

An Epidemiological Survey of Head Louse Infestation Among Primary School children in Rural Areas of Ravansar County, West of Iran

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Abstract: Head louse (*Pediculus humanus capitis*) is an obligate wingless insect that transmitted from a person to another, thorough physical contacts. Pediculosis is a health problem that is affect schoolchildren especially in poor countries. The present study was conducted to evaluate the prevalence rate of pediculosis among primary schoolchildren and its associated factors in rural areas of Ravansar County. The sample size was 385 girl students in 6 villages, including Quri Qaleh, Boz gureh, Qeshlaq, Mansur-e Aqai, Shahrak-e Series and Tazehabad-e Series. A questionnaire that included questions relating to the following: age, school grade, socio-economic status, parent's job, level of parents' education and family size was used. Data were analyzed by SPSS software with proper statistical test. 61 (15.8%) of the examined students were infested to head louse. The most prevalent infestation was observed in 8-9 year-old students and the lowest infestation were reported in students of ≥ 12 years old. There was a significant statistical relationship between head louse infestation and some related factors such as mother's education, frequency of hair washing, using common comb ($p < 0.05$). The results of the present survey and many studies in Iran and foreign countries show that head louse infestation is a cosmopolitan health problem with different prevalence rates regionally but it remains as a considerable pediatric problem.

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Introduction

Head louse, is Known as *Pediculus humanus capitis* is a wingless insect which is found on hair and scalp and transmitted from person to another person mainly through physical contacts (Linardi et al. 1988, Slonka et al. 1976). Blood feeding by this obligate insect can cause anemia in children and scratch sites can lead to secondary infections (Slonka et al. 1976). The insect is not known to be the vector of any disease but it causes annoyance, irritation and sleepiness apart from psychological and social distress (Alempour Salemi et al. 2003). Head louse infestation is one of the health problems in some countries (Ewasechko 1981, Kwaku-Kpikpi 1982, Slonka et al. 1976) and Iran (Shayeghi et al. 2010, Alempour Salemi et al. 2003, Edalatkhah et al. 2005). Head louse infestation is common between people especially children in age school (Shayeghi et al. 2010, Vahabi et al. 2013, Vahabi et al. 2012). In a study in Tabriz, head louse infestation rate was 3.64% (Hodjati et al. 2008). Study by Davarpanah et al. (2009) showed that 1% of children had head louse infestation. Head louse infestations are known in many parts of Iran but it's not common in Ravansar county, thus this study was conducted to evaluate head louse infestation and its associated factors in rural areas of this region.

Materials & Methods

The study was done in 6 villages of rural areas of Ravansar county, Kermanshah province, including: Quri Qaleh, Boz gureh, Qeshlaq, Mansur-e Aqai, Sharak-e Series and Tazehabad-e Series. The survey was carried out in 6 schools and 385 schoolchildren girls were evaluated. In each school 3 classes with the sample size of 20 students were selected (in 2 villages all of students were investigated because the number of students per class is less than those required) and investigated for head lice infestation by survey of the entire head carefully after parting the hair, special attention to the nape of the neck and behind the ears. If were detected living lice, eggs, either live or dead or nits, a child was considered infested. A questionnaire that included questions relating to the following: age, school grade, socio-economic status, parent's job, level of parents' education and family size was used. During the interview, Public health questionnaire focusing on demographic information and head louse infestation was completed. To data analyzing SPSS ver. 16 was used.

Results

During the study, totally 385 girl students were examined and 61 (15.8%) of them were infested to

head louse (Table 1-3). Mean age of samples was 9.16 ± 1.47 . The most head louse infestation was observed in 8 to 9-year-old students and the lowest infestation were reported in students of ≥ 12 years old (Table 2). There was a significant statistical relationship between head louse infestation and mother's education ($p < 0.001$), frequency of hair washing ($p = 0.04$), length hair ($p = 0.009$), using common comb ($p = 0.009$) and family size ($p = 0.04$). Data analyzing showed that there were no significant statistical relationship between head louse infestation and some associated factors such as: age ($p = 0.4$), Children's grade school ($p = 0.5$), father's job ($p = 0.5$), having hygiene teacher ($p = 0.4$) and level of father's education ($p = 0.57$).

Table 1. Relationship between head lice infestation with different variables in primary schoolchildren, Ravansar County, Kermanshah Province

Variable	Df	χ^2	p-value
Age	3	2.8	0.4
Level of education	4	3.3	0.5
Father's job	3	2.5	0.5
Father's education	4	2.9	0.6
Mother's job	1	0.4	0.5
Mother's education	4	44.6	<0.001
Frequency of hair washing	2	6.2	0.04
Length of hair	2	9.5	0.009
Having hygiene teacher	1	0.6	0.4
Using common comb	1	6.8	0.009
family size	2	6.5	0.04
$\alpha = 5\%$			

Discussion

In the present survey, 15.8% of the students were infested to head louse. Other studies in some parts of Iran have shown different rates of head louse infestation. The head louse infestation rate was from 0.35% in Fars (Davaranpanah et al. 2009) to 28.5% in Ardebil (Edalatkhah et al. 2005). In a study was conducted in sanandaj city (Vahabi et al. 2012), the prevalence rate was 4.7% that is different from this survey because the previous study was conducted in a city and the present study was carried out in rural areas that there were no adequate sanitation facilities. The prevalence rate in Hamadan, Western Iran, was 6.85% and in Kerman, Central Iran, was 3.8% (Kamiabi & Nakhaei 2005, Nazari et al. 2006, Moradi et al. 2009). In another study in rural areas in Sirjan county, South of Iran, the head louse infestation was 1.12% (Yousefi et al. 2012). Another

Table 2. Prevalence rate of head lice infestation in relation to socio demographic status of parents and age of the children in primary schoolchildren, Ravansar County, Kermanshah Province

Variable	infestation	
	Number of infestation / Total	%
Age		
6-7	12/63	19.7
8-9	27/147	44.3
10-11	21/163	34.4
≥ 12	1/12	1.6
Total	61/385	100
Children's grade school		
I	15/75	24.6
II	11/63	18
III	14/78	23
IV	13/92	21.3
V	8/77	13.1
Total	61/385	100
Father's job		
Government	12/93	19.7
Private	18/86	29.5
Labour	31/206	50.8
Total	61/385	100
Father's education		
Illiterate	10/45	16.4
Initial education	23/128	37.7
Guidance school	8/59	13.1
High school	12/91	19.7
University education	8/62	13.1
Total	61/385	100
Mother's job		
Employed	9/47	14.8
Housewife	52/338	85.2
Total	61/385	100
Mother's education		
Uneducated	35/94	57.4
Initial education	14/143	23
Guidance school	3/44	4.9
High school	4/72	6.6
University	5/32	8.2
Total	61/385	100
family size		
3-4 persons	31/218	50.8
5-6 persons	17/122	27.9
≥ 7 persons	13/45	21.3
Total	61/385	100

studies in Iran have shown prevalence rates of head louse infestation: 6.7% in girl students in Khajeh City (Shayeghi et al. 2010), 27% in Iranshahr (Alempour-Salemi et al. 2003), 8% in Paveh city

Table 3. Prevalence rate of head lice infestations in relation to personal hygiene in primary schoolchildren, Ravansar County, Kermanshah Province

Variables	Infestation	
	Number of infestation/ Total	%
Number of hair washing		
Once a week	25/122	41
Twice a week	30/183	49.2
Three times a week or more	6/80	9.8
Total	61/385	100
Length of hair		
Short	18/162	29.5
Medium	18/124	29.5
Long	25/99	41
Total	61/385	100
Having hygiene teacher		
Yes	30/207	49.2
No	31/178	50.8
Total	61/385	100
Sharing common comb		
Yes	28/122	45.9
No	33/263	54.1
Total	61/385	100

(Vahabi et al. 2013), 5.5% in girls students in Urmia (Hazrati Tappeh et al. 2012), 3.64% in Tabriz (Hodjati et al. 2008), 28.5% in Ardebil (Edalatkhah et al. 2005). Studies in foreign countries had shown different infestation rates among schoolchildren: 33% in Australia (Speare et al. 1991), 35% in Brazil (Borges et al. 2002), 48.7% in France (Courtaide et al. 1993) and 49.7% in Ghana (Kwaku 1982). The prevalence rate of this survey compare to some studies in Iran was more, thus the educational system should clarify all of parents from all families to play a more effective role to eliminate head louse infestation among schoolchildren. In the other hand simple and effective health training courses related to head lice infestation and its dangerous can be useful for parents to examine their children periodically and carry out preventive programs to protect them of this health problem. The results of the present survey and many studies in Iran and foreign countries show that

head louse infestation is a cosmopolitan health problem with different prevalence rates regionally but it remains as a considerable pediatric problem. The findings of this study revealed that, infestation rate in the students that wash themselves 3 or more 3 times in a week was less, thus bathing is very important to reduce head louse infestation.

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