PREVALENCE OF INSTESTINAL PROTOZOAL INFECTION AMONG PATIENTS IN AL-DOUR HEALTHY CENTERS[+]

انتشار الاصابة بالاوالي الطفيلية بين مرضى المراكز الصحية في قضاء الدور

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Abstract:

This study which was started from (1/10/2006) to (1/10/2007) aimed to determine the rate of infection of the intestinal protozoa from patients in the healthy centers in Al-Dour city. Total stool samples (650) were examined and 160 (66.7%) was positive case for *Entamoeba histolytica* and 80 (33.3%) positive case for *Giardia lambelia*.

All the stool samples were examined macroscopically with naked eye to observe the color, blood and mucus and microscopical examination (direct method) by using normal saline (0,85%) to determined trophozoits and cysts of *E. histolytica* and *G. lambelia*. In this study we used statistical analysis in order to assess and analyze the results which included the descriptive statistics (contingency tables, contingency coefficients and graphical presentation) and inferential statistics to accept or project the statistical hypothesis.

The observed frequencies distribution discern that the both responding, (positive and negative) recorded the same results proportionally among the gender relatively, then followed by diagnosis sample single or double infection responding and two different distributed among both gender and then finally followed by the diagnosis sample (positive and negative) responding and different distributed of age groups of the studied samples .

The observed frequencies distribution discern that the both responding, species (*E. histolytica*) and (*G. lambelia*) recorded the different in their distribution results among the infection status (single and double) infection relatively with a significant different, then followed by the studied species, the results showed that in male *E. histolytica* species decreases compared with the other species, while these results reversed in female in a highly obtained confidence and then finally followed by species (*E. histolytica*) and (*G. lambelia*) recorded the different in their distribution results among the different age groups relatively with high relative obtained confidence level .

المستخلص :

هدفت الدراسة الحالية التي استمرت من ٢٠٠٦/١٠/١ لغاية ٢٠٠٧/١٠/١ الى تحديد نسبة الاخماج بالاوالي المعوية للمرضى في مركزين صحيين في قضاء الدور. تم فحص المجموع الكلي لعينات براز المرضى البالغة (٦٥٠) عينة وظهر (١٦٠)،(٦٦,٧%) حالة موجبة الاصابة لطفيلي المتحولة الحالة للنسيج و (٨٠)،(٣٣,٣%) حالة موجبة الاصابة لطفيلي الجيارديا لامبليا.

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فحصت جميع عينات الخروج للمرضى بالعين المجردة لملاحظة لون الخروج ووجود الدم والمخاط من عدم وجـــوده، كمافحصت العينات مجهرياً بأستخدام المحلول الملح الفزيولوجي (٠,٨٥%) (الطريقة المباشرة) لتـــشخيص الاطـــوار المتحركة والمتكيسة للطفيلين السابقين الذكر.

في هذه الدراسة تم استخدام التحليل الاحصائي لتقييم وتحليل النتائج حيث شمل هذا التحليل كل من الاحصاء الوصفي والاحصاء الاستنتاجي لقبول او رفض الفرضية الاحصائية.

ان معدل التوزيع التكراري يبين كلا الحالتين المستجيبتين للفحص (الموجبة والسالبة) سجلت ان هناك علاقة وثيقة بين الجنس وعينات البحث، حيث ان نسبة الاصابة بالطفيليين المذكورين في البحث عند الذكور اكبر مما هي عليهـــا عند الاناث. كذلك استجابة سالبة وموجبة لتوزيع الحالات المرضية في المجاميع العمرية المدروسة .

كما اوضحت نتائج التوزيع التكراري بالنسبة للاجناس الطفيلية (اميبيا الزحار الا والجياردیا اللامبليـــا). ان هنـــاك اختلاف واضح مع نتائج الاصابة (المفردة والمزدوجة)، كما اوضحت ان الاصابة بطفيلي اميبيا الزحار الاميبي سجلت ارتفاعاً مقارنةً مع الانواع الاخرى، وبينما انعكست هذه النتائج في الاناث.

واخيراً سجلت اميبيا الزحار النسيجي والجياردیا لامبليا اختلاف في التوزيع بين مختلف الاعمار.

Introduction:

The prevalence of amoebic infection, as of most enteric disease, varies with the level of sanitation and generally higher in the tropic and subtropics than intemperate climates. **[1]**

The severity of disease and the incidence of complication may likewise by greater in the tropic, reflecting the higher incidence of infection while various factors may play role in determining the severity of the infection, sever disease is associated with malnutrition. **[2]**

The process of identify of intestinal parasites infection in Iraq goes back to (1939) to the first study done by (Senekji, et al, 1936). This study included examining of (1000) samples of stool from three different governorates (Baghdad, Diala and Anbar). The study concluded that the percentage of infection in *Entamoeba histolytica* was (22.4%). **[3]**

Scanning the researches and studies performed during the (1980-2007) in the governorates of Iraq. **[4]**

Giardia lambelia is worldwide distribution, but it is commoner in the tropics.
It particularly affects children in endemic areas. **[5]**
It has been the most commonly identified cause of waterborne outbreaks which were reported. **[6]**

Carriers are probably make important in the spread of this organism than symptomatic patients, because 8cysts are less found in diarrheic stool and are also spread by fecal-anal rout. **[7]**

Giardiasis can be problem in institutions, nurseries and male homosexuals **[8]**, also higher incidences are likely where sanitary standards are low.**[9]**.Acute Giardiasis is more common in children under the age of 10 years who are infected with *G. lambelia*, adult are make likely to develop chronic giardiasis than children.**[10].**

Materials and Methods:-

Time and Location:-

From 1-10-2006 to 1-10-2007 and the study was carried in the two healthy care centers in Al-Dour city.

Patient selection:-

A total of (650) patients of both sexes, their age ranged from 2 to up to 30 years were chosen in Al-Dour city.

Samples collection:-

Stool samples from patients were collected. Initially stool samples from each patient were collected in clear, dry, light fit cover (to prevent samples loss and to avoid contamination). The collected samples were taken to laboratory for examination.

Stool examination:-

The stool samples were examined with naked eyes (Macroscopic examination) before microscopic examination for color, blood and mucus. Then all samples were examined microscopically by direct method for demonstrating the trophozoites and cysts of ***E. histolytica*** and ***G. lambelia*** by using normal saline (0.85%).

Data treatments and results:

Cross section design was studied with creating a contingency tables which had been leaned on the basis of applied research. The objectives of this method is to asses and analyze the meaningful causes correlation ships between the direct factors (diagnosis sample, single or double infection, species (*E. histolytica – G. lambelia*) and some related variables that can be classified indirect variables, such that gender and the age groups.

The importance of studying these tables design can be summaries in the following items:

1. Studying the interaction criteria between the two factors direct and indirect variables in order to overlook and estimate the impact of that criteria on the shape of randomness restrictions.

2. Studying the meaningful causes correlation ships between the two factors of the contingency table through estimating the contingency coefficient and testing it's significant.

The following Contingency tables represents the anterior vassal were orderly by the studied factors (diagnosis sample, single or double infection, species (*E. histolytica – G. lambelia*) according to the age groups and the Gender:-

A. The following table no. (1), represents the Cross tabulation causes Correlation ships between Diagnosis sample (positive and negitive) responding and two different Gender of the studied samples :-

The table showed that the causes correlation ships among the two factors recorded a non meaningful interaction (i.e. a non significant interaction at $P>0.05$).

In addition to that, the observed frequencies distribution discern that the both responding, posative and negative recorded the same results proportionally among the gender relatively.

In the other side, the contingency coefficient emphasized a meaningless cause correlation ships with a confidence mentioned obviously.

Then figure no. (1) represented the similarity the observed frequencies which were distributed among the different levels of the two factors (posative and negative diagnosis and gender).

Table (1): Causes correlation ship of the observed frequencies distribution among two categories responding (positive - negitive) and gender with P-value

Gender			Responses		Total	CS P-value
			Pos.	Neg.		
Gender	Male	Count	155	263	418	CC=0.004 P=0.910 NS
		% within Gender	37.1%	62.9%	100.0%	
		% within Responses	64.6%	64.1%	64.3%	
		% of Total	23.8%	40.5%	64.3%	
	Female	Count	85	147	232	
		% within Gender	36.6%	63.4%	100.0%	
		% within Responses	35.4%	35.9%	35.7%	
		% of Total	13.1%	22.6%	35.7%	
Total		Count	240	410	650	
		% within Gender	36.9%	63.1%	100.0%	
		% within Responses	100.0%	100.0%	100.0%	
		% of Total	36.9%	63.1%	100.0%	

NS : Non Sig. at P > 0.05

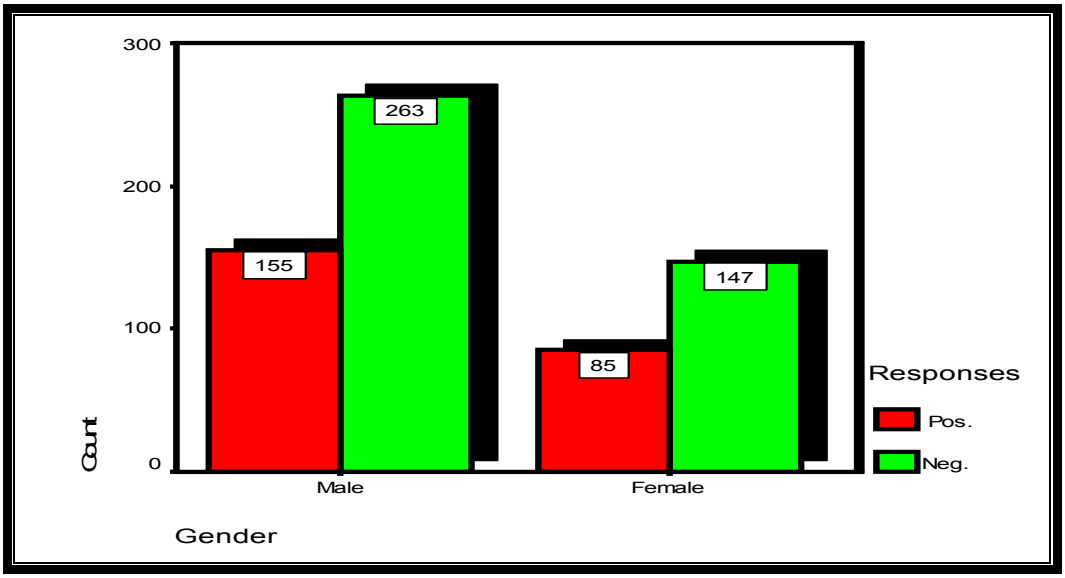

Figure (1): Cluster Bar Chart for the two categories responding (positive - negitive) and gender

B. The following table no. (2), represents the Cross tabulation causes Correlation ships between diagnosis sample single or double infection responding and two different distributed among both gender of the studied samples :-

The table showed that the causes correlation ships among the two factors recorded a non meaningful interaction (i.e. Anon significant interaction at P>0.05) .

In addition to that, the observed frequencies distribution discern that the both responding, single or double infection recorded the same results proportionally among the gender relatively.

In the other side, the contingency coefficient emphasized a meaningless causes correlation ships with a confidence mentioned obviously.

Then figure no. (2) represented the similarity the observed frequencies which were distributed among the different levels of the two factors (single or double infection diagnosis and gender).

Table (2): Causes correlation ship of the observed frequencies distribution among two categories responding (single – double) infection and gender with P-value

Gender			Responses		Total	CS P-value
			Single Inf.	Double Inf.		
Gender	Male	Count	130	25	155	CC=0.059 P=0.360 NS
		% within Gender	83.9%	16.1%	100.0%	
		% within Responses	63.4%	71.4%	64.6%	
		% of Total	54.2%	10.4%	64.6%	
	Female	Count	75	10	85	
		% within Gender	88.2%	11.8%	100.0%	
		% within Responses	36.6%	28.6%	35.4%	
		% of Total	31.3%	4.2%	35.4%	
Total		Count	205	35	240	
		% within Gender	85.4%	14.6%	100.0%	
		% within Responses	100.0%	100.0%	100.0%	
		% of Total	85.4%	14.6%	100.0%	

NS : Non Sig. at P > 0.05

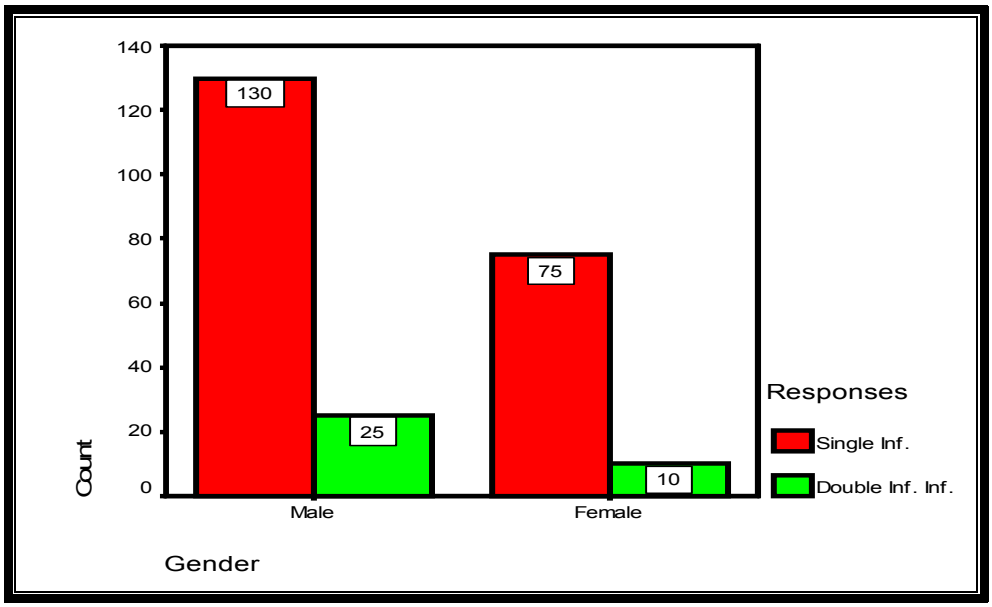

Figure (2): Cluster Bar Chart for the two categories responding (single – double) infection and gender

C. The following table no. (3), represents the Cross tabulation causes correlation ships between diagnosis sample (positive and negitive) responding and different distributed among age groups of the studied samples :-

The table showed that the causes correlation ships among the two factors recorded a non meaningful interaction (i.e. Anon significant interaction at P>0.05) .

In addition to that, the observed frequencies distribution discern that the both responding , positive and negitive recorded the same results proportionally among the age groups relatively.

In the other side, the contingency coefficient emphasized a meaningless causes correlation ships with a confidence mentioned obviously.

Then figure no. (2) represented the similarity the observed frequencies which were distributed among the different levels of the two factors (positive and negitive diagnosis and different age groups).

Table(3):Causes correlation ship of the observed frequencies distribution among two categories responding (positive - negitive) and age groups with P-value

Age/year			Responses		Total	CS P-value
			Pos.	Neg.		
Age Groups	2 - 9	Count	78	122	200	CC=0.055 P=0.580 NS
		% within Age Groups	39.0%	61.0%	100.0%	
		% within Responses	32.5%	29.8%	30.8%	
		% of Total	12.0%	18.8%	30.8%	
	10 - 19	Count	50	104	154	
		% within Age Groups	32.5%	67.5%	100.0%	
		% within Responses	20.8%	25.4%	23.7%	
		% of Total	7.7%	16.0%	23.7%	
	20 - 29	Count	52	90	142	
		% within Age Groups	36.6%	63.4%	100.0%	
		% within Responses	21.7%	22.0%	21.8%	
		% of Total	8.0%	13.8%	21.8%	
	30 >	Count	60	94	154	
		% within Age Groups	39.0%	61.0%	100.0%	
		% within Responses	25.0%	22.9%	23.7%	
		% of Total	9.2%	14.5%	23.7%	
Total		Count	240	410	650	
		% within Age Groups	36.9%	63.1%	100.0%	
		% within Responses	100.0%	100.0%	100.0%	
		% of Total	36.9%	63.1%	100.0%	

NS : Non Sig. at P > 0.05

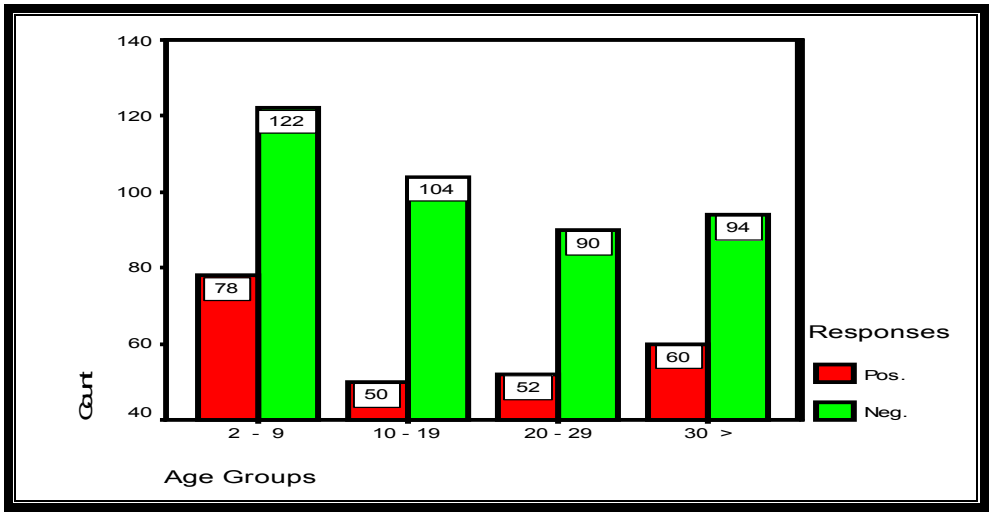

Figure (3): Cluster Bar Chart for the two categories responding (positive - negitive) and age groups

D. The following table no. (4), represents the cross tabulation causes Correlation ships between species (*E.histolytica*) and (*G.lambelia*) responding and two different distributed among both gender of the studied samples :-

The table showed that the causes correlation ships among the two factors recorded a non meaningful interaction (i.e. anon significant interaction at (P > 0.05).
In the other side, the contingency coefficient emphasized a meaningful causes correlation ships with a confidence not less than 89 % which indicated a different in responding among the two gender. From the percentages within species the results showed that in male *E.histolytica* species decreases compaired with the other species, while these results reversed in female .
Then figure no. (4) represented the differentiated of the observed frequencies which were distributed among the different levels of the two factors (species diagnosis infection and gender) .

Table (4): Causes correlation ship of the observed frequencies distribution among two categories responding species and gender with P-value

Gender			Species		Total	CS P-value
			E.histolytica	*G.lambelia*		
Gender	Male	Count	93	55	148	CC=0.102 P=0.111 NS
		% within Gender	62.8%	37.2%	100.0%	
		% within Species	58.1%	68.8%	61.7%	
		% of Total	38.8%	22.9%	61.7%	
	Female	Count	67	25	92	
		% within Gender	72.8%	27.2%	100.0%	
		% within Species	41.9%	31.3%	38.3%	
		% of Total	27.9%	10.4%	38.3%	
Total		Count	160	80	240	
		% within Gender	66.7%	33.3%	100.0%	
		% within Species	100.0%	100.0%	100.0%	
		% of Total	66.7%	33.3%	100.0%	

NS : Non Sig. at P > 0.05

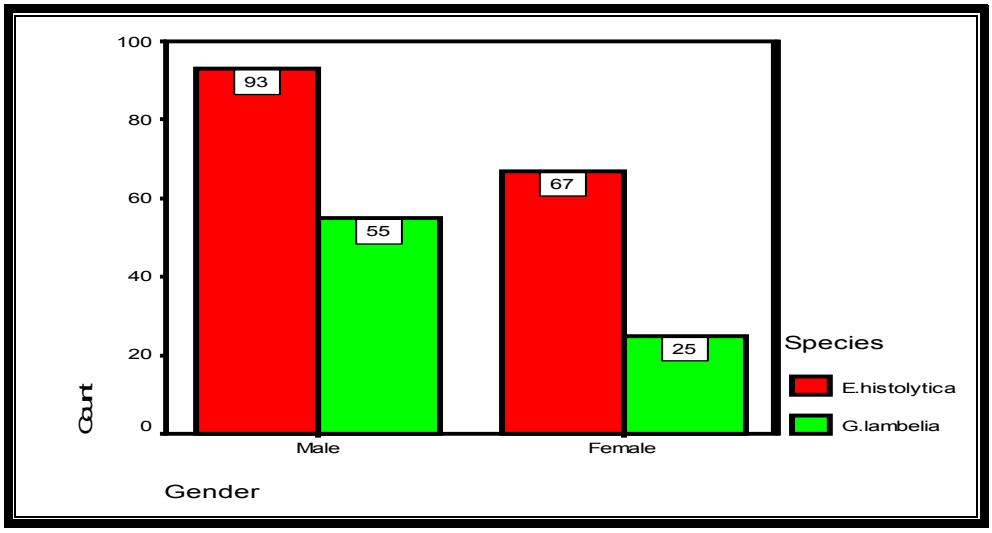

Figure (4): Cluster Bar Chart for the two categories responding species and gender

E. The following table no. (5), represents the cross tabulation causes correlation ships between species (*E. histolytica*) and (*G. lambelia*) responding and different distributed among infection status (single and double infection):-

The table showed that the causes correlation ships among the two factors recorded a meaningful interaction (i.e. A significant interaction).
In addition to that, the observed frequencies distribution discern that the both responding, species (*E. histolytica*) and (*G. lambelia*) recorded the a different in their distribution results among the infection status (single and double) infection relatively.
In the other side, the contingency coefficient emphasized a meaningful causes correlation ships with a confidence level not less than 95 % mentioned obviously.
Then figure no. (5) represented the differentiated of the observed frequencies which were distributed among the different levels of the two factors (single and double infection) and different infection status (single and double infection).

Table (5): Causes correlation ship of the observed frequencies distribution among two categories species and infection status with P-value

Infection Status			Species		Total	CS P-value
			E. Histolytica	*G.lambelia*		
Infection Status	Single	Count	120	69	189	CC=0.129 P=0.045 S
		% within Inf. Status	63.5%	36.5%	100.0%	
		% within Species	75.0%	86.3%	78.8%	
		% of Total	50.0%	28.8%	78.8%	
	Double	Count	40	11	51	
		% within Inf. Status	78.4%	21.6%	100.0%	
		% within Species	25.0%	13.8%	21.3%	
		% of Total	16.7%	4.6%	21.3%	
Total		Count	160	80	240	
		% within Inf.Status	66.7%	33.3%	100.0%	
		% within Species	100.0%	100.0%	100.0%	
		% of Total	66.7%	33.3%	100.0%	

S : Sig. at P < 0.05

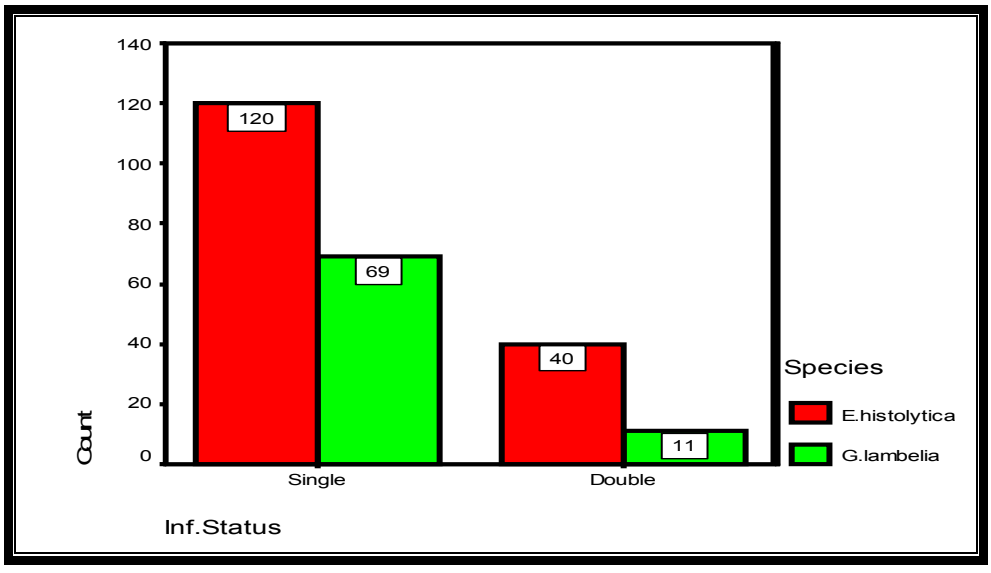

Figure (5): Cluster Bar Chart for the two categories responding species and infection status

F. The following table no. (6) , represents the cross tabulation causes correlation ships between Species (*E. histolytica*) and (*G. lambelia*) responding and different distributed among age groups of the studied samples:-

The table showed that the whereas causes correlation ships among the two factors recorded a meaningless interaction (i.e. a significant interaction at ($P < 0.05$), while to that, the observed frequencies distribution discern that the both responding , species (*E. histolytica*) and (*G. lambelia*) recorded the a different in their distribution results among the different age groups relatively.

In the other side, the contingency coefficient emphasized a meaningful causes correlation ships with a confidence level not less than (71 %) mentioned obviously .

Then figure no. (5) represented the differentiated of the observed frequencies which were distributed among the different levels of the two factors species (*E. histolytica*) and (*G. lambelia*) and different age groups.

Table (6): Causes correlation ship of the observed frequencies distribution among two categories species and age groups with P-value

Age Groups			Species		Total	CS P-value
			E.histolytica	*G.lambelia*		
Age Groups	2 - 9	Count	58	20	78	CC=0.124 P=0.288 NS
		% within Age Groups	74.4%	25.6%	100.0%	
		% within Species	36.3%	25.0%	32.5%	
		% of Total	24.2%	8.3%	32.5%	
	10 - 19	Count	30	20	50	
		% within Age Groups	60.0%	40.0%	100.0%	
		% within Species	18.8%	25.0%	20.8%	
		% of Total	12.5%	8.3%	20.8%	
	20 - 29	Count	35	17	52	
		% within Age Groups	67.3%	32.7%	100.0%	
		% within Species	21.9%	21.3%	21.7%	
		% of Total	14.6%	7.1%	21.7%	
	30 >	Count	37	23	60	
		% within Age Groups	61.7%	38.3%	100.0%	
		% within Species	23.1%	28.8%	25.0%	
		% of Total	15.4%	9.6%	25.0%	
Total		Count	160	80	240	
		% within Age Groups	66.7%	33.3%	100.0%	
		% within Species	100.0%	100.0%	100.0%	
		% of Total	66.7%	33.3%	100.0%	

NS : Non Sig. at P > 0.05

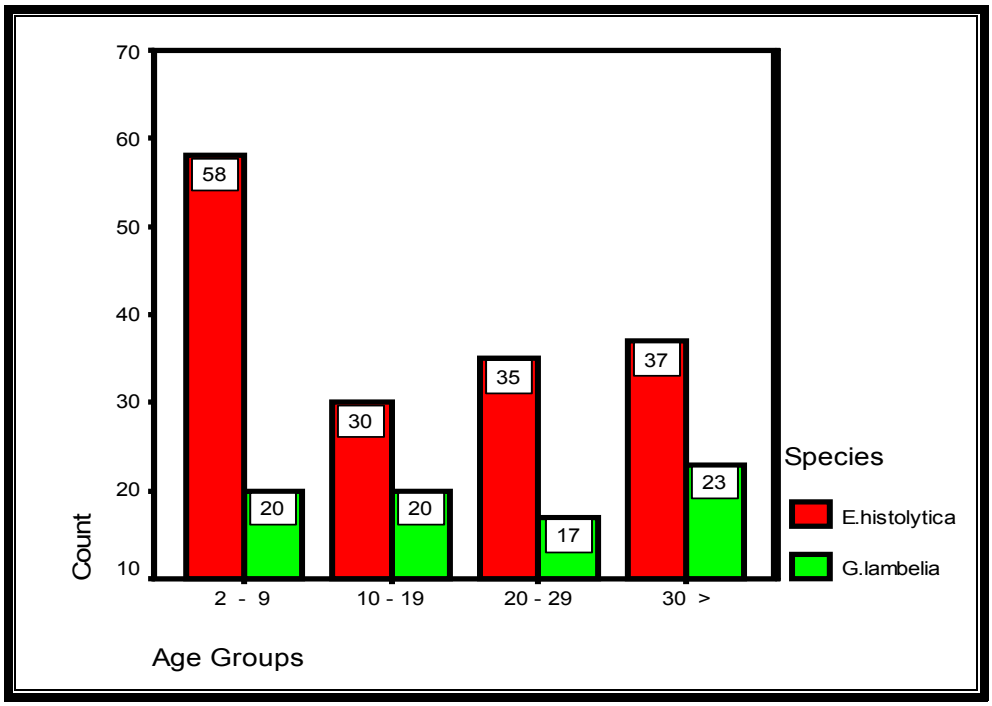

Figure (6): Cluster Bar Chart for the two categories responding species and age groups

Discussion:-

In the present study there was high rate of infection in male as compared with female infection (table 1), this finding is agree to other studies were recorded in Baghdad **[11]** and **[12, 13]** in Tikrit. And this results shows that infection was due to males play partly outside their houses and more exposure to soil contaminated with parasitic infective stage and they were mostly exposed to faecally transmitted parasite, in the same direction the results are agree to other studies **[14] [15] [16]**.

This study results (table 2) showed (85.4%), (14.6%) of single and double infection rates respectively by using direct stool examination. The best way for isolation of ***E. histolytica*** and *G. lambelia* cysts is by using flotation technique (Zinc sulphate solution) which is based on fact that *Entamoeba* cyst and *Giardia* cyst had a light weight which can float easily on Zinc sulphate solution which had heavy specific gravity **[18]**. This result is agree with that recorded **[19] [20]** and **[21]**. At the same direction we discuss table (4).

Distribution of infections according to age is shown (table 6). The highest rate (24.2%), (8.3%) in ***E.histolytica*** and *G. lambelia* respectively in the age group (2— >10) and (30 — up) years in the same direction. The result of ***E. histolytica*** is agrees with **[22]**,**[23]** and **[13]**.

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