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Article

Dysentery Disease Prevalence Among Pediatric Population Under 12 Years of Age

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Abstract: Amebiasis, caused by the protozoan parasite Entamoeba histolytica, poses a significant health concern in developing countries, particularly among children with clinical symptoms of diarrhea. However, there is a lack of comprehensive data on its prevalence in specific regions and age groups. This study aimed to address this gap by determining the prevalence of E. histolytica from January 2018 to December 2021 among children with diarrhea symptoms at Al-Hussein hospital in Nasiriyah city, Thi-Qar Province, Iraq. A total of 9168 stool samples were collected and directly examined, revealing a higher prevalence of E. histolytica infections in males compared to females, with a notable increase in infants under one year old. Additionally, the study examined injury statistics across different age and gender groups. Results indicate a higher incidence of infections in the 45–15 age group, with the lowest cases observed in children under one year old. Notably, in 2020, there was a complete absence of infection, suggesting potential interventions' effectiveness. These findings underscore the need for targeted public health interventions to mitigate the spread of E. histolytica infections, especially among vulnerable populations.

Keywords: Prevalence, Entamoeba histolytica, Nasirah city.

1. Introduction

Entamoeba histolytica, a protozoan, causes amoebiasis, a parasitic infection. [1]. Entamoeba histolytica is the causative agent of amoebiasis and continues to be one of the leading three parasitic causes of death globally . The genus Entamoeba comprises many species that parasitize a range of animals, including reptiles, birds, amphibians, and others. Researchers have extracted approximately seven species from the gastrointestinal tract of humans. The species include E. histolytica, E. dispar, E. moshkovskii, E. coli, E. polecki, and E. hartmanni. Humans' oral cavity contains E. gingivalis. E. histolytica is the sole identified harmful species among the amoebae found in the human intestine. However, some members of this species exhibit aggressive behavior, and researchers have linked these individuals to the occurrence of clinical reactions. The parasitic organism E. invadens commonly infects reptiles and serves as a model for in vitro research on pathogenic Entamoeba [2]. Intestinal amoebiasis often does not show any symptoms. Symptomatic patients exhibit a range of symptoms, including dysentery accompanied by fever, chills, and episodes of bloody or mucoid diarrhea interspersed with intervals of constipation [3]. Also, invasive infection can cause severe amoebic dysentery and extraintestinal amoebiasis occurs when the parasite invades other organs such as liver, lung or brain causing abscesses [4]. Around 10% of patients infected with E. histolytica have clinical symptoms characterized by intestinal and/or extraintestinal

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disease [5]. Fecal matter transfers infectious cysts, which then mature into invasive trophozoites (amoebae) in the terminal ileum. E. histolytica primarily lives asymptomatically in the large intestine. However, due to unidentified signals, the amoebae infiltrate the mucosa and epithelium, causing intestinal amoebiasis. E. histolytica has many mechanisms to cause disease by attaching to the lining of the intestines and breaking down proteins in the surrounding tissue. This leads to the formation of lesions and abscesses, as well as an intense inflammatory response by the host [6]. Common risk factors typically encompass:Visiting or residing in regions with an elevated prevalence of amebiasis, particularly in underdeveloped nations,i inadequate hygiene and waste management, inadequate access to potable water, ingesting food or beverages that have been polluted, direct exposure to an individual who is carrying a contagious disease. Insufficient adherence to personal cleanliness practices, inadequate hygiene measures are taken when washing hands, immunodeficiency, being afflicted with a chronic illness such as diabetes or HIV, utilization of antibiotics that can disrupt the equilibrium of the intestinal microbiota, consuming uncooked or insufficiently cooked meat, particularly pork, ingesting uncooked fruits and vegetables that have been rinsed in water that is polluted, in vulnerable regions, non-packaged or tap water is used, occupying or residing in densely populated environments and consuming street foods that are nutritionally deficient [7-10].

Annually, this protozoan is responsible for causing 40,000 to 100,000 deaths, making it the second leading cause of patient mortality after malaria[11-12]. According to a prior report, invasive amebiasis occurs in less than 10% of patient infections [13]. Amebiasis has a global presence and is highly prevalent, posing a significant public health issue in low- and middle-income developing countries in tropical regions. In densely populated areas with poor sanitation and limited access to clean water, the disease particularly spreads through the ingestion of food or water contaminated with cysts from the protozoan [14-16] Conversely, more affluent nations rarely observe this infection, but they are experiencing an epidemiological expansion. Specifically, recent immigrants from locations where the disease is prevalent (or individuals who have traveled and stayed for an extended period in such regions) are at a higher risk of having amebiasis [17-18]. It is advised to maintain a vigilant attitude towards amebiasis in certain high-risk groups, including men who engage in sexual activity with other men, individuals with acquired immunodeficiency syndrome or HIV, people with weakened immune systems such as those with cirrhosis, and individuals living in group homes or mental health facilities [19].

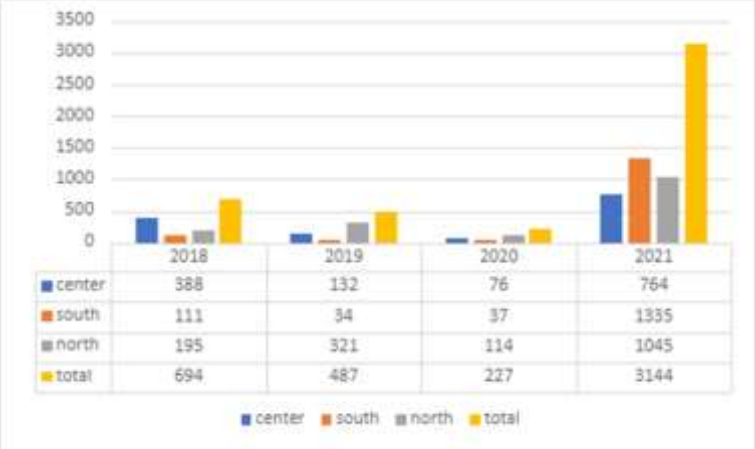
Specifically, in Japan, there have been a significant number of recorded cases of patients infected with HIV-1 who also regularly experienced subclinical amebiasis [20]. In addition, asymptomatic individuals infected with HIV-1 who have a high anti-E. histolytica titer run a risk of invasive amebiasis, most likely as a result of subclinical amebiasis exacerbation [20]. In Western countries, the relatively low number of cases and the long time it takes for symptoms to appear after being infected with the underlying pathogen pose a danger of delaying the diagnosis of amebiasis and, consequently, poor treatment. Moreover, pregnancy has been identified as a contributing factor to the risk of invasive amebiasis, making the management of pregnant patients particularly intricate. The main cause of death from amebiasis is mostly due to infections that occur outside of the intestines, with the most frequent type being amebic liver abscesses (ALAs) [21].

2. Materials and Methods

Thi-Qar is an expansive province in Iraq's southern region. The coordinates of its location are 31°14'N, 46°19'E. Approximately 2 million individuals inhabit the entire land area of 12,900 square kilometers. It has internal borders with Basra, Missan, Wassit, and Muthanna Provinces. Nasiriyah is the provincial capital. The climate in Thi-Qar Province is characterized by a brief winter and an extended, scorching summer, accompanied by a gradual decrease in precipitation over the course of the year. The epidemiological

statistics were acquired from the public health department of the Thi-Qar Health Office for the period of 2018–2021. Additionally, from February 2018 to October 2021, we randomly collected stool samples from individuals experiencing diarrhea at various hospitals.

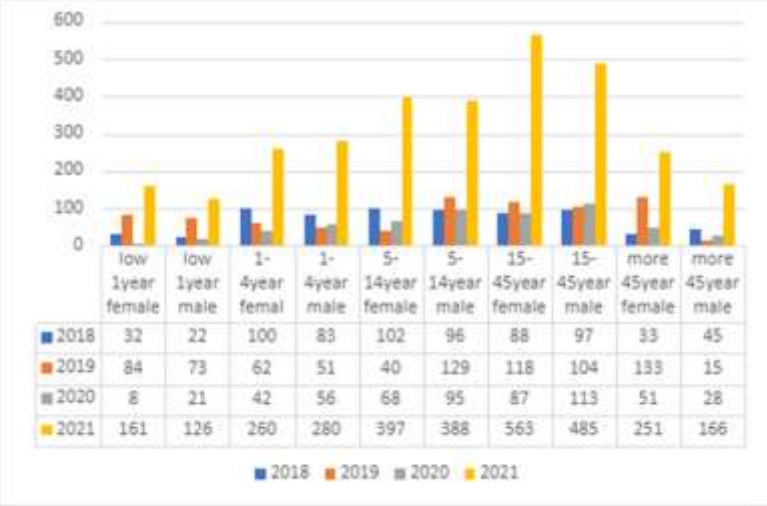
3. Results and Discusion



	2018	2019	2020	2021
center	388	132	76	764
south	111	34	37	1335
north	195	321	114	1045
total	694	487	227	3144

Figure (1): Total infections distribute according to residence area and study years

In this study, there were 9168 patients who visited Al-Hussein hospital from different areas in Nasirah city. The epidemiological information has collected from patient records for the period from 2018 to 2021. Results in figures (1) it is reported in 1260 patients living in city center, in 1497 patients living in north and, in 1827 living in south. We note that the incidence in the northern regions is the highest, while the incidence in the central regions is less than the northern and southern regions in Dhi Qar.



	low 1year female	low 1year male	1-4year femal	1-4year male	5-14year female	5-14year male	15-45year female	15-45year male	more 45year female	more 45year male
2018	32	22	100	83	102	96	88	97	33	45
2019	84	73	62	51	40	129	118	104	133	15
2020	8	21	42	56	68	95	87	113	51	28
2021	161	126	260	280	397	388	563	485	251	166

Figure (2): Show relationship between infection numbers and age groups

The present study examined the prevalence of this parasite across different age groups, specifically those under one year old and those over 45 years old. The goal was to establish a significant correlation between parasite spread, age, and gender. The findings revealed that there were 370 cases of amebiasis in infants of both sexes. From ages 4 to 15, the number of infections increased to 821, and from ages 14 to 45, it further rose to 1146. In the age group of 45–15 years, there were 1433 infections, while among individuals over 45 years old, there were 574 infections. These statistics indicate a higher

prevalence of infections in the 45–15 age group, with the lowest number of cases observed in children under one year old. Research and studies have revealed the following injury statistics: Men under the age of 285 experienced 464 injuries, while women under the age of 242 experienced 470 injuries. In the age group of 5–14, men suffered approximately 607 injuries, while women suffered 708 injuries. Among individuals aged 15–45, men experienced 856 injuries, while women experienced 799 injuries. Men over the age of 45 reported 468 injuries, while women over the age of 254 reported an unspecified number of injuries [22].

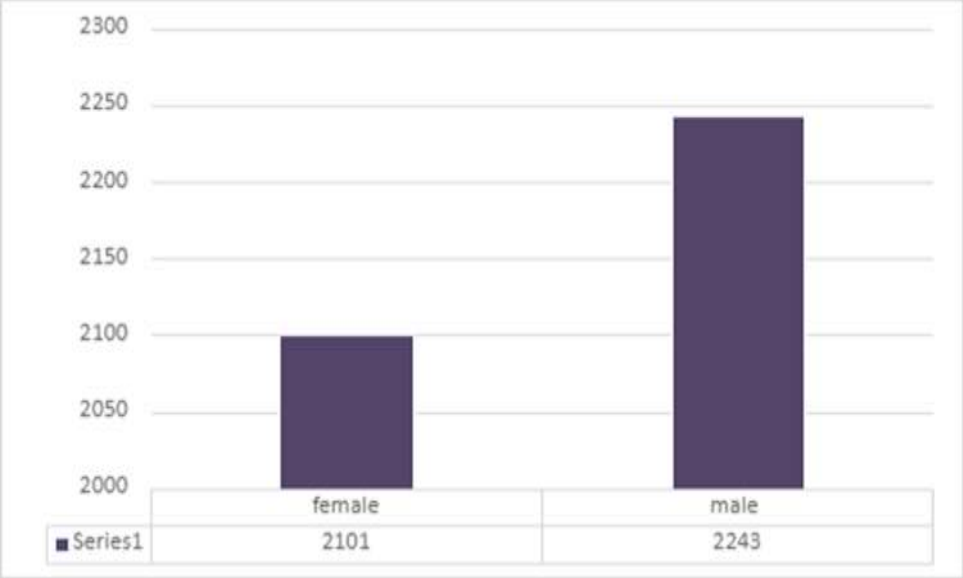


Figure (3): Show total infections according to gender

Between 2018 and 2021, a total of 2,101 male patients and 2,243 female patients received a stool examination in the clinics and hospitals of Dhi Qar province.The term "gender 4344" refers to a specific concept or category related to gender.The incidence of injuries in males is greater than the incidence of injuries in furniture.The results were in line with the reported prevalence of 0.92% of E. In Dhi Qar, a province in Iraq, 28.3% of pre-school children were found to have intestinal parasites. Among these parasites, the incidence of histolytica was observed at 57.6% in children who had been attending school for one year[23].

4. Conclusion

In 2020, we will have noticed a complete absence of infection. This may pertain to significant indications. Amoebiasis has affected individuals of all age groups, although the majority of infections have been observed in those between the ages of 14 and 45.The guys were shown to have a significant proportion.

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