Prevalence and Distribution of Parasitic Infections in Childrenin Diwaniyah hospitals

Abstract :

Intestinal parasites are a significant public health concern, particularly among children. These infections can lead to severe health issues, including malnutrition and impaired growth. This study focuses on the prevalence of intestinal parasites among children suffering from diarrhea in Diwaniyah Governorate, specifically at Diwaniyah Teaching Hospital. The study aimed Identify the prevalence of intestinal parasites among children suffering from diarrhea in Diwaniyah Governorate and assess the demographic distribution of infected children, focusing on gender differences, Entrobiais and Hymenolipiasis) are the most prevalent, infecting an estimated one-sixth of the global population. Infection rates are highest in children living in our country, followed by rural areas. Hundreds of millions of people are infected with helminths and intestinal protozoa, particularly children in low- and middle-income countries, we conducted a cross-sectional epidemiological survey in Al-Qadisiyah province communities of six region with sex hospital which including (Alhamza , Al-sanyia , Al-Shamyia hospital, Afak hospital, Al-Diwanyia 2 desert , Al-Diwanyia 1 desert)for 12 months to detect and record all intestinal parasite in patient who admitted to hospital However, a much larger and rapidly growing childhood population in these regions remains untreated and suffering from more than one parasite.

Keywords: children, Diarhea, intestinal parasite, public health

Introduction:

Intestinal parasites are one of the main health problems in developing countries, especially in tropical and subtropical regions (1). It is estimated to affect about 3.5 billion people worldwide, and 450 million people are believed to suffer from these diseases, most of them children (2)

The World Health Organization estimates that over 270 million pre-school children and over 600 million in developing countries of school children are living in areas where the parasites are intensively transmitted and are in need of treatment and preventive interventions (3)

Children are often more susceptibility to parasitic infections in general and intestinal parasites in particular due to ignorance of hygiene rules and health awareness, as well as a natural low immune response compared to adults. (4)

The prevalence of intestinal parasites varies from region to region and is related to geographical factors, climate, poverty, malnutrition, high population density, personal

and community hygiene, and, moreover, the optimal conditions for the growth and spread of intestinal parasites (5)

These infections are ubiquitous in hot and humid environments and among the poor and socioeconomically deprived communities where over crowding, poor sanitation, low level of education and lack of access to safe water are prevalent (6 .(

are widespread problems worldwide causing health and social problems of malnutrition, diarrhea, anemia, poor work capacity, and stunt growth rates, especially in poor and developing countries, including Iraq (7). In order to highlight the spread of intestinal parasites in the city of Diwaniyah and in view of insufficient research on infectious and parasitic diseases among children particularly and the lack of awareness in this problem in Iraq in general, this work was carried out.Research has indicated that children are most likely to develop intestinal parasitic diseases, and the effect of these parasites on them is different and dangerous (8).

The study aimed to detection of intestinal parasite in patient suffering from diarrhea in Iraqi patient.

Material and Methods

Study Population

This study was conducted in Diwanyah Teaching Hospital, over a period of 12 months started from January 2019 to end of December 2019 in Al-Qadisiyah city.

The total number of patients involved in this study was 107subjects including presumably patients (receiving anti parasite drugs) and 100 subjects not receiving such therapies and presumably in immuno- competent state, usually patients relatives

Patients were categorized according to the type of the therapeutic regimens including those receiving parasite drugs alone, aged from 1 to 14 years

Collection of Data

Data collected in this study included stool samples. Stool samples were from each patient have been recorded in book saving record in Al-Diwanyah hospital, which include date and name of the patient.

Results and discussion

The current study revealed different types of enteric parasitic pathogens including ***Gardiasis*spp**, ***Entamoeba coli , Entamoeba histolytica, Giardia lamblia,Ascarislumbricoides, Hymenolipiasis.*** The type of the parasitic infection and the frequency of each parasite detected was altered according to the stage of the disease and the immune status of the patient.

The total frequency of all enteric parasites detected in the AlHamza hospital group was in November 119 enterobus, while in-other patients it was seen in table (1).

Table 1: Frequency of all enteric parasites in Alhamza hospital

Months	Type	Age						Total
		0_1		1_4		5_14		
		male	Female	Male	Female	male	Female	
January	Amobiasis	5	4	10	10	5	13	47
	Giardiasis	0	0	1	1	4	3	9
	Entrobiais	4	5	7	9	3	2	30
	Hymenolipiasis	0	0	0	0	0	0	0
February	Amobiasis	4	3	11	6	6	5	35
	Giardiasis	1	1	2	0	1	1	6
	Entrobiais	0	0	1	0	0	0	1
	Hymenolipiasis	0	0	0	1	0	0	1
March	Amobiasis	3	6	6	10	10	14	49
	Giardiasis	1	0	1	3	1	3	9
	Entrobiais	0	0	4	5	3	3	15
	Hymenolipiasis	0	0	1	0	1	0	2
April	Amobiasis	5	0	19	16	11	15	66
	Giardiasis	1	0	0	3	4	3	11
	Entrobiais	1	1	9	12	7	8	38
	Hymenolipiasis	0	0	0	0	0	0	0
May	Amobiasis	6	4	14	18	10	16	68
	Giardiasis	0	0	4	1	4	2	11
	Entrobiais	2	4	8	11	5	3	33
	Hymenolipiasis	0	0	0	0	0	0	0
June	Amobiasis	8	2	8	10	6	5	39
	Giardiasis	2	0	1	2	1	3	9
	Entrobiais	2	2	4	5	9	12	34
	Hymenolipiasis	0	0	0	0	0	0	0
July	Amobiasis	3	1	13	13	12	8	50
	Giardiasis	1	1	2	2	1	2	9
	Entrobiais	2	3	6	8	7	7	33
	Hymenolipiasis	0	0	0	0	0	0	0
August	Amobiasis	4	3	5	2	3	4	21
	Giardiasis	1	0	2	0	1	2	6
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
September	Amobiasis	8	1	6	8	7	5	35
	Giardiasis	0	0	1	4	1	0	6
	Entrobiais	6	0	4	2	0	2	14
	Hymenolipiasis	0	0	0	0	0	0	0

October	Amobiasis	3	4	6	5	10	3	31
	Giardiasis	1	1	4	0	2	2	10
	Entrobiais	9	4	8	10	2	3	36
	Hymenolipiasis	0	0	0	0	0	0	0
November	Amobiasis	7	11	19	13	13	11	74
	Giardiasis	1	0	0	2	2	3	8
	Entrobiais	12	21	28	37	10	11	119
	Hymenolipiasis	0	0	0	0	0	0	0
December	Amobiasis	6	5	5	9	8	7	41
	Giardiasis	0	0	2	1	4	3	10
	Entrobiais	10	9	14	9	5	4	51
	Hymenolipiasis	0	0	0	0	0	0	0

In this table our study were found the most common in the month of November was Entrobiais as 119 cases and Amobiasis as 74 cases May have 68 cases of Amobiasis and April have 66 cases of Amobiasis , December have 51 Entrobiais , July and March have 50 and 49 Amobiasis respectively Amobiasis was as to most common parasites infestation in Alhamza hospital .

While in the Al-sanyah hospital, our study were found Entamoeba histolytica was detected in 14 cases in June , 9 of patients in the January ,Giardia lambalia not detected in most months excepts July and November 2 cases only , Table (2).

Table 2 :Parasitic infestation throughout the year

Months	**Type**	**Age**						
		0_1		1_4		5_14		
		male	female	male	female	Male	Female	Total
Jan	amobiasis	0	0	2	2	2	3	9
	giardiasis	0	0	0	0	0	0	0
February	amobiasis	0	0	2	1	2	2	7
	giardiasis	0	0	0	0	0	0	0
March	amobiasis	0	0	1	0	1	2	4
	giardiasis	0	0	0	0	0	0	0
April	amobiasis	0	0	1	1	2	2	6
	giardiasis	0	0	0	0	0	0	0
May	amobiasis	0	0	1	2	2	2	7
	giardiasis	0	0	0	0	0	0	0
June	amobiasis	2	2	3	2	2	3	14
	giardiasis	0	0	0	0	0	0	0
July	amobiasis	0	0	1	2	2	2	7
	giardiasis	0	0	0	2	0	0	2
August	amobiasis	1	0	1	1	1	1	5
	giardiasis	0	0	0	0	0	0	0
September	amobiasis	2	0	2	0	0	2	6
	giardiasis	0	0	0	0	0	0	0
October	Amobiasis	0	0	0	0	0	1	1
	Giardiasis	0	0	0	0	0	0	0

November	Amobiasis	1	1	1	1	0	1	5
	Giardiasis	0	0	0	2	0	0	2
December	Amobiasis	0	0	3	2	2	2	9
	Giardiasis	0	0	0	0	0	0	0

On the other hand***Ascaris lumbricoides*** was no found to be present in**.** ***Enterobiusvermecularis***was no detected in all patients group. No significant increase in gardiasis infection was noticed in patients,. A significant increase in infection with ***Entamoeba histolytica*** was noticed in patients group, but significant decrease in the infection with the same parasite was recorded in patients group in October .

All other detected enteric parasites in the Al-Shamyah hospital showed changes .Table (3). We found the most common parasite infestation in May we found ***Entamoeba histolytica*** *as 91 cases and June have 75 cases November as 72 cases while we found the same results 38 cases of* **giardiasis** in February , July and December on the other hand , we found same results in July , August and December of ***Entamoeba histolytica*** as 24 cases, one case of **Hymenolipiasis** in February table 3.

Table 3: **frequency of all enteric parasites in Al-Shamyah hospital**

Months	**Type**	**Age**						**Total**
		0_1		1_4		5_14		
		Male	female	male	Female	male	Female	
January	Amobiasis	0	3	1	2	3	3	12
	Giardiasis	1	4	5	6	8	5	29
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
February	Amobiasis	0	0	5	2	2	4	13
	Giardiasis	0	1	12	9	8	8	38
	Entrobiais	0	0	0	0	2	0	2
	Hymenolipiasis	0	0	0	1	0	0	1
March	Amobiasis	0	2	8	3	6	4	23
	Giardiasis	1	2	9	10	7	7	36
	Entrobiais	0	0	0	0	0	1	1
	Hymenolipiasis	0	0	0	0	0	0	0
April	Amobiasis	2	3	5	12	5	11	38
	Giardiasis	2	1	9	12	11	12	47
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
May	Amobiasis	7	10	19	15	18	22	91
	Giardiasis	3	0	10	11	12	6	42

	Entrobiais	0	0	1	0	0	0	1
	Hymenolipiasis	0	0	0	0	0	0	0
June	Amobiasis	6	6	11	18	13	21	75
	Giardiasis	0	1	21	5	11	14	52
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
July	Amobiasis	1	2	5	3	4	9	24
	Giardiasis	3	0	8	4	10	13	38
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	1	0	0	1
August	Amobiasis	1	2	4	4	4	9	24
	Giardiasis	4	1	8	4	12	13	42
	Entrobiais	0	0	0	2	1	0	3
	Hymenolipiasis	0	0	0	0	0	0	0
September	Amobiasis	0	0	5	2	4	6	17
	Giardiasis	1	3	6	4	1	19	34
	Entrobiais	0	0	2	2	1	3	8
	Hymenolipiasis	0	0	0	0	0	0	0
October	Amobiasis	1	3	6	2	6	9	27
	Giardiasis	4	6	9	6	4	10	39
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
November	Amobiasis	7	4	9	11	10	11	52
	Giardiasis	10	5	10	26	11	10	72
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
December	Amobiasis	4	2	3	5	6	4	24
	Giardiasis	3	5	10	5	6	9	38
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0

Differences in sex related frequency of parasitic infection in this study was non-significant where enteric parasitic infection was highly in the female rather than male . Also it revealed a non significant difference in the rate of parasitic infection in male than females in patients group . In the patient group, only 243 females were examined for enteric parasites with only 186 of them showed positive results. Male gave the lower rate of parasite infection in the same group 5-14 years.

On the other hand, the frequency of all enteric parasites in Afak hospital was shown in table .The most common infection in December we found Entrobiais 101 cases followed by October we found Entrobiais 94 cases , November we found Amobiasis 82 cases, and November Entrobiais 79 cases , and one case of Giardiasis in February and March.

In relation to the residence, the highest rates were recorded in the male as 47, 172, 174 for all aged groups of patients and the highest of those observed to be female patients group as 52, 163 and 207 (9).

Mixed and single infection were not recorded and observed with different rates, the highest rate for Entrobiasis infections was observed in female patients aged groups 5-14 years in the December mouth as well as male patients group was 27.

Our study were recorded the enteric parasites in patient in Al-Diwanyah 2 desert hospital were October and November forEntrobiasis as 86 cases and 65 cases respectively, followed by September have 30 cases, on the other hand we found 2 case of Giardiasis in the month of June , Hymenolipiasis is not recorded in all months. Female its relation to the susceptibility of infection was studied, and it was shown that the highest rate in the group of patients in all aged group as 18, 133 and 133 rater than 19, 75 and 120.

Infection rates according to the type of gender that patient had, the highest rates were obtained in female patients and in aged 5-14 years . The Same results with the highest rates obtained at all patients, According to the clinical signs highest rates of infection with Amobiasis recorded at patients group suffering from Diarrhea with a period of constipation (10). Enteric parasitic infections according to the occupation, the highest rates were obtained from children group followed by farmers group .The same results were obtained from patients group but with equal rates for each. In all patient group workers group gave the highest rate of infection .In regard to the best technique for diagnosis of giardiasis (11), Direct Iodine stain gave the highest rate or sensitivity among all groups. This was followed by Modified Acid fast stain (hot method) also for all groups . In the table 4 our results were found the most common parasite infestation Entrobiasis in July have 58 cases followed by March 55 cases , February 40 cases and august 37 cases, and just one case of giardiasis in the April and October month (12), in conclusion : Intestinal parasitic infections are distributed virtually throughout the world and the complaints of the patients were suffering from diarrhea with constipation, abdominal discomfort and weight loss or vomiting.

Table (4): Frequency of internal parasites in Al-Diwanyia city hospitals

Months	**Type**	**Age**						
		0_1		**1_4**		**5_14**		**Total**
		Male	Female	Male	Female	Male	Female	
January	Amobiasis	0	0	0	1	1	1	3
	Giardiasis	0	1	1	2	1	1	6
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
February	Amobiasis	0	0	0	1	1	1	3
	Giardiasis	0	0	2	1	1	2	6
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0

March	Amobiasis	0	1	1	1	1	1	5
	Giardiasis	1	1	1	1	1	2	7
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
April	Amobiasis	1	1	1	2	2	2	9
	Giardiasis	1	1	2	2	2	2	10
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
May	Amobiasis	1	1	2	2	2	2	10
	Giardiasis	1	0	2	2	2	2	9
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
June	Amobiasis	1	1	1	2	2	2	9
	Giardiasis	0	1	2	1	2	2	8
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
July	Amobiasis	0	1	1	1	1	2	6
	Giardiasis	1	0	1	1	1	2	6
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
August	Amobiasis	0	1	1	1	1	1	5
	Giardiasis	1	0	1	1	1	2	6
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
September	Amobiasis	0	0	1	1	1	1	4
	Giardiasis	1	1	1	1	1	1	6
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
October	Amobiasis	1	1	1	1	1	2	7
	Giardiasis	1	1	1	1	1	2	7
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0

November	Amobiasis	1	1	1	1	1	1	6
	Giardiasis	1	1	1	1	1	1	6
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0
December	Amobiasis	1	1	1	1	1	1	6
	Giardiasis	1	1	1	1	1	1	6
	Entrobiais	0	0	0	0	0	0	0
	Hymenolipiasis	0	0	0	0	0	0	0

In conclusion: The study highlights the distribution of parasitic infections over a year across different age groups and genders. Among the parasitic infections studied, *Giardiasis* was the most frequently reported infection, accounting for a majority of the cases across all months, whereas *Entrobiasis* and *Hymenolipiasis* were nearly absent in the population sampled.

In terms of age distribution, infections appear to be relatively evenly spread among the age groups (0–1, 1–4, and 5–14 years), though slight variations are noted in specific months. Gender-wise, there is no significant difference in the occurrence of infections, with both males and females showing similar levels of infection rates.

Overall, this study emphasizes the need for targeted awareness and intervention programs focusing on the prevention and treatment of parasitic infections, particularly *Giardiasis* and *Amobiasis*. Further investigation into the underlying causes of this distribution could provide better insights for effective public health strategies.

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