

Prevalence of Head Louse (*Pediculus humanus capitis*) Infestation and Associated Factors Among Primary Schoolchildren in Bayengan City, West of Iran

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Abstract: Head louse infestation is a worldwide public health problem that affects some people mostly school age children. This survey was a descriptive, analytical study that carried out to evaluate and determine the prevalence rate of pediculosis capitis and some associated factors among primary schoolchildren in Bayengan city, Kermanshah Province, Iran. 384 students in 4 schools (164 boys and 220 girls) were selected. For data collection, Random Cluster Sampling Method was used and from each cluster 96 persons were selected. The results and demographic data, was recorded in a questionnaire and then analyzed by SPSS ver. 16. The results of the study showed that 54 students (14.1%) were infested. 8.5% of the boys and 18.2% of the girls were infested to head lice. The most prevalent rate was observed in grade five and the lowest prevalence rate was observed in grade I. There were significant statistical differences between pediculosis capitis and some factors such as sex, level of mother's education and father's job ($p < 0.05$). The prevalence rate of head louse infestation in this study was high. The educational system should clarify all of parents from all families to play a more effective role to eliminate head louse infestation among schoolchildren.

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Key words: pediculosis, prevalence, head louse infestation, capitis, Iran

Introduction

The biggest classes of Animalia Kingdom, are insects. About 80% of the known animal's specimens in the world are insects (Salehzadeh, 1992; Vahabi et al., 2007). Head lice are blood-sucking insects belonging to order of Anoplura which are specific parasites of human being (Takano-Lee et al., 2004). They are transmitted from person to another person mainly through physical contacts (Linardi et al., 1988). Head lice are not known to be the vector of any disease but they cause annoyance, irritation and sleepiness apart from psychological and social distress (Alempour Salemi et al., 2003). One of the health problems in some countries and Iran is head louse infestation (Borges et al., 2007; Hodjati et al., 2008; Jahnke et al., 2009; Sim et al., 2011; Shayeghi et al., 2010; Alempour Salemi et al., 2003; Edalatkhah et al., 2005). Head louse infestation is a health problem in schools that is affect health workers, teachers, students and their parents, but it is believed that in areas where there are other serious health priorities, head louse infestation is ignored and thus remains undetected (Davaranpanah et al., 2009). Head louse infestation is common between people especially children in age school (Shayeghi et al., 2010; Vahabi et al., 2012). In a study in Tabriz, head louse infestation rate was

3.64% (Hodjati et al., 2008). Study in Fars province showed that 1% of the children had head louse infestation (Davaranpanah et al., 2009). Studies in some parts of Iran showed different rates of head louse infestation; 27% in Iranshahr (Alempour Salemi et al., 2003), 8% in Paveh city (Vahabi et al., 2013), 15.8% in Ravansar county (Sayyadi et al., 2013) and 5.5% in girls students in Urmia (Hazrati Tappeh et al., 2012). Head louse infestations are known in many parts of Iran but it's not common in Bayengan City, thus this study was conducted to evaluate head louse infestation and its associated factors in this region.

Materials and Methods

This survey was a cross-sectional study and carried out in Bayengan city (34°98'08"N34°57'12"E), Kermanshah Province, west of Iran. The city is 1155 meters above sea level and the population of the city was 2265 in 2008. For data collection, Random Cluster Sampling Method was used and from each cluster 96 persons selected. Finally 384 students in 4 schools and in any school 5 classes and in each class 19 pupils were selected 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

164 (42.7%) of them were boys and the rest (57.3%) were girls. The infestation rate was 54 (14.1%) that 14 (8.5%) of boys and 40 (18.2%) of girls were infested to head louse. There was a significant statistical relation between sex and head louse infestation ($p=0.007$). Mean age of samples was 9.20 ± 1.41 years. The most prevalent rate of infestation was observed in grade five that 29.6% of all infested

children were in this grade and the lowest infestation was observed in grade I (9.3%) (Table 1). 11.4% of the infested children had a bathroom in their houses. There was a significant statistical relation between head louse infestation and having bathroom in the house ($p<0.0001$). The prevalence rate of head louse infestation based on using common comb for Yes or No was 68.5% and 31.5% respectively. Head louse infestation in pupils that washed their hairs twice or more than 2 times in a week compared to the students who washed their heads only once a week was less that was a significant statistical relationship between head louse infestation and Frequency of hair washing (Table 2). There were no significant statistical relation between head louse infestation and mother's job, father's education level, length of hair and family size ($p<0.05$) (Tables 1-2).

Table 1: Head louse infestation among primary schoolchildren relation to some socio-economic factors in Bayengan city, West of Iran

Characteristics	No. of infested No. of Examined	Prevalence (%)	P. value
Family size			
3-4 persons	29/221	53.7	0.2
5-6 persons	17/129	31.5	
7 or more than 7 persons	8/34	14.8	
Total	54/384	100	
School grade			
I	5/49	9.3	0.08
II	7/75	12.9	
III	13/90	24.1	
IV	13/150	24.1	
V	16/65	29.6	
Total	54/384	100	
Age			
6-7	5/50	9.2	0.5
8-9	20/160	37.1	
10-11	26/161	48.1	
≥ 12	3/13	5.6	
Total	54/384	100	
Father's job			
Government	6/100	11.1	0.02
Private	12/81	22.2	
Labour	36/203	66.7	
Total	54/384	54/384	
Father's education			
Illiterate	9/44	16.7	0.1
Initial education	24/124	44.4	
Guidance school	7/66	13	
High school	9/96	16.7	
University education	5/54	9.2	
Total	54/384	100	
Mother's job			
Employed	3/35	5.6	0.2
Housewife	51/349	94.4	
Total	54/384	100	
Mother's education			
Illiterate	20/84	37.1	0.006
Initial education	24/153	44.4	
Guidance school	6/57	11.1	
High school	3/68	5.6	
University education	1/22	1.8	

Total	54/384	100	
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Table 2: Prevalence rate of head louse infestation in relation to personal hygiene in primary schoolchildren, Bayengan City, West of Iran

Characteristics	No. of infested	Prevalence (%)	P.value
	No. of Examined		
Frequency of hair washing			
Once a week	25/118	46.3	0.02
Twice a week	22/182	40.7	
Three or more a week	7/84	13	
Total	54/384	100	
Length of hair			
Short	19/140	35.2	0.8
Medium	23/150	42.6	
Long	12/94	22.2	
Total	54/384	100	
Having hygiene teacher			
Yes	54/338	100	0.003
No	0/46	0	
Total	54/384	100	
Sharing common comb			
Yes	37/133	68.5	<0.0001
No	17/251	31.5	
Total	54/384	100	

Discussion and Conclusion

The total prevalence rate of head louse infestation in this survey was 14.1% that 8.5% of the boys and 18.2% of the girls were infested. Studies in foreign countries had shown different infestation rates among schoolchildren: 33% in Australia (Speare et al., 1991), 35% in Brazil (Borges and Mendes, 2002), 48.7% in France (Courtaide et al., 1993) and 49.7% in Ghana (Kwaku, 1982). Studies in some parts of Iran mostly in primary schoolchildren showed different prevalence rates of infestation; less than 1% in Fars province (Davarpanah et al., 2009), 1.3% in Hamadan (Moradi et al., 2009), 3.64% in Tabriz (Hodjati et al., 2008), 3.8% in Kerman (Kamiabi et al., 2005), 27% in Iranshar (Alempour-Salemi et al., 2003), 28.5% in Ardebil (Edalatkhah et al., 2005), 1.12% in Sirjan (Yousefi et al., 2012), 4.8% in Khajeh city (Shayeghi et al., 2010), 6.85% (0.7% in boys and 13.5% in girls) in Hamedan (Nazari and Saidijam, 2007), 4% in Urmia (Hazrati Tappeh et al., 2012), 23.9% in Qeshm (Soleimani et al., 2007) and 1.3% in Bahar city (Moradi et al., 2009).

Findings of this study and Iranian studies are similar related to prevalence rates in boys and girls, indicated that the prevalence rate in boys is less than girls. These differences are related to length of hairs in girls. The highest prevalence rate was shown in grade 5. The high level infestation in fifth grade students can be attributed to the fact that they wash their hairs themselves and their mothers don't pay attention to their hygiene. Difference in behavior patterns between boys and girls might have affected transmission rates and susceptibility to head louse infestation. Some factors such as income of

family, having bathroom in the house and frequency of hair washing in a week are important factors that they are effective in the prevalence rate of head louse infestation. 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 educational system should clarify all of parents from all families to play a more effective role to eliminate head louse infestation among schoolchildren. 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.

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