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Incidence of helminthiasis in humans in Iraq

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Abstract

Background: The biggest problems facing the medical parasitologist are the problem of controlling the spread of human worms. This study aims to estimate the prevalence and infection intensity of soil-transmitting helminthes (STHs) and other helminthes in Iraqi governorates in 2016.
Methods: The data was obtained from Communicable Diseases Control Center through the period from January to Jun, 2016.
Results: The results showed that individuals were infected with Ascariasis (40), (20), (6) (7) and 90 individuals infected with Hymenolepiasis. 78,486 individuals were infected with Enterobiasis, 7 cases were infected with *Taenia solium*.
Conclusion: This study demonstrates that Enterobiasis is the most common helminthic disease in Iraq in 2016 followed by Hymenolepiasis and Ascariasis. Moreover, the prevalence of helminth infections was higher in patients with age group between-14 years who did not have awareness enough for personal hygiene.
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Keywords: Epidemiology; Transmitting helminthes; Iraq; 2016

1. Introduction

Helminthes infections are a major public health problem [1]. The soil transmitted helminthes like *Ascaris lumbricoides*; *Trichuris trichiura*; *Necator americanus* and *Ancylostoma duodenale* are frequently considered together because infection is diagnosed by the same laboratory method and treated with the same drugs. The nematode *Strongyloides stercoralis* can also be considered a soil-transmitted helminthes. Helminthes infections caused by STHs are among the most prevalent diseases of humans who live in areas of poverty in the developing world [2]. The population at risk of STH is mostly represented by preschool-age children, school-age children and women of child-bearing age living in an endemic area. These groups are those in a critical period of growth and development and are therefore at increased risk of adverse health consequences caused by STHs [3].

Ascaris lumbricoides is the world's most common helminth that generally affects children [4] and is infecting about a quarter of the world's population. Prevalence is high wherever there is poor hygiene and sanitation or where human faeces are used as fertilizer. Infection follows ingestion of embryonated in contaminated food [5]. *Trichuris trichiura* is prevalent

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in tropical and subtropical regions of the world with poor sanitation. The infection is acquired by ingestion of contaminated water or foods and infections are asymptomatic. However, when it progresses from light to heavy infection, specific diseases manifest [6]. *Ancylostoma duodenale* is one of the most prevalent worms. Infection usually occurs as the result of larval penetration of the skin causing allergy and sensitivity leading to the appearance of maculo-papular rash with itching [7]. *S. stercoralis* is an intestinal parasite; it can cause infection and develop chronic disease. It has been estimated that 30–100 million people are infected around the world by this helminth, especially in tropical and subtropical regions. The infection is ranging from asymptomatic to chronic symptomatic ones. The outcome is often fatal [8]. Soil-transmitted helminths infect over 1.45 billion people including 819 million individuals infected with *Ascaris lumbricoides*, 465 million with *Trichuris trichiura* and 439 million with hookworm (*N. americanus* and/or *Ancylostoma duodenale*) [9].

Hymenolepis nana is the most prevalent tapeworm. It is a cosmopolitan parasite by its distribution and it is more prevalent in warm climates. Infections due to *H. nana* are associated with low absorption of vitamin B12 in the intestines. Majority of the infections by *H. nana* is by self-infection through contaminated food or water with the eggs contained in faeces [10].

Taenia solium is a zoonotic cestode which has a complex life cycle. Humans are the only definitive hosts, the adult tapeworm live in the gut without having significant symptoms. The infection of the tapeworm is acquired by eating raw or undercooked pork meat containing cysticerci. Adult tapeworms have a life span of some years during which they produce millions of eggs which are intermittently released in the environment with the faeces. Humans and pigs acquire cysticercosis ingesting *T. solium* eggs by the fecal-oral route. After the ingestion, embryos contained in the eggs are released and are then transported by the circulatory system and dispersed throughout the body producing cysts mainly in the central nervous system (CNS) and in striated muscles. Pigs are usually infected when reared in areas lacking adequate sanitary infrastructure where they can feed on human faeces [11]. *Enterobius vermicularis* is very common in children worldwide, particularly in the temperate and tropical regions. It is estimated that 200 million people are infected annually. This worm is commonly found in crowded institutions such as daycare centers, schools, hospitals and orphanages [12]. Enterobiasis is asymptomatic in most adults who have low worm burdens. However, in children, these may influence child growth [13].

2. Methods

The data presented in this paper are gathered from Communicable Diseases Control Center, parasitology and helminthology units in Baghdad for the period from January to June, 2016.

3. Statistical analysis

The Statistical Analysis was performed using – SAS (2012) program to know the of difference factors in study parameters. Chi-square test was used to significant compare between percentages in this study.

4. Results

With Out of 130,701 patients, Ascariasis, Trichuriasis, Ancylostomiasis, Strongyloidiasis and Hymenolepiasis were found infected in 44, 20, 6, 7 and 90 patients, respectively. However and 7 patients were with enterobiasis and respectively (Table 2). The (30) incidence rate of Ascariasis recorded in Najaf governorate, while the lowest (1) rate was in Erbil and Thiqar governorate. The present study showed that male participants have higher prevalence of infection (24) than females (20) (Tables 1 and 2).

Muthanna governorate showed the highest incidence rate of Trichuriasis (18 patients) while Najaf governorate showed 2 patients only. The present data demonstrate that female participants have higher prevalence of infection (15) than males (50) (Tables 1 and 2). This study also revealed that Anbar province showed the highest incidence rate of Ancylostomiasis (6 only) (Table 2). The highest incidence rate of Strongyloidiasis was in Sulaymaniyah governorate

Table 1
Relationship between sexes with the diseases.

Helminth	Sum of male	Sum of female	p-Value
Ascariasis	24	20	0.219 NS
Enterobiasis	37,728	40,758	0.073 NS
Hymenolepiasis	56	34	0.066 NS
Strongyloidiasis	6	1	0.069 NS
Taeniasis	5	2	0.077 NS
Trichuriasis	5	15	0.148 NS
Grand total	63,868	66,833	–
p-Value	0.0001**	0.0001**	–

**$p < 0.01$, NS: non-significant.

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