

PREVALENCE RATE OF INTESTINAL PARASITE ASSOCIATED WITH DIARRHEA⁺

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Abstract

This study was performed from December 2003 to October 2004 to investigate the prevalence rates of intestinal parasites among some outpatients and inpatients, who were suffering from diarrhea, This study included 865 patients from both sexes and different ages. In addition, the prevalence rate of parasite was 530 (61.2%) cases of diarrhea. Stool samples examinations were performed for these cases, which included direct smear method, concentration sedimentation method and scotch tape method for investigating *Enterobius vermicularis* in children. this study record that the high prevalence rate of infection with intestinal parasite in urban regions compared with rural regions and high prevalence rate of infection with intestinal parasite in non-education patient comparison with education patient. This study records that the number and percentage of parasite with diarrheas as follows: *Entamoeba histolytica* 146(27.54%), *Giardia lamblia* 98(18.49%), *Trichomonas hominis* 25(4.71%), *Entamoeba coli* 175(33.01%), *Hymenolopis nana* 61(11.5%) and *Trichuris trichuria* 25 (4.71%).

المستخلص:

أجريت هذه الدراسة للفترة من كانون الاول ٢٠٠٣ ولغاية تشرين الأول ٢٠٠٤ للتحري عن انتشار الطفيليات المعوية بين بعض المرضى الوافدين وبعض المرضى الراقدين في مستشفيات مدينة الحلة مركز محافظة بابل. هؤلاء المرضى كانوا يعانون من الإسهال. هذه الدراسة شملت ٨٦٥ مريضاً من الجنسين كلاهما ومن مختلف الأعمار، وقد كانت نسبة الإصابة الكلية ٥٣٠ (61.2%). لقد أخذت عينات البراز من هؤلاء المرضى وأجريت عليها الفحوصات المخبرية بطريقة المسحة المباشرة وطريقة التركيز. وللتحري عن الديدان الدبوسية في الأطفال استخدمت طريقة الشريط اللاصق. لوحظ ارتفاع نسب الإصابة بالطفيليات المعوية ضمن مرضى المناطق الريفية مقارنة بمرضى المناطق الحضرية، أو مركز المدينة كما لوحظ ارتفاع هذه النسب ضمن المرضى غير المتعلمين، مقارنة بالمرضى المتعلمين. الدراسة الحالية بينت الأعداد ونسب الإصابات المنوية لمختلف الإصابات الطفيلية المتعلقة بحالات الإسهال المصاحبة لاميبا الزحار ١٤٦ (٢٧,٥٤%) ، الجيارديا اللمبيلية ٩٨ (١٨,٤٩%) ، المشعرات البشرية ٢٥ (٤,٧١%) ، اميبا القولون ١٧٥ (٣٣,٠١%) ، الدودة الشريطية القزمية ٦١ (١١,٥%) وشعيرة الرأس السوطية كانت ٢٥ (٤,٧١%) .

Introduction:

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Intestinal parasitic infections are distributed virtually throughout the world, with high prevalence rates in many regions. Parasitic infections produce illness in large segments of population and cause considerable economic losses, particularly, in developing countries where they are often endemic. The spread of these parasites is associated with poor personal hygiene, which encourages person- to- person transmission, poor food hygiene, particularly, in handling and storing of raw vegetables, also the presence of flies, and drinking contaminated water {1}.

Intestinal helminthes and protozoa have global prevalence, though they show considerable variation in both place and time. The distribution of parasites over the surface of the earth is dependant on the presence of suitable hosts, the habits, and environmental conditions {2}. The intestinal parasitic diseases are more commonly encountered in Iraq as well as other developing countries due to the relatively low standard of hygiene in rural areas of such countries {3}.

{4} shows that 10% of the world population is infected with amoebiasis, 65 million cases of cestodiasis and 35 million cases of strongyloidiasis. While the information that is published by {5} 1987 shows the global prevalence of intestinal nematode infections and states 1000 million cases for *Ascaris lumbricoides*, 900 million cases for hookworms and 500 million cases for *T.trichiura* .

Materials and Methods

The Patients:

This study included 865 patients of both sexes and different ages with diarrhea.

General Information

The information included living conditions or regions (Urban, Rural), locality, sex, age and education. Some information was obtained from the case sheet as a confirmatory diagnosis of intestinal disorders.

Laboratory Examination

Stool Examinations:-

- Stool Samples Collection

Clean plastic cups were used for stool samples collection avoiding presence of urine or any other substances that may lead to false examination.

- Stool Samples Examinations

Macroscopical Examination

It was performed by observing grossly the consistency of stool samples, presence of helminthes, blood, mucus and other substances.

Microscopial Examination: It was divided into three methods:-

- 1- Direct Method
- 2- Concentration Technique [Formalin – Ether Sedimentation Concentration Technique] {6}
- 3- The Scotch Cellulose Tape Technique {7}.

Statistical Methods:

Chi-square was applied to find the significant difference between the data. P values (<0.05) were considered significant {8}.

Results:

Prevalence rate of intestinal parasite: table (1) show the Prevalence rates of isolated intestinal parasites associated with diarrhea is 61.2% and the main intestinal parasite is *Entamoeba coli* 175(33.01%) followed by *Entamoeba histolytica* (27.54%).

- According to residence:

The highest percentage of different parasitic infections associated with diarrhea was in rural regions (64.7%) in comparison with parasitic infections in urban regions (35.2%). Table (2) Fig. (1)

- According to education:

While the highest percentage of parasitic infections associated with diarrhea was with non-educated patients (61.69%) in comparison with percentage among educated patients (38.3%) Fig. (2) Table (3).

Table (1): Prevalence rates of isolated intestinal parasites that are associated with diarrhea

Isolated intestinal parasites			
	NO.	% of total examined	% of positive
1- <i>Entamoeba histolytica</i>	146	16.87	(27.54%)
2- <i>Giardia lamblia</i>	98	11.32	(18.49%)
3- <i>Trichomonas hominis</i>	20	2.89	(4.71%)
4- <i>Entamoeba coli</i>	175	20.23	(33.01%)
5- <i>Hymenolopis nana</i>	61	7.05	(11.5%)
6- <i>Trichuris trichuria</i>	20	2.89	(4.71%)
Total	530	61.2	(100%)

Table (2): The number of parasitic infections associated with diarrheal cases in urban and rural region according to sex and age

M: male

F: female

Age groups (years)	Sex	Residence								Total	
		Urban regions				Rural regions					
		No.	%	Total	%	No	%	Total	%	No.	%
1-10	M	15	8.02	50	26.7	45	13.1	98	28.5	148	27.9
	F	35	18.7			53	15.4				
11-20	M	35	18.7	55	29.4	40	11.6	95	27.6	150	28.3
	F	20	10.6			55	16				
21-30	M	22	11.7	47	25.1	45	13.1	82	23.9	129	24.3
	F	25	13.3			37	10.7				
31-40	M	10	5.3	22	11.7	25	7.2	39	11.3	61	11.5
	F	12	6.4			14	4				
41- 50 and more	M	5	2.67	13	6.95	12	3.4	29	8.4	42	7.9
	F	8	4.2			17	4.9				
Total	M	87	46.5			167	48.7				
Total	F	100	53.5			176	51.3				
Total	-	187	35.3			343	64.7			530	100

* $\chi^2 = 45.330$, df = 1 , $P < 0.005$

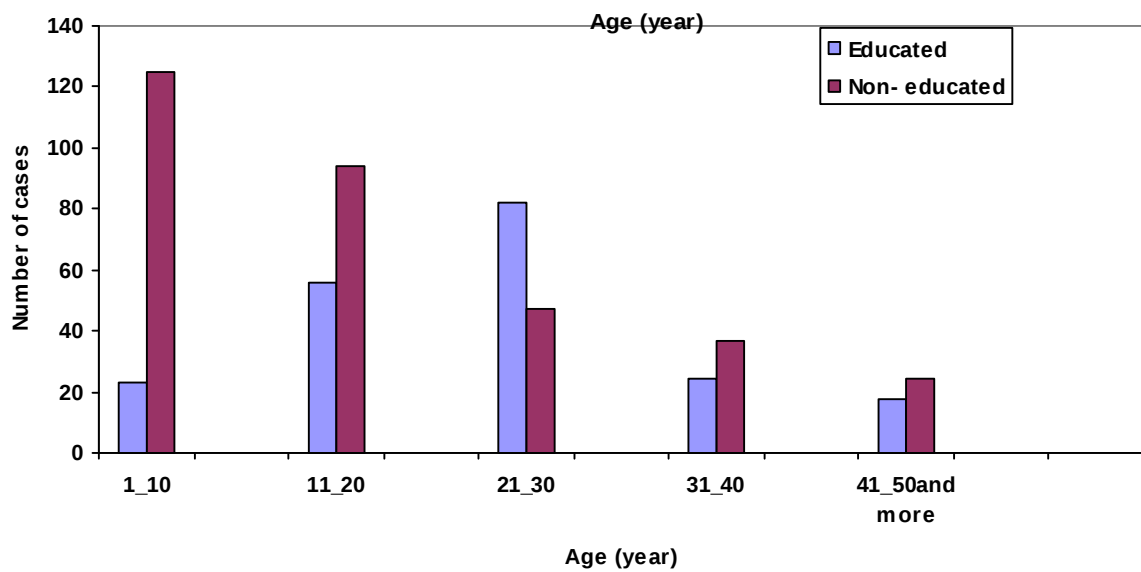
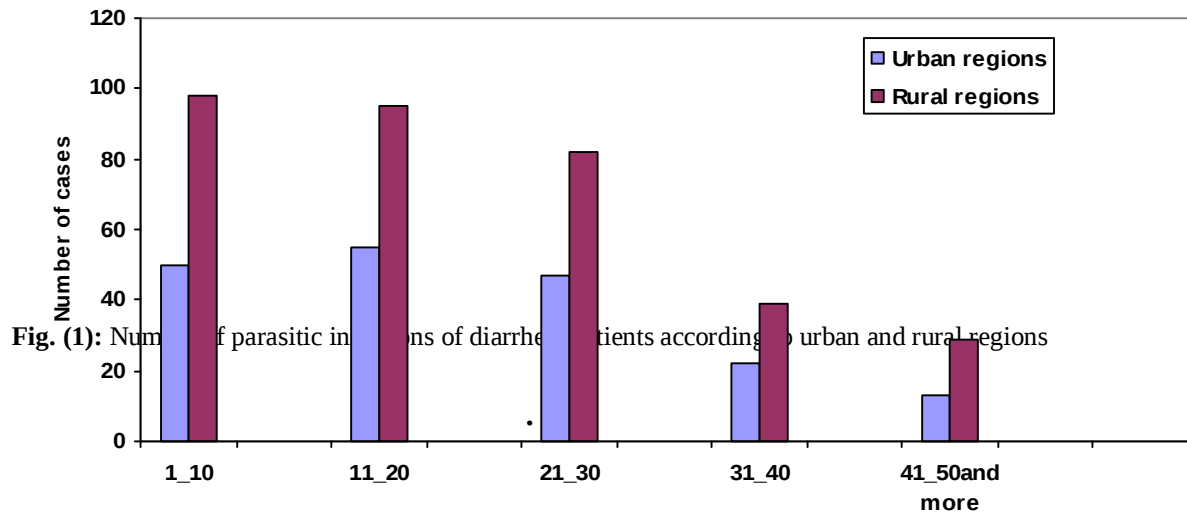


Fig: (2) : Number of parasitic infections of diarrheal patient according to education

Table (3): The number of parasitic infections of diarrheal patients according to education

Age groups (years)	Sex	Education								Total	
		Educated				Non-Educated					
		No.	%	Total	%	No	%	Total	%	No.	%
1-10	M	11	5.4	23	11.3	49	14.9	125	38.2	148	
	F	12	5.9			76	23.2				

11-20	M	32	15.7	56	27.5	43	13.1	94	28.7	150	
	F	24	11.8			51	15.5				
21-30	M	57	28	82	40.3	10	3	47	14.3	129	
	F	25	12.3			37	11.3				
31-40	M	10	4.9	24	11.8	15	4.5	37	11.3	61	
	F	14	6.8			22	6.7				
41- 50 and more	M	11	5.4	18	8.8	10	3	24	7.3	42	
	F	7	3.4			14	4.2				
Total	M	121	59.7			127	38.3				
Total	F	82	40.3			200	61.7				
Total	-	203	38.3			327	61.69			530	100

M = male F = female * $\chi^2 = 28.545$, d.f = 1 , $P < 0.005$

Discussion:

The results of this study show that the infection with *E.histolytica* is (27.54%), These high infection rates indicate that this parasites come in first degree among other pathogenic intestinal parasites, which are discussed in this study and has an important role in occurrence of many of intestinal disorders. The reasons for these results may be due to many factors (environmental factors, nature of habitant, low sanitary conditions, socioeconomic factors...etc) which work together in the incidence of these symptoms or disorders. The infection rates of this parasite, which is associated with previous intestinal disorders, are higher in rural regions in comparison with urban regions and are higher with non-educated patients in comparison with educated patients. Studies record high infection with *E.histolytica* as {9,10,11} they explain that most of the patients are with low socioeconomic level and low educational level. This study show that infection rate with *E. coil* is 175 cases of diarrhea. This rate is higher in comparison with other intestinal protozoa, which has been isolated in recent study; this result is approximate to other studies, which show also high infection rate with *E.coil* {9, 12}. The result of *E. coli* infection associated with diarrheal cases is similar to that of other investigators {13}. The infection rates of *G.lamblia* associated with diarrhea are 18.49%. These infections are similar to other studies that state high infection rates with *G.lamblia*{9,11}. These results are attributed to minimum level of education and bad situation of public health. The infection rate of *T.hominis* in this study is 2.62% (25 cases) of diarrhea, the reasons for these results may be due to many factors (environmental factors, nature of habitant, low sanitary conditions, socioeconomic factors...etc). The infection rate of *H. nana* (11.5%) is approximate to the rate of some studies, {12,14,15,16,17,18}, which range between 8.5%-11%, while{19} show high infection

rates than the present study . In the present study the infection rate with *T.trichiura* is 4.71% (25 cases) of diarrheal patients from total number of cases of diarrhea. This rate is nearly similar to other studies by {15,18} who attributed this low infection to unsuitable environmental conditions to unsegmented eggs after excretion with stool, since they need 10-14 day in soil to complete their embryonic development in certain conditions of light, moist in addition to sensitivity of these eggs to dehydration, direct sun lights, cold weather and ingestion of these eggs by some insects. Previously {20} recorded high infection rate with *T.trichiura*, which might result from minimum sanitation conditions with low level of medical care. The results of present study show that there is no significant difference in infection rate among different age groups

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