Review article

Entamoeba histolytica among Children in some selected States in Nigeria

*Salihu, F., Simeon, C.O., Ayandokun, T.A. and Musa, A.J.

Department of Animal Biology, Federal University of Technology Minna

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SUMMARY

This review investigates the prevalence of *Entamoeba histolytica* among children in selected states in Nigeria, addressing a critical public health concern given the parasite's association with amoebic dysentery and other gastrointestinal complications indicating a significant prevalence rate of *Entamoeba. histolytica* with variations observed through different states in Nigeria reflecting socio-economic factors, sanitation conditions, and healthcare access. 17% was recorded in Niger State also, 26.7% in Lafia Nasarawa State, 72.00% in Abeokuta Ogun State, 64.10% in Imo State, 67.63% in Akure Ondo State, and Borno State which is noticeably higher than other state with the prevalence rate of 80.90%. These findings contribute to the knowledge of *E. histolytica* prevalence and its implications for child health in Nigeria, providing a basis for targeted interventions. The insights from this review aim to inform future research and public health policies targeting the reduction of parasitic diseases in vulnerable populations.

Keywords: prevalence, Amoebiasis, Entamoeba histolytica, children

Corresponding author's email: salihufatima09@gmail.com +2349073486586

INTRODUCTION

A few epidemiological examinations have demonstrated a high frequency of intestinal parasitic infections among Nigerian children [2]. The event bit by bit increases over the span of youth and usually arrives at its greatest predominance in young people [6]. The high prevalence of *E. histolytica* contaminations is firmly associated with poverty, poor personal hygiene, poor environmental hygiene, and poor health care service providers having an inadequate supply of drugs and medication and inappropriate acknowledgment of the transmission systems and life-cycle styles of those parasites [14]. Kids and pregnant women are normally vulnerable to these diseases. School youths, extraordinarily,

are appropriate focuses for mass treatment programme towards intestinal worms because of the reality they are said to have a higher event of the infection [13]. Clinical features of amoebiasis extend

from asymptomatic colonization of amoebic colitis (loose bowels or the runs) and intrusive extraintestinal amoebiasis, which is shown most typically looking like liver abscesses [9].

When the parasites attack the intestinal wall, they arrive at the submucosa and the fundamental veins. From that point, trophozoites venture into the blood to sites alongside the liver, lungs or pores, and skin. Encystation happens in the intestinal lumen, and sore arrangement is whole when 4 nuclei are produced. These infective growths are passed into the environment in human feces [17].

LITERATURE REVIEW

Entamoeba histolytica is essentially associated with employing the ingestion of food and water that are faecally contaminated with the cysts of the parasite [11]. In Nigeria, the prevalent and widespread of amoebiasis has been attributed to many environmental sources of transmission [2]. A few reports have perceived amoebiasis as a significant medical issue, particularly among young children in developing nations. *Entamoeba histolytica* is well recognized as a pathogenic amoeba associated with intestinal (amoebic colitis) and extra-intestinal (liver abscess) infections [20]. Amoebiasis is more common in areas of poor sanitation and nutrition particularly in the tropics [21]. About 10% to 20% of people infected with *E. histolytica* become ill. Even then, symptoms are often mild and develop within two to four weeks but can show up later [7].

Amoebiasis has high morbidity and mortality rates In Africa, Asia, Central America, and South America [20]. It is ranked the third most important parasitic disease after malaria and the second protozoan disease to schistosomiasis, and 100,000 deaths occur annually due to the disease [22]. The major cause of transmission is poor sanitation, particularly

where food and water are concerned. [22] Reported that *Entamoeba histolytica* affects approximately 500 million people worldwide, resulting in symptomatic diseases in 50 million and mortality rate in about 100,000 individuals [12] About 80-90% of infections were asymptomatic and are likely due to the nonpathogenic species *E. dispar* or *E. moshkovskii*. Therefore, the worldwide incidence of *E. histolytica* is more likely estimated to be 5 million cases annually, with global mortality still at 100.000 persons per year. More than any other causes, parasitic diseases are contributing significantly to the burden of illnesses, leading sometimes to death, and affecting people in developing and developed world, even in regions that include high-income countries [23]. Intestinal Amoebiasis can penetrate the epithelium and inhabit the lumen of the human gut. When *E. histolytica* trophozoites penetrate the walls of the large intestine and proliferate in the mucosa, producing ulcers, amoebic dysentery results. The most common signs of infection include abdominal pain, weight loss, diarrhea, colitis, and a flatulent stomach. A common and potentially deadly result of amoeba invasion of tissues is liver abscesses. The disease produces histolysin, which breaks down the affected person's stomach; therefore, the Latin term histo (tissue) lytica (destruction) [22]. Intestinal amoebiasis is frequently asymptomatic. Symptomatic cases vary from dysentery with fever, chills, and bloody or mucoid diarrhea alternating with periods of constipation. Also, the invasive infection

can cause severe amoebic dysentery and extra-intestinal amoebiasis occurs when the parasite invades other organs such as the liver, lung, or brain causing abscesses [5]. Only approximately 10% of *E. histolytica-infected* individuals show clinical symptoms with intestinal and/or extra-intestinal pathology. The prevalence of infection caused by *E. histolytica* is very low in industrialized countries (about 1%) and high in tropical countries (about 50–80%). Clinical presentation of the intestinal infection may include abdominal discomfort, weakness, malaise, and constipation that may alternate with diarrhea, dysentery with the passage of exudates, blood, and mucus, as well as colicky abdominal pain. Systemic signs of infection include fever,

rigors, and polymorphonuclear leukocytes while liver abscess results from infection through the intra-hepatic portal vessels. *E. histolytica* infection is found in over 50% of the patients with acute diarrhea [17]. Amoebiasis which is caused by *Entamoeba histolytica* is a global health problem, as it is responsible for more than 100,000 deaths per year and is the third leading cause of global death due to protozoa after malaria [15]. Amoebiasis is a major problem in developing countries such as Nigeria; this is primarily because of inadequate sanitation and contaminated food and drinking water [1]. The rate of infection by *E. histolytica* differs among countries and is dependent on the socio-economic and sanitary conditions of the populations [3]. *Entamoeba histolytica* is highly endemic throughout poor and socio-economically deprived communities in the tropics and subtropics. Environmental, socio-economic, demographic, and hygiene-related behavior is known to influence the transmission and distribution of intestinal parasitic infections [15]. Clinical features of amoebiasis range from asymptomatic colonization of amoebic colitis and invasive extra-intestinal amoebiasis, which is manifested most commonly in the form of liver abscesses [1]. Once the parasites invade the intestinal wall, they reach the sub-mucosa and the underlying blood vessels, from there, trophozoites travel in the blood to sites such as the liver, lungs, or skin. Encystations occur in the intestinal lumen and cyst formation is complete when four nuclei are present, these infective cysts are passed into the environment in human feces and are resistant to a variety of physical conditions. *Entamoeba histolytica* is transmitted through the ingestion of food and water that are faecally contaminated with the cysts of the parasites [19]. Studies have identified drinking water inadequately treated, ingestion of raw vegetables, and low socio-economic status as risk factors for infection in addition to failure to wash hands before eating [4]. This study intends to fill the knowledge gap and provide data on the prevalence of *Entamoeba histolytica* that will be used in planning intervention strategy.

Prevalence Rate of *E. histolytica*

Entamoeba histolytica is estimated to infect about 35-50 million people worldwide [18]. About 50% of the population in Africa has been recorded to suffer from amoebiasis [10]. In Nigeria, the overall prevalence recorded was 11.2%, this prevalence increased quickly among young age groups and no real difference between genders. Prevalence is high among families who ate together from the same plate, those who ate with their fingers, and also among those who ate away from home. In Jos plateau state, the prevalence of *E. histolytica* among

children is 17.0% [8]. 17% was recorded in Niger State also, 26.7% in Lafia Nasarawa State, 72.00% in Abeokuta Ogun State, 64.10% in Imo State, 67.63% in Akure Ondo State, and Borno State which is noticeably higher than other state with the prevalence of 80.90% [16].

DISCUSSIONS

The prevalence of *Entamoeba histolytica* among children in selected states in Nigeria highlights a pressing public health issue that requires immediate attention. This review indicates a notable proportion of the pediatric population is at risk for amoebic infections. This finding aligns with previous studies that have documented similar trends across various regions in Nigeria and other developing countries.

This review examines the prevalence, risk factors, and public health implications of *Entamoeba histolytica* infections among children in Nigeria, with a focus on studies conducted in plateau state, Nasarawa State, Niger State, Ogun State, Borno State Imo State, and Ondo State.

Several factors contribute to the observed prevalence. Socioeconomic status plays a crucial role, as children in lower-income households often face inadequate access to clean water and sanitation facilities. The stark differences between urban and rural prevalence rates suggest that rural areas, characterized by poorer sanitation and hygiene practices, are particularly vulnerable. This highlights the need for targeted interventions that focus on improving water quality and sanitation infrastructure in these regions.

Moreover, the role of education cannot be overstated. Many caregivers may lack awareness regarding the transmission and prevention of *E. histolytica* infections. Public health campaigns aimed at educating communities about proper hygiene practices, such as handwashing and safe food preparation, could significantly reduce transmission rates. Integrating these educational efforts into school curricula could also empower children to adopt healthier practices. The insights from this review aim to inform future research and public health policies targeting the reduction of parasitic diseases in vulnerable populations.

CONCLUSIONS

In conclusion, the prevalence of *Entamoeba histolytica* among children in Nigeria underscores the urgent need for multi-faceted public health strategies. Addressing socio-economic disparities, enhancing educational initiatives, and improving healthcare access which is a critical step toward reducing the burden of this infection and improving overall child health in the region.

Recommendations

Strengthening Sanitation and Water Quality:

Implement infrastructure projects to improve access to clean water and sanitation facilities, particularly in rural areas. Regular maintenance and monitoring of water sources should be prioritized to ensure safety and accessibility.

Enhance Public Health Education:

Develop and disseminate educational materials that focus on hygiene practices, such as proper handwashing, safe food preparation, and the importance of using clean water. Workshops and community outreach programs should target caregivers and children.

Integrate Health Education into School Curricula:

Introduce health education programs in schools to teach children about the prevention of infections like *Entamoeba histolytica*. Empowering children with knowledge can encourage healthier behaviors within families.

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