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A Study of Pediculosis Capitis Infestation (Head Lice) among School Girl's Students in Al-Fuhud District of Thi-Qar Province in Iraq

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Abstract

Head lice (Pediculus hum anus capitis) is one of the most common parasitic infections in the world, causing health problems among schoolchildren and a high level of anxiety among school-age parents, with a peak infestation between the ages of 6-12 years.

The current study included conducting a visual examination for the detection of head lice on 709 female students from two primary schools in different areas at the economic and social level in Al-Fuhud district / Thi-Qar province. The current study showed a total infection number of 48 in all of the two schools.

The results showed differences in head lice infestation according to factors such as age and social and family variables for the same school, with similar results when comparing both schools. The number of infections in Al-Mukhtar Al-Thaqafi School was 25 and the number of infections in Imam Al-Muttaqin School was 23.

Improving living standards, awareness and education, and the use of appropriate treatment methods can significantly reduce lice infestation.

Key words: pediculosis, primary school girl's, infestation.

I. Introduction

Pediculosis is an infestation of lice on the human body. Lice are insects of the order phthiraptera living as an obligate ectoparasite on the body of humans and animals. Human infestations occur on the head (the most common type), body, and pubic parts [(1)]. Pediculosis also known as head lice infestation, is caused by *Pediculus humanus capitis* (Phthiraptera: Pediculidae). Lice infestation or pediculosis is a global health concern, with much more spread in developing countries. Despite the preventive activities, head lice infestations persist at different ages and spread, most commonly, by close person-to-person contact in densely populated areas as in the figures (1,2) [(2)], because lice cannot hop or fly from one host to another. In addition to direct contact, they are also rarely transmitted through personal effects such as combs, hats, scarves, underwear, and towels [(3)]. Head and pubic lice may cause discomfort and embarrassment to people, but play no role in transmitting any diseases. Body lice are only vectors of human diseases such as trench fever, typhoid fever, and relapsing fever [(4)]. There are numerous reports of increased cases of pediculosis and recurrences after treatment [(5)]. Treatment with permethrin 1%, lindane 1% shampoo, and dimethicone lotion has been used in the cure of pediculosis since 2014. To date, various studies have been performed on the *Pediculus capitis* prevalence among primary school-aged children around the world. Economic, social, and cultural standings are very important contributors to lice infestation [(6)]. Children are infested at a higher percentage than adults [(7)]. The highest infestation was reported in children 5–11 year. old groups. It is more common in girls than boys and also in whites than blacks [(8)].

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Head lice contamination is one of the most common parasitic contaminations in the world that causes serious health problems for many communities, especially for school children [9]. It may also have psychological and social outcomes. This condition may lead to the students' educational failure [10]. Head lice contamination is common worldwide and has been proposed as a major health problem not only in poor countries but also in developed and industrial countries. Every year, over 12 million Americans are contaminated by this parasite [11]. Studies carried out in different parts of the world have reported different prevalence for head lice in children. The rate of contamination has been estimated to be 16.59% in India, 13.3% in Yemen and 8.9% in Belgium. Various reports have been published on the percentage of contamination in Iran. For instance, it has been reported to be 0.47% in Aran and Bidgol, 2.2% in Babol, 4.5% in Gilan, 6.7% in Hamedan, 7.7% in Sanandaj, and 13.3% in Qom [12]. The aims of study to estimate the updated pediculosis capitis (head lice infestation) prevalence among school girls and its associated factors in Thi-Qar province.

Figure (1) : explain head lice [2]

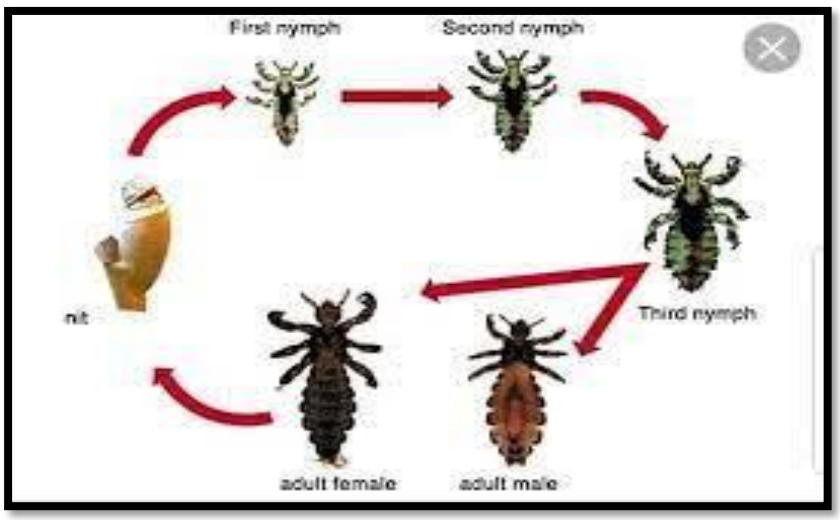

Figure (2) : explain life cycle head lice [2]

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Classification

Kingdom: Anemalia

Phylum: Arthrapoda

Subphylum: Mandibulata

Class: Insecta (Hexopoda)

Sub Class: Pterygota

Division: Exopterygota

Order: Anoplerura

Family: Pediculidae

Genus: Pediculus

Species: P. hum anus

Subspecies: P.h.capiti (Ernst Haeckel 1986)

II. Materials and Methods

Sample Collection

After receiving permission from the school administration to conduct the study and obtaining the required permission to collaborate with the researcher when entering the chosen schools, the study was carried out to find out how common head lice were among two students from a primary school in areas of the city of Dhi Qar (Al-Fuhud) that varied in social and economic status. There were 688 female students in the study sample.

For female pupils aged 6 to 12, a direct external field assessment was performed on their heads. Each student was interviewed in person, and a questionnaire containing personal information such as name, age, gender, mother's level of education, and hair type and nature was completed and recorded. They looked at the scalp. The examination was conducted with the unaided eye, with a magnifying lens employed where necessary, with a focus on the occiput and behind the ears.

The presence of the adult bug or one of its stages (egg, nymph) indicates the presence of an infestation. Female hair length is also separated into two categories: There are two types of hair texture: short hair that falls to the shoulders and long hair that reaches past them. The two components of hair density—thick and thin—were also separated, and percentages were used to compare the aforementioned indications.

Study materials

Alcohol, gloves and coat

Sstatistical Analysis

The results of the current study were analyzed using Chi-square test, using the SPSS statistical analysis program version 26.

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III. Results and Dissection

The schools under study in Al-Fuhud district were visited to determine the number of cases of head lice infestation and the percentage among female students from first to sixth class, numbering 709. The results appeared as shown in the tables below.

The total infection rate at Al-Mukhtar Al-Thaqafi girls' school was (5.88%), and the highest infection rate was in the age group of 8-9 years, (32.00%), followed by the age group of 6-7 years, (24.00%), while the lowest infection rate was in the age group 11-12 years, (4.00%), as shown in Table (1).

Table (1): Shows the numbers of students, age group, and percentage of lice infection at Al-Mukhtar Al-Thaqafi girl's school.

Grade	Age group	Healthy		Patients	
		No.	%	No.	%
First	6-7	66	16.50	6	24.00
Second	7-8	53	13.25	3	12.00
Third	8-9	74	18.50	8	32.00
Fourth	9-10	61	15.25	4	16.00
Fifth	10-11	85	21.25	3	12.00
Sixth	11-12	61	15.25	1	4.00
Total		400	94.12	25	5.88
$CalX^2$= 13.4		$TabX^2$= 11.07	DF= 5	p. value 0.020*	

The total infection rate for Imam Al-Mutaqeen school for girls was (8.10%), and the highest infection rate was in the age group of 8-9 years, (30.43%), followed by the age group 6-7, (26.09%), while the lowest infection rate were in the age groups 9-10 (8.70%) and 11-12 years which (8.70%) as shown in Table (2).

Table (2): Shows the number of students, age group, and percentage of lice infection for Imam Al-Muttaqeen girl's school

Grade	Age group	Healthy		Patients	
		No.	%		%
First	6-7	42	16.09	6	26.09
Second	7-8	47	18.01	3	13.04
Third	8-9	45	17.24	7	30.43
Fourth	9-10	43	16.48	2	8.70
Fifth	10-11	41	15.71	3	13.04
Sixth	11-12	43	16.48	2	8.70
Total		261	91.90	23	8.10
$CalX^2$= 11.0		$TabX^2$= 11.07	DF= 5	p. value 0.051	

Head lice infections are widespread among kids in schools and other institutions worldwide, according to earlier studies. Students between the ages of 5 and 13 have the highest prevalence of head lice infection and girls are more likely than boys to have it. One of the suggested approaches to addressing issues like obesity and the use of tobacco, alcohol and other drugs are health education and awareness, which are crucial in addressing issues of this kind. The same approach may be used to address the lice problem in schools, and educators can act as change agents in relation to the infection and the issues it causes [13]. Additionally, study has demonstrated that lice were more common in schools that did not offer any kind of instruction on lice prevention and management.

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The study noted that the number of lice infection in both schools is higher among female students whose mothers are unemployed, and that there is a difference in the infection rate among students according to the nature of the mother's work, as shown in Table (3).

Table (3): Shows the nature of the mother's work for Al-Mukhtar Al-Thaqafi School and Imam Al-Muttaqin school for girls

Imam Al-Muttaqin school (23)			Al-Mukhtar Al-Thaqafi School (25)		
%	No.	Mothers work nature	%	No.	Mothers work nature
39.2	9	Employed women	40	10	Employed women
60.8	14	Unemployed women	60	15	Unemployed women
CalX^2= 0.021 TabX^2= 3.84 DF= 1 p. value 0.885					

Table (4) shows the father's work for both schools. It was noted that is a difference in infections for both students whose parents are unemployed and employed, as the study showed the infection rates for female students whose parents are unemployed are higher than for female students whose parents are employed of Al-Mukhtar Al-Thaqafi School, while on the contrary, the percentage of infection was observed among female students whose parents are employed of Al-Mukhtar Al-Thaqafi School. A female student whose parents are employed is higher than parents unemployed for the Imam Al-Muttaqin School.

Table (4): Shows the father's work for teacher, Al-Mukhtar Al-Thaqafi, and the Imam Al-Muttaqin girl's school

Imam Al-Muttaqin school (23)			Al-Mukhtar Al-Thaqafi School (25)		
%	N	Father work nature	%	No.	Father work nature
69.56	16	Employed	48	12	Employed
30.44	7	Unemployed	52	13	Unemployed
CalX^2= 10.0 TabX^2= 3.84 DF= 1 p. value 0.002**					

Socio-economic status, including the parents' occupations, is one of the important factors in the prevalence of pediculosis capitis. In this study significant relationship was observed between the mother's job and lice infestation. However, there was a significant difference between pupils whose fathers enjoyed state employment and those whose fathers were laborers. This may have been due to a better economic situation, causing better hygienic conditions in such families. Some studies did not show a significant relationship between the prevalence of head lice infestation in pupils and their parents' occupations [14]. They the study agree with our study in the al-mukhtar al-thaqafi school.

The study also showed the number of infections is higher among female students with long hair in both schools, at a rate of (60%) for Al-Mukhtar Al-Thaqafi school and (69.5%) for Imam Al-Muttaqeen school, as shown in Table (5).

Table (5): Shows the nature of the type hair of Al-Mukhtar Al-Thaqafi school and Imam Al-Muttaqin girls' school

Imam Al-Muttaqin school (23)			Al-Mukhtar Al-Thaqafi School (25)		
%	No.	Hair type	%	No.	Hair type
69.6	16	Long and thick	60	15	Long and thick
30.4	7	Short	40	10	Short
CalX^2= 2.19 TabX^2= 3.84 DF= 1 p. value 0.138					

May be attributed to various factors such as having long hair, braiding of hair, and gender related behaviors such as wearing scarves which can cause late detection, probably account for facilitating pediculosis infestation and the high prevalence rate among girls. Also, girls tend to spend more time playing in close contact especially head

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to-head with one another than boys because they tend to have short length of hair while girls prefer long hair and that boys are more likely to be taken care of by the parents as compared to girls especially in rural settings in our country. In this regard, some studies have only focused on girls [9].

The study noted infection rates among female students with families of less than 7 members were higher than with families of more than 7 for both schools, (72%) for Al-Mukhtar Al-Thaqafi school and (60.8%) for Imam Al-Muttaqeen school, Table (6).

Table (6): Shows the incidence of infection and the number of family members for Al-Mukhtar Al-Thaqafi school and Imam Al-Muttaqeen girls

Imam Al-Muttaqeen school (23)			Al-Mukhtar Al-Thaqafi school (25)		
%	No.	family members	%	No.	family members
39.1	9	7<family members	28	7	7<family members
60.9	14	7>family members	72	18	7>family members
$CalX^2$= 2.71 $TabX^2$= 3.84 DF= 1 p. value 0.099					

In high-density populations, where lack of personal hygiene is an important risk factor for pediculosis capitis, however, no significant difference was observed between the family size and pupil infestation, in our investigation [14]. Also found a positive correlation with number of people sharing the room with the number of children with head louse infestation increase in the size of the family results in increase in transmission of the lice and likelihood of infestation which is consistent with our study. The causes can be that as the number of members in a family increase that chances of been ignored is high in children as the parental attention tends to get divided [15].

IV. Conclusion

The major findings of the present work are:

1. A significant difference has been shown in the age group in patients as compared to healthy group at Al-Mukhtar Al-Thaqafi girl's school.

2. A significant increase has been shown in the father's work for teacher, Al-Mukhtar Al-Thaqafi, and the Imam Al-Muttaqin girl's school**.**

Recommendations

1. Conduct studies on a larger scale and in a larger number of schools.
2. Be careful when examining students and wear gloves to avoid lice infection.
3. Raising the level of health and awareness among students in schools.
4. Increase supervision of schools with the highest incidence rates in an attempt to reduce the spread of head lice infection.
5. The necessity of carefully examining the scalp of schoolchildren at the beginning of the school year.
6. Do not share clothes and hairbrushes, such as hats and coats.

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