

Prevalence of Intestinal Parasites among Children (1-13) Years Age in Baquba City

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الخلاصة

أجريت الدراسة لتحديد الطفيليات المعوية في الاطفال لعمر (6-13) سنة في مدينة بعقوبة ، تحديد الاصابات المنفردة والمتعددة وتوزيعها في المناطق الريفية والحضرية . جمعت نماذج البراز من (1481) من أطفال المدارس باعمار (6-13) سنة وتم فحصها بأكثر من طريقة مخبرية لتحديد مدى انتشار الطفيليات المعوية بينهم . أظهرت الدراسة ان نسبة أنتشار الطفيليات المعوية كان 710 طفل بنسبة (47,94%) وكان معدل الاصابة في المناطق الريفية (67,04%) أعلى مما في المناطق الحضرية (32,95%) والذكور (49,22%) أعلى من الإناث (44,62%) . والطفيليات المعوية التي تم عزلها الجيارديا لامبليا *G. lamblia* (29,43%) والدودة الدبوسية *E.coli* (14,22%) ، والمتحولة الزحارية *E.histolytica* (14,22%) ، والمتحولة القولونية *E.vermicularis* (16,9%) ، والصفير الخراطيني (10%) والشريطية القزمية *H.nana* (9,43%) ولاسطوانة البرازية *Stronulodes estersoralis* (3,09%) والمشعرة البشرية *Trichomonas hominis* (0,84%) والحلقوة العفجية *Ancylostoma duodenale* (0,56%) وشفوية السياط المسنيلة *Chilomastix mesnili* (0,28%) والايودومبيا بيوجيلا *Iodamoeba butchili* والاندولمكس نانا والمفلطحة الكبدية (0,14%) لكل منهم . تم تحديد الاصابات المتعددة في 82 نموذج وبنسبة (11,4%) توزعت في 49 نموذج للمناطق النائية 33 نموذج في المناطق الحضرية .

ABSTRACT

Background : This study was – carried out to determine the prevalence of intestinal parasites among children between [6-13Y] in Baquba city , to determine the frequency of single & multiple infections and to show the distribution of intestinal parasites in rural and urban areas .

Methods : The stool specimens were collected from 1481 school children aged 6-13 years and examined for intestinal parasites by more than one method to determine parasites among primary school children .

Results : Intestinal parasites were found in 710 children (47.94%) . The rate of infection in rural area (67.04%) was higher than in urban area (39.95%) . Males (49.22%) had higher rate of infection than female (44.62%) . The intestinal parasites were *Giardia lamblia* (29.43%) *Enterobius vermicularias* (16.9%) *Entamoeba histolytica* (14.22%) , *Entamoeba coli* (14.08%) , *Ascaris lumbricoides* (10%) , *Hymenolepis nana* (9.43%) , *Strongyloides stercoralis* (3.09%) , *Trichomonas hominis* (0.84%) , *Taenia Spp* (0.70%) , *Ancylostomn duodenale* (0.56%) , *Chilomastix mesnili* (0.28%) , *Iodamoeba butschili* , *Endolimax nana* & *Fasciola hepatica* (0.14% for each) . Multiple infections were detected in 82 samples (11.4%) , distributed in rural (49) & urban (33) .

Conclusion : The prevalence of intestinal parasites is higher among children (1-13Yr.) age . Males had higher rate of infection than females . The rate of infection in rural area was higher than urban area and the combined infections were more common in rural area.

INTRODUCTION

Intestinal parasitic diseases are among the most common infections worldwide and are more prevalent in the poorest communities of developing world (1-3) . These infections are regarded as a serious public–health problem , as they cause iron – deficiency anaemia (4-5) . It is estimated that some 3.5 billion people are affected in the world and , that 450 million become ill as a result of these infections , the majority being children (6) . To control parasitic infections in the community , the guidelines developed by the World Health Organization (WHO) suggest consideration of three coordinated actions improved : sanitation , chemotherapy , and health education (7) .

The prevalence of intestinal parasites in neighboring countries may vary from area in Saudi Arabia it was reported a prevalence of (9.5%) among school children (8) and ,in children Lebanon (12.4%) (9) .

Jassim et al (10) studied the prevalence of intestinal parasites among school children in Kirkuk city , found that the incidence of *H. nana* , *E. vermicularis* , *G. lamblia* , *A. lumbricoides* and *E. hestolytica* were (8.0% , 6.6% , 5.5% , 2.4% and 0.4%) respectively . They also found that the rate of infection among males (26.9%) was higher than females (20.8%) . Ibrahim (11) found that the prevalence of intestinal parasites in school children was (75.84%) . The highest rate of infection was *G. lamblia* , followed by *E. coli* , *E. vermicularis* , *H. nana* , *T. hominis* and *A. lumbricoides* . In Tikrit , Al-Tikrity (12) reported that the prevalence of intestinal parasites among school children was (92.4%) (protozoa 18% , helminthes 17.2% and combination of protozoa & helminthes (56.3%) . She found that the rate of *E. coli* was highest followed by *A. lumbricoides* , *E. vermicularis* , *H. nana* , *chilomastix mosnilli* , *E. hestolytica* , *H. diminula* , *Iodamoeba butschili* , *G. lamblia* , *A. duodenal* and *Balantidium coli* .

This study was designed to find the prevalence of intestinal parasites among children between 6-13 years in different localities of Baquba city .

MATERIAL AND METHODS

This study was carried out in different areas of Baquba city between 2004 and 2005 . One stool specimen was collected from each child , and was examined by using normal saline and lughole's iodine and by formal – ether concentration technique . Scotch tape method was used for *Enterobius vermicularis* infection for children with symptoms of itching at anal region .

Faecal samples were collected from 1481 child. Aged 6-13 years they were (795) males and (686) females . A significance test of differences between rural and urban infection (t-test) was carried out . The level of significance was set at $P < 0.05$.

RESULTS AND DISCUSSION

The total prevalence of intestinal parasites in Baquba city (outside and inside Baquba) was (47.94%) (710 infected child.) . Fourteen intestinal parasite species were detected *G. lamblia* were the most frequently – isolated species in the two regions (Table 1) .

Table -1 : The isolation of parasites from stool samples from school children in Baquba city

Parasites	Outside Baquba		Inside Baquba		Total	
	No	%	No	%	No	%
- <i>Giardia lamblia</i>	141	31.12	68	26.45	209	29.43
- <i>Enterobius vermicularis</i>	72	15.89	48	18.67	120	16.90
- <i>Entamoeba histolytica</i>	64	14.12	37	14.39	101	14.22
- <i>Enlamoeba coli</i>	59	13.02	41	15.95	100	14.08
- <i>Ascaris lumbricoides</i>	47	10.37	24	9.33	71	10.0
- <i>Hymenolepis nana</i>	41	9.05	26	10.4	67	9.43
- <i>Strongyloides stercoralis</i>	19	4.19	3	1.16	22	3.09
- <i>Trichomonas hominis</i>	4	0.88	2	0.78	6	0.84
- <i>Taenia spp.</i>	3	0.66	2	0.78	5	0.70
- <i>Ancylostoma duodenals</i>	3	0.66	1	0.39	4	0.56
- <i>Chilomastix mesnili</i>	2	0.44	0	0	2	0.28
- <i>Iodamoeba butschili</i>	1	0.22	0	0	1	0.14
- <i>Endolimax nana</i>	1	0.22	0	0	1	0.14
- <i>Fasciola hepatica</i>	1	0.22	0	0	1	0.14
Total	453	100	257	100	710	100

The prevalence of infection among children in rural areas was higher than those in urban (inside Baquba) and it was also higher in males than females . The school children in rural areas infected with more types of parasites than those in urban areas . The prevalence of multiple infections was higher in rural then that in urban areas (Table 2).

Table -2 : The distribution of multiple parasites recovered from school children in Baquba city.

Types of parasites	Outside Baquba		Inside Baquba		Total	
	No	%	No	%	No	%
- <i>Giardia</i> + <i>Enterobius</i>	6	12.24	10	30.3	16	19.51
- <i>Giardia</i> + <i>E. histolytica</i>	9	18.36	5	15.15	14	17.07
- <i>Giardia</i> + <i>E. coli</i>	6	12.24	6	18.18	12	14.63
- <i>Giardia</i> + <i>Strongyloides</i>	6	12.24	2	6.06	8	9.75
- <i>Enterobius</i> + <i>H. nana</i>	2	4.08	3	9.09	5	6.09
- <i>Enterobius</i> + <i>E. histolytica</i>	3	6.12	2	6.06	5	6.09
- <i>Enterobius</i> + <i>E. coli</i>	3	6.12	2	6.06	5	6.09
- <i>E. histolytica</i> + <i>E. coli</i>	3	6.12	1	3.03	4	4.87
- <i>E. histolytica</i> + <i>Ascaris</i>	2	4.08	0	0	2	2.43
- <i>E. histolytica</i> + <i>H. nana</i>	1	2.04	0	0	1	1.21
- <i>E. coli</i> + <i>Trich. Hominis</i>	0	0	1	3.03	1	1.21
- <i>Ancylostoma</i> + <i>E. histolytica</i>	1	2.04	0	0	1	1.21
- <i>Ancylostoma</i> + <i>Giardia</i>	1	2.04	0	0	1	1.21
- <i>Giardia</i> + <i>E. histolytica</i> + <i>E. coli</i>	2	4.08	1	3.03	3	3.65
- <i>Giardia</i> + <i>Enterobiu</i> + <i>E. coli</i>	2	4.08	0	0	2	2.43
- <i>Ascaris</i> + <i>E. coli</i> + <i>H. nana</i>	1	2.04	0	0	1	1.21
- <i>Taenia</i> + <i>E. coli</i> + <i>Trich hominis</i>	1	2.04	0	0	1	1.21
Total	49	100	33	100	82	100

The present study observed a higher prevalence of intestinal parasites in rural areas than in urban areas . The families inside Baquba were mostly of middle and upper middle classes, while those families outside Baquba were poor and were lower classes with low socioeconomic level and poor hygienic conditions . The high prevalence of intestinal parasites in any population is related to parasitic contamination of the soil and water sources in addition to deficient sanitary and sociocultural conditions (13) .

The prevalence rate of intestinal parasites in our study (47.94%) is high comparison to other studies reported (37.2% and 40.45%) (14-15) , and lower comparison to Ibrahimetal. (16) found that the overall rate of intestinal parasites among school children were (50%) .

The highest rate of infection with *G. lamblia* , *E. vermicularis* and *E. histolytica* (29.43% , 16.90% & 14.22% respectively) reflects a poor health care and bad sanitation among school children (13 , 16) . The prevalence rate of *G. lamblia* in our study (29.43) is low comparison to other studies reported (64% , 62.2% and 38% respectively) (16 , 17 , 18) .

The high prevalence of *E. vermicularis* in this study specially in rural areas , indicates that auto – infection is very common in these areas due to low standard of living as all members of the families share the same bedroom . *E. vermicularis* was the second most common parasite

(16.90%) , this finding is in agreement with that reported a prevalence of (12.3%) in three regions of Sivas , Turkey (19) .

The high prevalence of *A. lambricoides* in rural areas may be attributed to nature of the sandy yards of rural region and the viability of eggs for long period in the external environment (20) . Also the prevalence of *Strongyloides stercoralis* (4.91%) in rural areas may be explained by that those children tend to walk bare foot inside farms during planting vegetables with their families .

The incidence of multiple infections were common in rural areas with low income , poor hygienic status than which was of higher income & better hygienic status .

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