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Epidemiological study of head lice among primary school students of some districts in Babil Governorate

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Abstract---A survey study was conducted to investigate the epidemiology and spread of the head lice parasite for the period from November/2021 to May/2022 among students of a number of primary schools in some districts of Babil Governorate, including the city center of Hilla and some districts (Abu Gharq District, Al-Hashmiyah District, Al-Kifl District). Through it, 2575 students were examined, their ages ranged from 6-8 and 10-12 years. It was found through the physical examination that there is a wide spread of head lice among primary school children, especially in the rural areas of the governorate, with the increasing rates of infection among females, where the infection rate reached 20%, while the rate of infection was 20%. The infection in males reached 18% with no significant difference, while the age group showed a significant difference 1.1916, as well as it was noted that the months had a clear significant effect 1.4594. And by tracking the injuries for a period of six months, it was noted that the infection rates increased during the month of November, while there was a clear decrease in the number of injuries during the month of December, while the infection rates returned to rise to nearly half of their previous rates in the month of February, while a decrease in the level of infection was observed in the month In March, especially among males, this percentage continued to decline among females in April, while the percentages of male injuries resumed in the same month, and with the continued low levels of infection among females in the month of May, male infection levels witnessed a clear decline.

Keywords---epidemiology, head lice parasite, infection.

Introduction

Head lice infestation is a common health problem mainly in children under 15 years of age and affects the hair and scalp. The infection is spread between adults and children, and because head lice cannot fly, their short, lumpy legs make them unable to jump, or even walk efficiently on surfaces level, the transmission of head lice from one person to another, either directly during children's play or indirectly through contact with pregnant lice. Items such as brushes, combs, towels, hats, head coverings, and pillows (Downs *et al.*, 1999). Many studies in the world have focused on the subject of head lice, including a head lice epidemiological study conducted by Kwaku-Kpikpi (1982), which included 319 primary school students in the Ghanaian city of Accra.

In the United States, through the questionnaire carried out by Nutanson *et al* (2008) to investigate head lice infestations, head lice were found to be the most prevalent parasitic infection among children, infecting 6 to 12 million people annually .From a meta-analysis by Tytuła*et al* (2019) of data obtained from orphanages and refugee shelters in southeastern Poland he noted that this type of living conditions promotes the transmission of scabies and lice and these diseases were diagnosed most often in young people who actively participate in social life.
ead lice are the most common ectoparasite disease of children in industrialized countries and are extremely common in resource-poor communities in the developing world (Feldmeier, 2014)

Head lice remain a public health problem worldwide, with prevalence varying within and between countries from 0.7 to 59% (Combescot *et al*, 2015). The city of Kalar in northern Iraq was a city infested with head lice parasites, and the infection rates exceeded the minimum epidemic level (Amin *et al.*, 2019). There is a clear increase in the incidence of pediculosis among children of government primary schools in Erbil governorate, as 234 children out of 1100 were infected with the variation in the severity of infection according to gender, age, nature and length of hair. (AL-Daoody*et al*, 2021).

The study carried out by Ali and Hama (2018) on the spread of the head lice parasite on 11,798 people who were examined in refugee compounds in Sulaymaniyah Governorate, revealed that 1.12% of them are carriers of head lice, with the increase of that percentage in females, and the infection was related to the size of the family and the duration of hair washing Hair length and age, and personal hygiene have a clear impact on the spread and epidemic of head lice.

From a study conducted in the city of Kirkuk, it was found that 117 of the population carried head lice out of 1988, and the infestations were higher among the age groups 6-12 years (Rasheed and Al-Nasiri, 2021).In the city of Tikrit, the rates of head lice infestation among the displaced reached (47.85%), and the infestation was found to be associated with young ages, female gender, mother's educational level, increasing family members, exchanging personal tools with others and sleeping in one place (Madhi et al., 2021).

Materials and Method

Two methods were used to collect the parasite:
1-Soft comb method: A special comb was used to quickly and easily remove lice without pulling the hairs, and the parasite was placed in a petri dish 2-Head lice device method: This device is free of chemicals and allergens. It removes head lice and eggs with a hair comb. It can detect head lice infestation, while providing fast, visible results. With the force of suction, the head lice and eggs that are ejected from the head are drawn into the capture filter inside the V-Comb, which is easily visible due to the transparency of the device. Then we place the head lice on a petri dish.

Students were divided into two age groups (6-8), (10-12)
The number of infestations and their proportion to the studied areas were calculated monthly during the research period and the infestations were divided according to age and gender. Samples were taken from severely infested students manually and using a louse suction device. The samples were placed in Petri dishes and transferred directly to the laboratory for use in all experiments related to the research.

Results and Discussion

Infection rates in (the studied areas) according to the months of the study

Table (1) shows the rates of infestation with the head lice parasite *Pediculushumniscapitis*, according to the months and regions covered by the study

Infection rate for the area	April and May infected	February and March infected	December and January infected	Region
11.00	4	10	19	City center
19.33	11	19	29	Abu Gharq
24.00	11	22	٣٩	AL- kefl
22.66	9	18	41	Hashemite
	8.50	17.25	32.00	average months
	overlap	months	Region	Lsd
	1.8202	0.9101	1.0509	

The results contained in Table (1) indicated that the highest number of injuries was recorded in the months of December and January in Al-Hashemiah district, which amounted to (41) injuries, followed by Al-Kifl district with (39) injuries. 29) injuries, while the lowest injuries were recorded in the city center and were (19) injuries.

During the months of February and March, a decrease in the number of casualties was observed in the study areas with a discrepancy in their number, as Al Kifl district topped it, followed by Abu Gharq district, then Al Hashemiyah district, and finally the center, where the number of casualties came (10, 18, 19, 22), respectively.

The results contained in Table (4-1) indicated that the highest number of injuries was recorded in the months of December and January in Al-Hashemiah district, which amounted to (41) injuries, followed by Al-Kifl district with (39) injuries (29), while the lowest injuries were recorded in the city center and were (19) injuries . During the months of February and March, a decrease in the number of consequences was observed in the study areas with a discrepancy in their number, as Al Kifl district topped it, followed by Abu Gharq district, then Al Hashemiyah district, and finally the center, where the number of consequence came (10, 18, 19, 22), respectively.

It is noticed from the above table that there is a significant difference between the study areas (1.0509) and there is a significant effect between the months of the study (0.9101) and the overlap between them was (1.8202) (SAS, 2012). It is worth noting that the increase in the number of infection during the months of December and January after the start of the school year for about a month and a half, through the mixing of students with each other, which led to the rapid transmission of infection and the spread of the parasite among them as a result of contact and adhesion to each other, in addition to the lack of showering times and the scarcity of using treatments Or shampoos because of the cold winter season, which makes daily bathing difficult, in addition to children wearing headscarves to avoid the cold, which provides a suitable environment for the growth of head lice.

This study was consistent with many studies, including what Kunhan et al. 2004 indicated that head lice are more prevalent in winter due to children wearing hats and exchanging them among students or taking them off and leaving them on the study platform, which leads to transmission of the parasite and facilitates its spread .Then there was a decrease in injuries during the months of February and March, which may be due to the exams, in which students meet and stick together for fear of cheating, in addition to the lack of working hours on examination days, followed by the spring vacation, during which students stay at home and mixing rarely occurs, in addition to the absence of homework. Mothers are somewhat devoted to the children and take care of them

It was also noted that the infestations continued to decline in the months of April and May, which are the hottest months during the study, during which students can shower and use various treatments to eliminate head lice. The result of the current study is similar to many studies that confirmed the high rates of infection in the cold months, including what was confirmed by (Kassiri and MardaniKateki, 2018) (AL-Marjan *et al*, 2022). Playing as well as the cold weather in which showers are less, while the summer vacation coincides in the hot months, which reduces mixing between children, in addition to the ease of washing hair and using the necessary pesticides to combat lice.

While these results differed with a study conducted in the city of Tikrit by Al-Alusi and Tawfiq in (2008) which confirmed the high rates of infection in the hottest months of the year, and this was also confirmed by AKhter*et al* (2010), who attributed this to the fact that the summer season is the season of tourism and going out and the mixing of people in gatherings Public areas such as parks and recreational places were also considered as high temperatures as an important growth factor for head lice. Only a slight seasonal difference was shown in a study conducted in Pakistan by (Suleman and Jabeen, 1989).

Table (2) shows the rates of head lice infestation, Pediculus humnis capitis, during the months of the year, according to age groups and sex

Average Months	Female		Male		Number of Infected		Number of Examinations	Age	Month
	%	Number	%	Number	%	Total number			
23.00	40.32%	50	%29	23	%35.34	83	618	6-8	December, January
	15.32%	19	%25	27	% 19.82	46	376	10-12	
17.25	17.74%	22	%24	26	%20.68	48	443	6-8	February, March
	12.09%	15	%5.05	6	% 9.05	21	245	10-12	
8.75	8.87%	11	%10.1	11	%9.48	22	501	6-8	April, May
	5.64%	7	%5.05	6	% 5.60	13	392	10-12	
		124		108		232	2575	the total	

	20.66	18.00	sex rate
10-12		6-8	average age
13.33		25.33	

overlap	sex	age period	Months	Lsd
2.9188	1.1916	1.1916	1.4594	

It is noted from Table No. (2) that the rates of head lice infestation increased in males than in females, where the infection rate reached 20% in females and 18% in males. There is no significant difference between injuries in males and females While the age group showed a significant moral difference of 1.1916, where the age group 6-8 showed an increase in infections because this age group did not know how to take care of their personal hygiene and depend on their mothers,

who may be responsible for their younger siblings, and they cannot avoid children carrying head lice in addition to using the same tools Personality between the children of the same family by the mother, which causes the rapid spread and transmission of the parasite.

The months show a clear significant effect of 1.4594. By tracking the infections for a period of six months, it was noted that the infection rates increased during the month of November, while there was a clear decrease in the number of injuries during the month of December, while the infection rates returned to rise to nearly half of their previous rates in February, while A decrease in the level of infection was observed in the month of March, especially in males. This percentage continued to decrease in females in April, while the percentage of injuries rebounded in males in the same month. With the continued low levels of infection among females in the month of May, male infection levels witnessed a clear decline.

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