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The prevalence of intestinal parasite among the attending peoples to Al-Hashimyah hospitals for seven years , Babylon province , Iraq.

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Abstract. This study was managed and done from June 2018 to September 2018 to investigate the prevalence of parasites (protozoan and helminths) infection for seven years ago which was began from 2011-2017. A total of 2877 samples were scored in peoples that attending the Al-Hashimyah hospitals ,from the working papers of laboratory management of Al-Hashimyah hospitals , Babylon province / Iraq, among the ages from less than one year for more than 71 years old. The study reveals the rate of infection with pathogenic parasites (*Entamoeba histolytica*, *Giardia lamblia*, *Hymenolepis nana* , *Trichomonas hominis* and *Enterobius vermicularis*) were (88.00% ,10.80% ,0.76% ,0.38% and 0.03%,respectively). The percentage of infection in both gender male and female were 56.96 % and 43.03 % , respectively). The highest ratio of infection was found in the 2016 and 2014 year which (16.89% and 16.47 % , respectively), while in the 2013 year scored the lowest ratio of infection (11.33%). The largest percent of infection reported in the (1-10) age group which was (44.35%) compare with (1.45%) percent of infection that scored in (>71) age group. The highest ratio of infection was reported in the protozoa which was (99.2%) more than in helminths which have the lowest ratio of infection in this study (0.79%). The single infection has the largest ratio of infection (99.51%) compare with doubled infection (0.47%), all of these results with significance differences.

Keywords: intestinal parasite, Al-Hashimyah hospitals, protozoan and helminths

1. Introduction

The main public health problems in the world are founding of intestinal (helminths and protozoan) parasites [1]. Parasites composed of protozoa such as (*Entamoeba histolytica* , *Plasmodium falciparum* and *Giardia lamblia*) and the helminths (*Ascaris lumbricoides* , *Ancylostoma duodenale* , *Trichuris trichiura*, and *Schistoma* spp.) represent the main pathogenic parasites that lead to significant deadliness and death in the world [2,3]. The intestinal parasites are very important and represent as causal agents for gastrointestinal illness as ulceration, abdominal distension, diarrhoea, acute inflammation , vomiting, lack of appetite, dysentery and haematuria [4,5]. The parasites with clearly common properties ,it's very endemic in populations attach with poor hygiene , low economic status , oral faecal transmission , skin penetration by favoring larvae and low household income [6,7]. Although gastrointestinal parasites are cosmopolitan in their distribution, but in tropical and subtropical region's some of it are endemic [8]. The pathogenic effects of the parasites usually depends on the parasitic species and on the density of infection [8,9]. Intestinal parasite very complicated and



associated with low educated mother or unclean habit , vegetables contamination or unsterilized food and haven't hand washing after using water cycle ,specialty in children . [10].

Parasites diseases in general can be transmitted naturally from one person to another or by the exchange of tools [11] . Intestinal parasitic infections are calculated nearby 3.5 billion patients infected and about 450 million sick with these infections [9]. *G.lambelia* is one of pathogenic enteric parasites that infect children with prevalence peak 15-30% founding in patients younger 10 years in poor countries of the world [12] .The search aims conducted for indicate epidemiologic features of pathogenic parasites also to compare among the parasite types ,numbers , males and females and conjunct infections for seven years.

2. Materials and methods:

A total of (2877) faecal specimen were accumulated from June month 2017 till September month 2018 from patients attending to Al-Hashimyah hospitals (Babylon province\Iraq) .Patients with ages range from (1> - 71<) years and above , They usually have abdominal pain and diarrhea . Each fresh stool, kept in a plastic container, transmitted to the Laboratory and within one hour of delivery it examined . Accumulated specimen that composed of 10% from the wastes liquid's that mixed with physiological normal saline, this specimen was performed to exam larvae ,ovum of worms and trophozoites or cysts of protozoa by Microscopically examination, Giemsa and the safranin methylene blue stains which used for samples staining [13,14] .

3. Statistical analysis

Analyzing data performed and calculated by using Chi-square tests for reveal the significance differences by using the system SPSS at the probability level 0.05.

4. Results:

4.1. Gender patient factor:

As shown in table one we show that all of a parasite's kinds with the highest percent of infections in male 56.96 % and decreased to 43.03% with female , this results with significance differences .

Table (1): Distribution of parasitic infection according to the patient's gender.

Gender	<i>E. histolytica</i> No.(%)	<i>G. lamblia</i> No.(%)	<i>H.nana</i>	<i>T.hominis</i>	<i>E.vermicularis</i>	Total
Male	1435 (49.87%)	179(6.22%)	15(0.52%)	9(0.31%)	1(0.034%)	1639(56.96%)
Female	1097 (38.12%)	132 (4.58%)	7(0.24%)	2(0.06%)	0	1238(43.03%)
Total	2532 (88.0%)	311 (10.80%)	22 (0.76%)	11 (0.38%)	1 (0.03%)	2877(100%)

P_{value}=0.00017

4.2. Year factor :

As indicated in table two , the infection percentages of all parasite was high in 2016 and 2014year were(16.89%)and (16.47%),respectively, on the other hand, 2013year has lowest percent of infection (11.33%) .

Table (2): Distribution of intestinal parasitic infection according to the year.

Year	<i>E. histolytica</i> No.(%)	<i>G. lamblia</i> No.(%)	<i>H.nana</i> No.(%)	<i>T.hominis</i> No.(%)	<i>E.vermicularis</i> No.(%)	Total No.(%)
2011	283(9.83%)	63 (2.18%)	3(0.10%)	2 (0.06%)	0	351(12.20%)
2012	329 (11.43%)	61 (2.12%)	3(0.10%)	3(0.10%)	0	396(13.76%)
2013	253 (8.79%)	66 (2.29%)	4(0.13%)	3(0.10%)	0	326(11.33%)
2014	385 (13.38%)	78 (2.71%)	11(0.38%)	0	0	474(16.47%)
2015	388 (13.48%)	21 (0.72%)	1(0.03%)	2(0.06%)	0	412(14.32%)
2016	476 (16.54%)	8 (0.27%)	0	1(0.03%)	1(0.03%)	486(16.89%)
2017	418 (14.52%)	14 (0.48%)	0	0	0	432(15.01%)
Total	2532 (88.0%)	311(10.80%)	22(0.76%)	11 (0.38%)	1(0.03%)	2877(100%)

P_{value}=0.00025**4.3. Age group factor :**

Table three reveals that age group (1-10)years have a high infection percent of parasite infection which was (44.35%) while age group (>71) year which was(1.45%).

Table (3): Distribution of intestinal parasitic infection according to ages.

Age (year)	<i>E. histolytica</i> No.(%)	<i>G. lamblia</i> No.(%)	<i>H.nana</i> No.(%)	<i>T.hominis</i> No.(%)	<i>E.vermicularis</i> No.(%)	Total
<1	195 (6.77%)	14(0.48%)	17(0.59%)	0	0	226(7.85%)
1-10	1138(39.55%)	137(4.76%)	2(0.06%)	6(0.20%)	0	1276(44.35%)
11-20	320(11.12%)	51 (1.77%)	2(0.06%)	3(0.10%)	1(0.03%)	377(13.10%)
21-30	284(9.87%)	31 (1.07%)	1(0.034%)	1(0.03%)	0	321(11.15%)
31-40	183 (6.36%)	26 (0.90%)	0	0	0	213(7.40%)
41-50	206 (7.16%)	24 (0.83%)	0	0	0	229(7.95%)
51-60	105 (3.64%)	15 (0.52%)	0	0	0	120(4.17%)
61-70	64 (2.22%)	8 (0.27%)	0	1(0.03%)	0	73(2.53%)
>71	37(1.28%)	5 (0.17%)	0	0	0	42(1.45%)
Total	2532 (88.0%)	311 (10.80%)	22(0.76%)	11(0.38%)	1(0.03%)	2877(100%)

P_{value}=0.0004**4.4. Parasite Type factor :**

In table four appear the infection with Protozoa has a high percent which was(99.2%) compare with Helminths which was(0.79%).

Table (4): Prevalence of parasitic infection according to kind of parasite.

Protozoa	No.(%)	Worms	No.(%)
<i>Entamoeba histolytica</i>	2532 (88.00%)	<i>Enterobius vermicularis</i>	1(0.03%)
<i>Giardia lamblia</i>	311(10.80%)	<i>Hymenolepis nana</i>	22(0.76%)
<i>Trichomonas hominis</i>	11(0.38%)		
Total	2854(99.2%)		23(0.79%)

P_{value}=0.00056

4.5. Infection kind factor:

Table five reveal that founding that single parasite infection with a largest ratio (99.51%) and double infection with lowest percent (0.49%).

Table (5): Distribution of parasitic infection according to type of infection .

Type of infection	No.	%
Single	2849	99.51
Double	14	0.49
Total	2877	

$P_{\text{value}}=0.00002$

5. Discussion :

The currently problems that affect on human body health is Parasitic infection, limitation in developing penurious countries [15] , type of living conditions , the level of neediness or poverty , adequacy of health services, personal cleaning and habit hygiene , sanitation and availability of pure water supply generally related to the large prevalence of intestinal parasites [16].

The present study scored five parasite species (three protozoans and two nematodes) among patients ,they were attending to Al- Hashimyah hospitals, the most available parasite was *E. histolytica* (88.00%) then *G. lamblia* (10.80%),while the lowest abundant parasite was *E. vermicularis* (0.03%). The same parasitic species were previously scored by [17] in Babylon province from patients that attended to hospitals, he was found abundant infections (29.5% ,13. 7%) for *E. histolytica* and *G. lamblia*, respectively, as well as consistency with [18] he was reported abundant infections which was *E. histolytica* and *G. lamblia* (27.9%) and(13.9%) , respectively, in patients that attending to hospital in Hilla city, also compatible with [19] they were reported the highest percent of infections for *E. histolytica*(61.6%)and(32.3%) for *G. lamblia* , while the lowest percent of infections by *H.nana* (1.02%), also this study agree with [20] they were reported the largest infections by *E. histolytica* (35.8%) , as agree with [21] they were scored the highest rate of infections for *E. histolytica* (24.4%)and(18.8%) for *G. lamblia* , while the lowest rate of infections by *T. trichura* and *T. saginata* (0.07%) for both parasites, also similar with [22] they were get on the increased rate of infections for *E. histolytica* (36.7%) decreased with *T. trichura* (0.85%), as well as similar with [23] he was reported the largest percent of infections for *E. histolytica*(66.8%)and(36.8%) for *G. lamblia* , while the lowest percent of infections occurred by *T. saginata* (0.4%), while disagree with [24] he scored the highest rate of infection for *E. vermicularis* (51%) compare with *G. lamblia* (15%) were less dominant. Anyway, the high available of *E. histolytica* in present study is may be due to because it's doesn't has intermediate host, as well as has a simple life cycle and the infection comes usually by contaminated food ,vegetables and drinks also the home flies are very high known as a mechanical insects transmitter for this parasite [22] , or may be attributed to the lowest of sterile waters , educational and greatest of parks that represent as sources of parasite or may be due to the natural of climate and fertilizers that using in agriculture from human or animal wastes[25], also *G. lamblia* and *E. histolytica* parasites are often available in water, soil or surfaces which polluted with wastes of infected patients[26] .

The modicum prevalence of *E. vermicularis* parasites in this survey couldn't be clearly or reveal the actual infection, because it is very known that *E. vermicularis* eggs are infrequent in the feces and are ordinarily obtain in the night by using viscid tape for wiping the anal region then examination by microscope [8]. This study appears a highest prevalence of pathogenic parasites in male rather than in female, which (56.96%) and (43.03%) in male and female ,respectively, with the significant difference

was found between the two genders, other's studies that were performed in certain region of Iraq, this study were reported the similar results like the study performed by [24] he was scored a highest rate (62.7%) in male and decreased rate (37.3%) in female, as agree with the researcher [18] he was mention a highest percent of infections (53.9%) in males and lower percent than in females (47.8%), also agree with the study in Baghdad province of [27] with infection percent reached to (59.9%) for males, compare with the lowest percent (57.9%) for females, also consistency with the study that conducted in Al-Diwanyia province by [28] he was found a high infections percent (6.12%) in males while the lowest percent of infections (5.11%) present in females, as similar with [21] in Baghdad city, they were found rate (52.3%) and (47.6%) in male and female, respectively, also similar with [22] they were mention the pathogenic parasites infections (60.9%) and (58.7%) in male and female, respectively, also agree with study was conducted by [29] in Baghdad city, where they was reported the largest percent of infection in males (58.5%) compared with (41.5%) in females, as well as consistency with study of [30], who were found the prevalence of parasites in male and female were %51.5 and %41.2, respectively, and as disagreement with [31] he was reported the highest percent of infection (15.35%) in females while he was found (12.28%) in males and also inconsistency with [32] in Babylon city, who was scored the rate of infections in males 80.6%, while he was scored the rate of infections in females 81%.

The variation in percent of parasitic infections between two gender's may be attributed to that male life normality with a high, active and movement, and it's connection with the external habitat conditions such as play or swimming in the pollution rivers and eating from the cleaning poor restaurants in communities [33], this is factors made them more accident for pathogens getting rather than by females as well as males can drink different kinds of juice from the mobile vendors in public areas without any protection, also anarchism adjective and less attention by personal hygiene [34].

The present study was reveal the founding of difference in percent of intestinal parasite infection, according to the years, this study represents the first study conducted in Iraq for seven years and it's difference from the other study that was conducted for one year only, the highest rate of infection was found in the (2016) and (2014) year which was (16.89%) and (16.47%) respectively, compare with (11.33%). which act the lowest rate of infection in (2013) year, with significance differences, the result of this study similar with [27] they got on the highest infection percent of (61%) in the November month and the lowest percent of the parasitic infection was found in April month (53.7%), as well as similar with [35] she mentioned a highest rate of infection in summer seasons (31.6%) compare with the lowest rate of infection %7.9 in winter seasons, also similar with the result of [23] he got on the highest infection rate (31.1%) and (28%) in the Augusts and July month and the lowest rate of infection 12.3% in January month, The variance of parasitic infection according to the years may be due to ecological conditions as the temperature, health services bad, water pollution with sewage water s and abattoir water s that was available in a special year more than the other year, during the present study, the years factor has effects on the prevalence of parasite in patients which comes to Al-Hashimiyia hospitals, These results may related to number of patients who visited a hospital, epidemiological studies mention that the prevalence and epidemiological factors of intestinal parasites vary in different localizations of the world, even in different parts of the same country, the socio-economic level of the community, geographic, sanitary, feeding pollution factors which may effect on the incidence of pathogenic intestinal parasites [36,37].

The current study reported the incidence of parasites infection for variant age groups for patients from less one year to more than 71 year, age groups from (1 – 10) year with the highest infection rate (44.35%), while the lowest infections rate (1.45%) in the (>71) age group, the result in present study is compatible with [38] who was found a highest percent of infection (55.04%) in (<10) years, age group in Baghdad city, also agree with [31] in Baghdad city, he was scored increased percent of infections (4-6) year, as well as agree with [27] they were found a highest percent of infections reached to (71.4%) in age groups (6-11) and decline to (30.6%) in age groups (< 2), as well as

consistency with [21] they got on the increased rate (10.9%) in age group (1-<10) year decreased with (5.9%) in the (50<) age group, also similar with [23] he was reported the highest percent of infections (56.7%) in age group (4 – 6) year, as well as, the current study inconsistency with a researcher [39] they were reported a highest rate of infections (39.5%) in the age groups (<1) year, as this results inconsistency with [40] in Baghdad city, they were report increased percent (49.3%) in (16-20) year age group, as incompatible with [30] they were reported the prevalence of parasites by using PCR technique, they were found the age groups (16-20) year has the highest percent of infection (76.1%) while the age group (26-30) year has the lowest infection rate (22.8%).

The incidence of pathogenic parasitic infection with a highest infection rate in the age (1-10) year may reveal the high percent of school pupils in this age have a large movement and high activity and with a little attention for cleaning, hygiene and cleaning [5,41], the main reason for the incidence of parasites infection in this age group may be belonged to subsistence nature of parasites which produce defect as it can affects on patient with the less immunity [33], also the present of tinned nourishment which may be represent as a source of microbe infection by pollution or unclean feeding bottles as well as children creep and pick up of objects in this age which lead to contaminated by the put fingers inside the mouths, all these reasons may causes of infection in this age group [30], parasites prevalence is bigger in young people than the other population age groups, especially children [42], also the lowest percent of infection in the (>71) year age groups may be attributed to the movement and business of person group was very less.

The results of current study reveal that incidence of protozoa parasite which was reached to (99.2%) that was larger than infection by helminths parasite which was decreased to (0.79%), this result is similar to that result of [18] he was reported the highest percent of infections (41.8%) in protozoa and lower percent (10.5%) in helminths from the completely infection which was (51.0%), as agree with [27] they got on a high rate of infection for protozoa (90.1%) and lower percent (17.5%) for helminths, respectively in Hilla city, also similar with [21] in Baghdad city, they were found increased rate (44.0%) in protozoa and decreased to (2.3%) in helminths from the completely infection which was (46.3%), also this study compatible with study that conducted out of Iraq by [41] in Rwanda country, they were found that infections percent (78.2%) and (21.8%) in protozoa and helminths parasites, respectively, also the current results disagree with [24] he was scored increased rate (51%) in helminths and decreased rate reached to (49%) in protozoa, the protozoan infection were more than helminths infection in this study, this result may be due to that transfer of protozoa parasite is easier than the transfer of the eggs or larvae of helminths [43,44], in addition to the in case of parasitic worms, their eggs or larvae continue to multiply and develop in the soil or intermediate host before they become infectious to people [45].

The results of this study appears founding two type of parasite infections, single and double infections, there was (99.51%), (0.49%) respectively, this results consistency with the result of [46] in the Al-Mosul city, they were getting on a highest single infections (7.4%) and lowest percent for double infections (4.2%), also compatible with [24], she was scored increased a single infection (66.7%) decline to (32.7%) for double infections and more decline 0.6% for tripled infections, as compatible with [27] they were found a highest infection percent (92.4%) and decreased into (7.6%) for single and double infections, respectively, as well as agree with [47] they were found (63%) for single infection and (36%) for mixed infection in Erbil city, also consistency with [23] he was scored (76.2%), (19.3%) and (4.5%) for single, double and tripled infections, respectively, the highest prevalence of single infections rate in this study may be attributed to the incidences of a special parasite in the same habit was more than the other parasites this lead to produces high numbers of patient with the same parasite. Also related to the unhealthy habits that concern with environmental conditions which lead to transfer of special parasite [48], in addition to worldwide epidemiological distributions for parasites founding in both the rural and urban region populations [49].

6. Conclusion :

The results of this search can produce the following conclusions:

1- The incidence of the parasite for seven years in the patients that coming to Al-Hashimyah hospital's are highly especially for *E. histolytica* parasite and its found in great number in male more than in female.

2-The later years especially (2016, 2014) years associated with a high percent of parasite compare with a few percent of parasites in (2013)year.

3- The largest age groups with parasites infection were the Small children while the lowest age groups that infected with parasites were more than seventy one year.

4-Protozoa parasites were highly prevalence from helminth.

5-single infection was highly prevalence from the double infection.

7. Recommendation:

Attention with public and personal cleaning, using of drinkable water for drinking and for fruits and vegetables washing also insects fight. Prevent children from playing in contaminated places.

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9. References:

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