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Current dispersal of helminths infections at Al-Sadr Teaching Hospital in province Al-Najaf al-Ashraf Iraq

Muna Hashim Ghazzay [1], Munaf M. Naji [1,*], Ali R. Alaraje [2] and Walaa hasan aljabbas [2]

[1] *Department of Clinical and Laboratory Sciences, College of Pharmacy, Kufa University, Najaf, Iraq.*
[2] *Department of Biology, University of Kufa, Faculty of Science, Iraq.*

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Abstract

Helminthes parasite is the cause of infectious disease globally and has been a public health issue in developing countries. Long-term infections may lead to severe complications and complex symptoms. The study aims to control the dispersal of helminthes infection in the province during 2024 Al-Najaf Al-Ashraf /Iraq. Methodology: The results of 632(100%) stool examinations of males and females of all ages from February to October 2024. Collected from the registers of the laboratories at Al-Sadr Teaching Hospital in the province of Al-Najaf al-Ashraf, Iraq, from February until October 2024. analyzed with the use of Chi-X2 with a P value ≤0.0001 to explain differences in statistical significance for parasitic helminthes infections. Result: The overall dispersal of helminthes infections was 428(100%). Enterobiasis was the most common helminthes 403(94.2%) whereas Ancylostomiasis and Trichuriasis 4(1.0%) had less dispersal. high infections among the age group of 5 to 45 years whereas a decrease in ages 1-4 and ≥ 45. Helminthes parasitic infections were higher in females 222(51.9%) than males 206(48.1%). Also, Prevalence of helminthes parasitic was low in July and high in February. Conclusion: Helminthes parasitic infection remains an important health problem in the province. So, there is still a need for prevention efforts in the community. The study explained that parasitic helminthes infections are general in all age groups in Al-Najaf City, and the infections it related to sex, age, and months of the year.

Keywords: Dispersal; Parasitic; Helminthes; Najaf; Iraq

1. Introduction

Parasitic helminthes infections are a public health problem globally, mostly in tropical and subtropical states in some continents of Africa, Asia–Pacific, and South America [1]. Parasitic helminthes have been divided into 2 main groups, (roundworms) nematodes, and (flatworms) overall trematodes and cestodes, which cause unhealthy effects on humans [2]. The more apprehension is soil-transmitted helminthes (STHs) that involve three major parasites, a great" roundworm"Ascaris lumbricoides, "whipworm" Trichuris trichiura and hookworms (Ancylostoma duodenal) and (Necator americanus). The overall estimation of STH infection has approximately 1.5 billion people in the last ten years but nowadays the situation danger still endures [3]. Soil-transmitted helminths can be transmitted effortlessly by connecting by soil, drinking water, and ingesting contaminated foods containing the infective stage of the parasite [4]. The symptoms range from mild to acute complications like mild anemia, malnutrition, frequent diarrhea, parasitic dissemination, intestinal obstruction, visceral organ failure, and death occasional [1].

The helminths are transmitted between people by oral-fecal [5]. Helminth infection affects all age groups, although children are unevenly affected due to the environment and socio-economic risk factors. These include limited access to education, poor individual hygiene practices, poverty, insufficient hygiene infrastructure, lack of safe drinking water, and inadequate housing conditions. Such infections cause significant health burdens and contribute to anemia, iron deficiency, malnutrition, and impaired physical and cognitive development in children. Clinical manifestations such as abdominal pain, dyspepsia, and developmental disabilities increase long-term health and development results [6].

* Corresponding author: Munaf M. Naji.

The main species of intestinal helminths that cause digestive disorders are *E. vermiculates, Ascaris lumbricoides, Strongyloides stercoralis,* and hookworms [6]. The dispersal of helminth infections has large public fitness importance because of their relation to socioeconomic and environmental factors, cleaning stage, and schooling inside the community. Contribute Intestinal helminthiases to terrible nutritional reputation in infected kids due to their damaging outcomes on meal consumption, everyday nutrient absorption, and immunity [7]. Nutritional impairment is most related to persistent helminthiasis, as with one's hardships from protein-strength malnutrition, iron-deficiency anemia, and vitamin A deficiency, the severity of the contamination relies upon the stress's virulence, host susceptibility, and immune condition, and mixed infections [8]. It has been documented that the traditional remedy of consuming wastewater isn't always continually sufficient for the destruction of protozoan oocysts and helminth eggs [9]. Incorrect landfilling of human and animal feces is also diagnosed as a probable supply of infection of water assets and recreational waters, which includes swimming pools, water parks, and lakes [10]. Sometimes sewage overflows also contribute to the pollutants of groundwater and farmland, which ends up in the possibility of capability human infections food infections also can occur for the duration of food processing, directly by contaminated equipment or washing water or indirectly by contaminated irrigation water [11].

1.1. Prevention of worm infection

Many intestinal helminths can be killed by being treated with Albendazole or Mebendazole, which can control the disease with this treatment in affected populations, although reinfection is not unusual, and long-term prevention strategies are important to halt the unfolding of those worms The individuals should wash their arms with cleaning soap and water after defecation and earlier than meals, at the same time as children require supervision, and consuming well-cooked and washed vegetables is crucial as well as due to the longer time wished for advanced sanitation and water supply, proactive private hygiene measures are important to prevent infections[12]. Intestinal helminth worm infections disproportionately affect sanitation-conscious individuals and college-aged kids, specifically in low- and middle-earning countries (LMICs), wherein overburdened sanitation infrastructure and dangerous water get admission to facilitate transmission globally; about 27% of preschool and school-age kids require anti-helminthic remedy; stepped-forward hygiene practices can mitigate transmission; the World Health Organization (WHO) advocates region-unique preventive chemotherapy in endemic areas; in areas with ≥20% contamination incidence, annual mass drug management (MDA) is recommended, escalating to biannual treatment in high-risk zones with ≥50% [13].

Epidemiological data on parasitic infections is still lacking in certain regions. This study aims to determine the prevalence of some helminth parasite infections according to the type and relate such infections and age, sex, and month in Al-Najaf province, Iraq.

2. Materials and methods

2.1. Data collection

The data for the current study were collected from the Helminthes Unit of the laboratories at Al-Sadr Teaching Hospital in the province of Al-Najaf al-Ashraf, Iraq, from February until October 2024. The information was organized based on infections with helminthes in both genders and across all age groups. During the study, 632 patients were seen, and 428 were cases positive. The fecal specimens were investigated for parasitic helminths with different methods like microscopic screening of immediate moist smear, enrichment helmintho-ovoscopic way [sedimentation, flotation, formalin- ether concentration way], staining with Lugol's iodine, helmintho-larvoscopy by the way of Berman and Harada-Mori, the perianal tape for the see of Enterobius vermicularis ova.

2.2. Statistical analysis

Data collected from patients was analyzed with the use of Chi-X^2 with P value ≤0.0001 to explain differences in statistical significance for parasitic helminthes infections according to age groups classified into four age groups: 1-4, 5-14, 15-44, and ≥ 45 years, sexes, and months

3. Results

The present study reported infections of parasitic helminthes at Al-Sadr Teaching Hospital in the province of Al-Najaf al-Ashraf, Iraq, from February until October 2024. The overall number of patients examined during the period of study was 632 patients, with 428 positive samples. Table (1) showed that the highest dispersal of helminthes infections the parasitic according to age was in Enterobiasis it was a total of 403(94.2%) infections, and lower infection Ancylostomiasis and Trichuriasis 4(0.9%). as well as appear the relationship between parasitic helminthes infections

and the age groups it showed the high was infection age at the15-44 year 187(43.7%) infections and lower in ≥ 45 year 43(10.0%) infections (Figure 1). This is an indicator of statistically significant differences using chi-square, P value ≤0.0001. Also, Enterobiasis has the highest dispersal according to age groups. It was reported in 176 cases (41.1%) in ages 15-44 years, and decreased in the age ≥ 45 years 41(9.6%).

Table 1 Dispersal of helminths infections according to age

Types of parasitic helminthes	1-4	5-14	15-44	≥ 45	Total
Enterobiasis	59(13.7%)	127(29.7%)	176(41.1%)	41(9.6%)	403(94.2%)
Hymenolepiasis	1(0.2%)	6(1.4)	4(0.9%)	1(0.2%)	12(2.8%)
Ancylostomiasis	0(0%)	1(0.2%)	2(0.5%)	1(0.2%)	4(0.9%)
Trichuriasis	0(0%)	2(0.5%)	2(0.5%)	0(0%)	4(1.0%)
Schistosomiasis	0(0%)	2(0.5%)	3(0.7%)	0(0%)	5(1.1%)
Total	60(14.0%)	138(32.3%)	187(43.7%)	43(10.0%)	428(100%)

X^2= 85.3, ***df*** = 12, ***P* value** ≤0.001

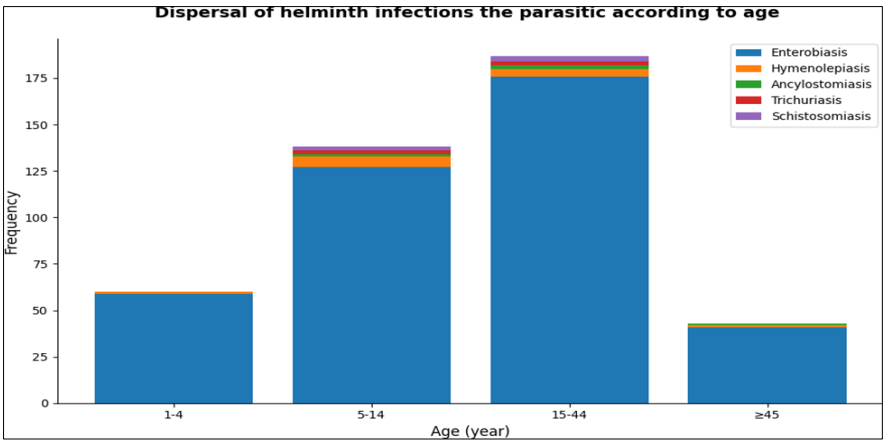

Figure 1 Dispersal of helminthes infections the parasitic according to age

Table (2) showed the relationships between sexes and parasitic helminthes infections in 428(100%) samples, where infection in females 222(51.9%) are higher than the males 206(48.1%), this is a statistically significant difference using chi-square, P-value ≤0.0001. There was also a high parasitic helminthes infection in females by Enterobiasis reaching 216(50.5%) in females while decrease by Ancylostomiasis 0(0.0%).In males, was inection high by Enterobiasis reaching 187(43.7%), and low by Trichuriasis 2(0.5%) figure (2).

Table 2 Dispersal of helminths infections according to sex

Types of parasitic helminthes	Sex		Total
	Male	Female	
Enterobiasis	187(43.7%)	216(50.5%)	403(94.2%)
Hymenolepiasis	10(2.3%)	2(0.5%)	12(2.8%)
Ancylostomiasis	4(0.9%)	0(0.0%)	4(0.9%)
Trichuriasis	2(0.5%)	2(0.5%)	4(1.0%)
Schistosomiasis	3(0.7%)	2(0.5%)	5(1.1%)
Total	206(48.1%)	222(51.9%)	428(100%)

X^2= 10.93, ***df*** = 4, ***P* value** ≤ 0.027

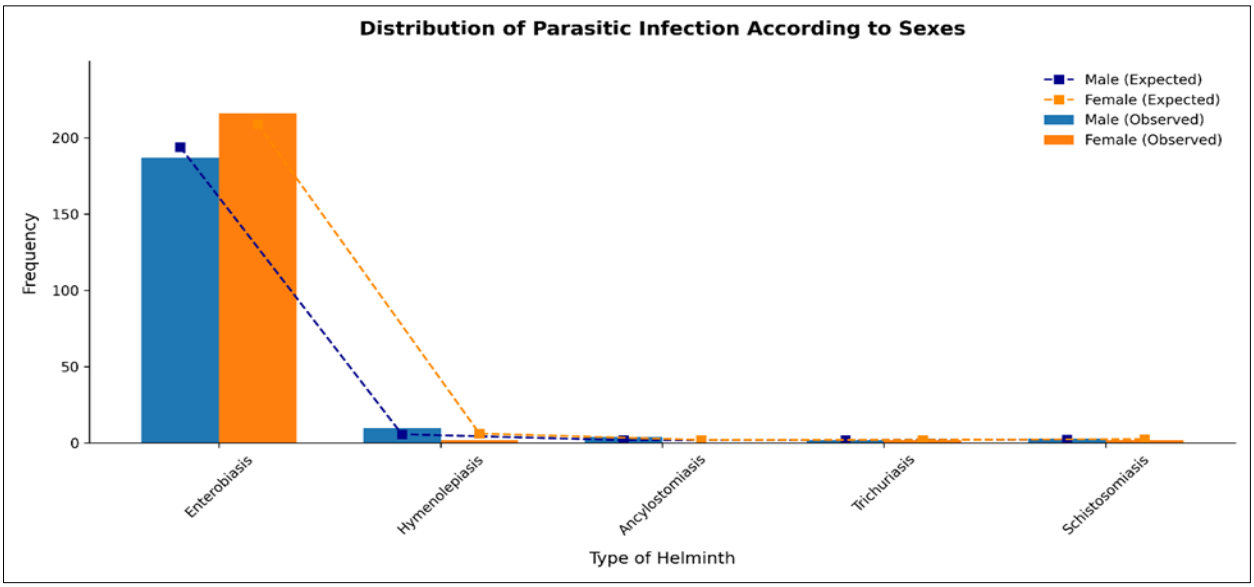

Figure 2 dispersal of helminths infections according to sex

Table (3) shows the relationships between month's year and parasitic helminthes infections in 428(67.8%) samples Number examined (positive), where high infection in February 93(14.7%), April 116(18.4%) and May 80(12.7%) In contrast, low in all from August 8(1.3%), September 61 (9.7%) and October 9 (1.4%)this is a statistically significant difference using chi-square, P-value ≤0.0001, as well as show table 3 the number examined(total) was in April 116(18.4%) whereas was lower it in July 15 (2.4%) Figure (3)

Table 3 Dispersal of helminths infections according to months

Months	Number of infected	Number of uninfected	Number examined (Total)
February	93(14.7%)	17(2.7%)	110(17.4%)
March	59(9.3%)	24(3.8%)	83(13.1%)
April	75(11.9%)	41(6.5%)	116(18.4%)
May	80(12.7%)	26(4.1%)	106(16.8%)
June	41(6.5%)	10(1.6%)	51(8.06%)
July	2(0.3%)	13(2.1%)	15(2.4%)
August	8(1.3%)	18((2.8%)	26(4.1%)
September	61(9.7%)	44(6.9%)	105(16.6%)
October	9(1.4%)	11(1.7%)	20(3.1%)
Total	428(67.8%)	204(32.2%)	632(100%)

X^2= 107.65, ***df*** = 8, ***P* value** ≤ 0.001

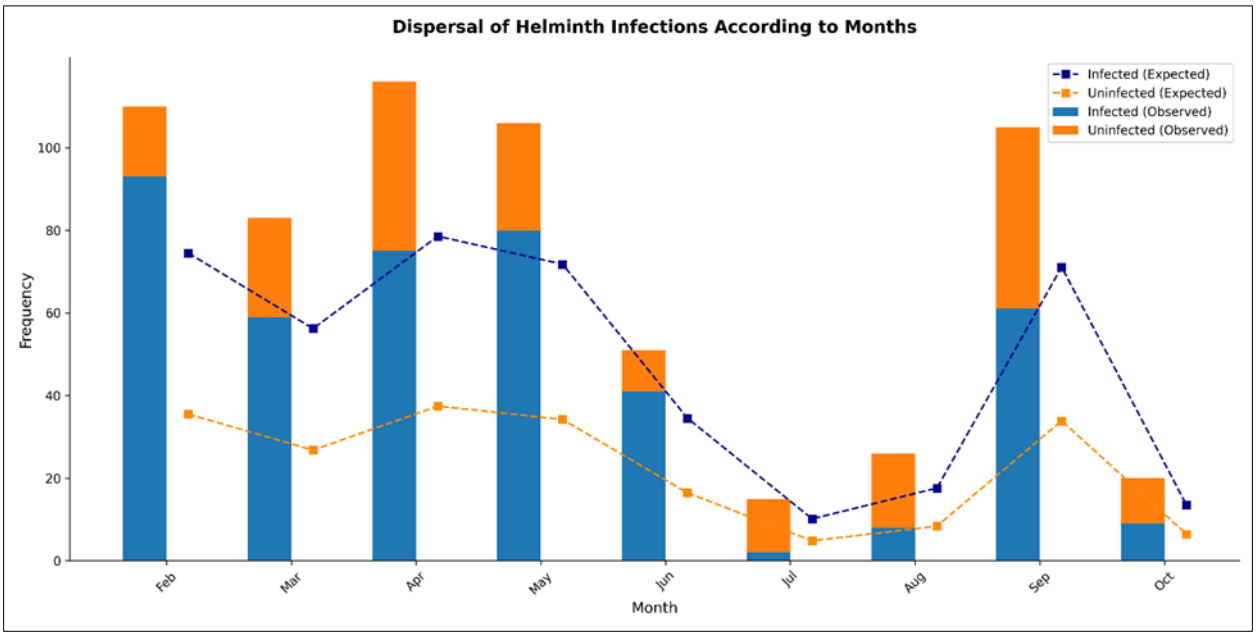

Figure 3 Dispersal of helminths infections according to months

4. Discussions

Parasitic helminthes infection is one of the global health issues, particularly in developing countries that are not only the cause of death but also the genesis of economic losses worldwide [14]. World Health Organization has evaluated that more than two billion person are infected with a parasitic organism, the majority of helminthes including soil-transmitted helminthes such as carcinogenic liver flukes and flatworm parasites, mostly Schistosoma spp. [15]. This study shows the overall dispersal of helminthes infections the parasitic at Al-Sadr Teaching Hospital in Al-Najaf al-Ashraf Iraq. The exam had a total of 632(100%) samples during the period from February - October 2024. The number of infected was 428 (67.8%) Males and females from different age groups and 204 (32.2%) were uninfected.

Our study showed that the dispersal type of parasitic helminths is Enterobiasis 403(94.2%). The widespread nature of these intestinal helminths may be due to the simple life cycle, which does not need an intermediate host; as well as the high efficiency of transmission mechanisms, which are transmitted broadly via the fecal-oral route, either directly from humans to humans or indirectly through ingestion of contaminated food or water [16].

Our study reported 60 (14.0%) infections among children aged 1-4 years, which was lower than the total infection rate of (37.5%) among children in Diyala province, as reported by [17]. As well as in Baghdad province was reported (24.39) [13]. In our study, observed non-significant differences in P value ≤0.001 between the age groups 5-14 and 15-44. The intensity of infection reached 138 (32.3%) and 187(43.7%) higher than the age groups; these results agree with [18]. This might be due to these groups' high activity and behavior; they usually play, move around, and cover greater areas which leads to an increased risk of infection. Also, we found that males and females in different age groups were susceptible to infection since they all lived in the same environment. However, variable infection rates across genders may be due to behavioral patterns, immunological profiles, and endocrine function, since male bodies are more tolerant than female ones [19].

The variation in the percent of helminth parasitic infections between the study months was recorded in the winter, February 93 (14.7%) Maximum peaks of Helminthus parasites were recorded, which is the rain month in al Najaf province. These results agree with those reported in Naynawa city in Iraq [20]. And in Spain [21]. Which reported high infection rates during the rainy season. While the minimum peak was seen on March and July 2 (0.3%). These differences were statistically significant with a P-value ≤ 0.001, which suggests that the climate plays an important role in the dispersal of helminth worm infection.

5. Conclusion

Helminth parasitic infection persists as a major health problem challenge in the province. So, by necessity, there is a need for prevention in the sustained-based community. Also, our study demonstrates that parasitic helminth infections are common in all age groups in the al-Najaf province, and these infections are related to sex, age, and months of the year

Compliance with ethical standards

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Disclosure of conflict of interest

The authors of this paper claim that he has no monetary or personal dealings with individuals or groups that might unacceptably bias the content material of this paper and, therefore, declare that there is no conflict of interest

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