to the environment and parasitic species (Lima *et al.*, 2013). The last multicenter survey of intestinal parasitic infections in Brazil showed that 55.3% of the children were parasitized, 51% of them with poplartism (Rocha *et al.*, 2000 and Lima *et al.*, 2013). The intestinal parasitoses still present a high prevalence among the population of low socioeconomic level, representing an important public health problem, mainly due to the effects that can cause on the nutritional status and the physical development of the children population (Santos *et al.*, 2014). Children constitute a high risk group for helminth and protozoal infections. Childbirths are environments where children have been shown to be more susceptible to acquire intestinal parasites because of the ease of interpersonal contact (child-child, child-worker), poorly trained staff and inadequate hygiene conditions inherent in children (Gonçalves *et al.*, 2011). Lima (2013) further reinforces that the prevalence of intestinal parasitoses decreases gradually as socioeconomic and educational conditions increase. In the last three decades, social and economic changes that have evidenced improvements in the health system, water supply and sanitation occurred in the country, suggesting also an impact on the epidemiology of parasitic infections among children (Costa *et al.*, 2013). Moreover, behavioral changes and social status have undergone changes, contemporary parents do not dedicate themselves full-time to the education and care of their child, and it is necessary to delegate this task to others. Nowadays, due to the increasing number of women entering the labor market, day care is a reality in families' lives (Santos *et al.*, 2014). It is the place where many children spend most of their childhood and, with this, it becomes clear the important role that this institution has in the integral development of the child in its physical, psychological, intellectual and social aspects (Magalhães *et al.*, 2013). Thus, considering the harmful effects of enteroparasitoses on infant development and the benefits of early prevention and treatment (MAGALHÃES *et al.*, 2013), the objective of the present study is to review the literature regarding pathological enteroparasites and its impacts on children of preschool age.

MATERIALS AND METHODS

In the literature it can be found two categories of review articles: narrative and systematic reviews (Rother, 2007). Narrative reviews are broad publications, adequate for the description and discussion of the development of a given subject, from a theoretical or contextual perspective. According to the same author (2007), they do not indicate the sources of information used, the methodology for searching for references or the criteria used in the evaluation and selection of studies. This type of review is used to describe the highest level of development of a particular subject. It makes possible to acquire and update knowledge about a particular topic in a short period of time (Botelho *et al.*, 2011). The data research was carried out in the Virtual Health Library (VHL) in march 2018. The descriptors used were: parasites, host-parasite interactions, child, and preschool.

NARRATIVE REVIEW

The high prevalence of enteroparasites has been considered the main cause of morbidity among students of developing countries (Santos *et al.*, 2014). Although very prevalent, these diseases are often underestimated by health professionals, although the morbidity associated with them is significant (Magalhães *et al.*, 2013). Children attending daycare centers are more susceptible to infections than those who are kept in their homes because of the large interpersonal contact provided by collective environments (Santos *et al.*, 2014). In the case of enteroparasitosis, in individuals, mainly in children, malabsorption, chronic diarrhea,

anemia, malnutrition, abdominal pain, concentration deficit, delay in weight development and learning difficulties, which results in low school performance (Magalhães *et al.* 2013). It is very important to prevent children from becoming contaminated, as enteroparasites (intestinal parasites) weaken the body, often resulting in growth retardation, learning difficulties in school and, in the most serious cases, can lead to death (Mamus *et al.*, 2008). It is important to remember that such measures reduce the transmission of all agents considered as enteroaggressors, including, in addition to helminths and protozoa, some species of viruses and bacteria. (Uchoa *et al.*, 2009). However, it is fundamental to practice preventive measures in the family context in relation to parasitic diseases, in relation to the manipulation, storage and preparation of food, conduct with the water to be consumed, as well as knowledge about this type of aggravation to health by a group of people, preferably acquired through an educational process, which enables the individual to change behaviors for the promotion of their health (Barbosa *et al.*, 2009). Even though there is a greater scientific, pharmacological and drug quality provided to the population, there are, however, important deficiencies that can be overcome and discussed, such as social and cultural factors of the individuals studied and their representatives. There are still few studies of coproparasitological research in the Northeastern region, which makes it difficult to know the reality experienced by many cities in the case of infantile intestinal parasitoses (LIMA *et al.*, 2013). After studying such a theoretical reference, it is justified to study this theme to better clarify the characteristics belonging to a specific group of pre-school children. The relevance of the study is directly related to the exchange of knowledge, learning through health education, in order to minimize the risks of transmission of enteroparasitoses. One of the suggestions of Mamus and other researchers (2008) is sanitary education and greater sanitary control of schools and public establishments. One of the nuances of this research project is to carry out activities that involve health education, thus showing a gain for both involved in health promotion.

DISCUSSION

Parasitic infections are a major public health problem in the world, especially in underdeveloped countries (Biasi *et al.*, 2009). According to Gonçalves *et al.* (2011), it has been estimated that intestinal infections by helminths and protozoa affect 3.5 billion people around the world and cause illnesses in approximately 450 million people and the vast majority are children. The study by Uchoa *et al.* (2009) shows that there is an association between intestinal parasites and interferences in the nutritional status and in the growth of humans once they have been detected influence of one on the other. In Brazil, the direct relationship between the socioeconomic development of the populations and the occurrence of parasitoses, which varies considerably in different regions, is also perceptible due to the methodology of the studies carried out (BELO *et al.*, 2012). Biscegli (2009) brings in his study that day care children are more susceptible to infections because of their close contact with other children and adults and often have more gastrointestinal, skin, infectious-contagious, respiratory, including otitis problems. An alarming finding in the literature reveals that "the last multicenter survey of intestinal parasitic infections in Brazil has shown that 55.3% of the children were parasitized, 51% of them with poplartism" (LIMA *et al.*, 2013 apud ROCHA *et al.*, 2000). It is worth noting that children do not have an immune system so apt to recognize and combat these pathogens, which can lead to an exacerbation of the symptoms that are generally presented as manifestations of diarrheal diseases. According to Magalhães and other researchers (2013) the child continues to be the most affected by these pathogens, mainly because they do not yet present hygiene notions formed, greatly increasing the risks of infection. Another

factor considered worrying by Mamus *et al.* (2008), is the ingestion of food contaminated by parasites, which makes this one of the most common means of contamination. "The clinical spectrum of infection by intestinal parasites varies from asymptomatic to a condition characterized by abdominal pain, cramps, nausea, vomiting, diarrhea, anemia, weight loss, lack of appetite and respiratory illness" (Santos *et al.*, 2014). Helminths and protozoa are the types of parasites that cause most illness in humans. Among them are: *Giardia lamblia*, which causes Giardiasis, *Entamoeba histolytica* that causes Amebiasis and *Ascaris lumbricoides* belonging to the class of helminths and has as its habitat the human small intestine. These parasites are distributed in several countries and the most susceptible public is a child in the developmental phase and it is more common to find parasitic infections in those that spend most of their time in contact with a cluster of children, such as day care centers. Neves (2011) shows that the infection of man by *Giardia lamblia*, as well as by other protozoa, occurs in several ways: untreated water intake, contaminated food, from person to person through the hands and in (day care centers, orphanages, etc.). "In Latin America, giardiasis is one of the three causes of morbidity in children 0-5 years old" (Rosa, 2015 and Berne *et al.*, 2014).

About Ascariíase Neves (2011) goes on to say that the laboratory diagnosis is made by the research of eggs in the feces. The clinical picture does not distinguish it from other verminoses, and it is necessary to confirm the finding of eggs in parasitological examination (Brasil, 2010). For this analysis, the sedimentation technique is sufficient, however, WHO recommends the Kato-katz method because this technique allows the quantification of eggs and estimates the degree of parasitism of the carriers (Neves, p.256, 2011). Underdeveloped countries have a higher rate of parasitic infection by amoebae. The mode of transmission is via the fecal-oral route where the human ingests foods contaminated by feces containing mature amebian cysts. "In Brazil, amebiasis is widely distributed. Some studies show that *E. histolytica* is more common in the northern and northeastern regions of the country, with prevalences ranging from 6.8% to 29.35%" (Santos *et al.*, 2013). Although *E. dispar* and *E. histolytica* present morphologically identical species, only the latter is pathogenic (Brasil, 2010). In this sense, learning about the distribution of enteroparasitoses in a given environment is necessary for the knowledge and actions of health promotion and prevention of diseases to be carried out with the populations, with their particularities. It is of fundamental importance to inform about the diseases, their means of transmission and their clinical repercussions that directly imply the quality of life of the studied population.

CONCLUSION

Due to the problem of parasitoses, especially in the children's public and especially in the less favored social classes, the actions developed with this population are of great relevance (Barbosa *et al.*, 2009). Several government programs have been implemented to control intestinal parasites in different countries. Brazil, in 2005, launched the National Program for Surveillance and Control of Enteroparasites of the Ministry of Health with the objective of reducing the prevalence of enteroparasitoses and their morbidity and mortality.

This initiative was based on surveys of the situation of intestinal parasitic diseases in Brazil, from 1980 to 2001, demonstrating that few studies have been done in this period (Lima *et al.*, 2013).

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