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The Epidemiological Aspect of Pediculosis in Primary School of Qeshm, South of Iran

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The purpose of the present study was to determine prevalence of *Pediculus humanus capitis* and assess risk factors associated it among the primary school pupils of Qeshm, south of Iran. In this descriptive analytical study, 515 pupils were selected randomly. Presence of nit, nymph or adult louse in pupil's hair was characteristic for diagnosis of head louse infection. The results of the physical examination were recorded in the pre-designed questionnaires for each pupil. The overall prevalence of the infection was found to be 23.9%. Head lice infections were much more commonly in girls than boys with prevalence of 35.27% and 11.07%, respectively. There was significant relationship between head louse infection with sex, grade, number of family members, the education level of parents and job of fathers ($p < 0.05$), but there was no significant relationship between head louse infection with job of mothers. The peak of infection rate was 27.3% in 5th grade. Present study demonstrated a high prevalence of head lice among primary school children of Qeshm. Health education about ways of infection, methods of prevention, personal hygiene and providing suitable hygienic living place for them are important to decrease head louse infection in pupils.

Key words: Pediculosis, pupils, primary school, Qeshm

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INTRODUCTION

Head lice infection caused by *Pediculus humanus capitis*, which has existed for more than 10,000 years, is a common and worldwide problem (Sim *et al.*, 2003; Service, 2004). It is transmitted directly by close contact with an infected individual's head or indirectly via fomites such as hair, hats, or combs (Bartels *et al.*, 2001). Head lice feed by sucking blood and cause pruritus to host due to sensitization to louse saliva and subsequent skin excoriation may lead to secondary bacterial infections. In addition, chronic irritation and secondary infection may disrupt behavior and school performance (Baily *et al.*, 2000). Also human louse infection may cause psychological distress (Mumcuoglu, 1999). It is not considered to be a serious health problem. Nevertheless, human louse infection consumes considerable time and attention of the public and private health communities (Sim *et al.*, 2003). Infestation with head lice is usually detected by three types of evidence: itching and inflammation of the scalp and neck, sighting of lice and detection of eggs attached to hair shafts (Spear and Buetter, 1999).

The eggs of head lice are laid within 1 cm of the scalp and are firmly bound to the shafts of hairs. Hatching occurs about 7 days after deposition, but most eggs remain in site after the larvae have escaped. The empty egg shell (nit) can remain on the hair for many months, even after the infection has been eradicated (Service, 2004). Consequently, although finding nits is evidence of past infection, it is not diagnostic of current infection. The threat of transmission to other people is only posed by active infection, which can be confirmed exclusively by finding lice, or viable un-hatched eggs, on the hair shafts. When this ecto-parasite is associated with poor social conditions and inadequate diet, the infestation may even lead to anemia (Spear and Buetter, 1999; Service, 2004). There are many factors related to the host such as race, age, sex, socio-economical conditions and hair characteristics that can be associated with head lice prevalence (Borges and Mendes, 2002). Overcrowded living conditions and the arising of resistance to insecticides have contributed to the increase of head lice in the last few years (Lee *et al.*, 2000). Head lice infection should be investigated regionally because its prevalence may vary according to social situation, genetic and cultural characteristics of a population. Studies on head lice in populations with different socioeconomic levels have encountered significant differences between prevalence rates in different populations and regions (Chunge, 1986). This is partially due to the existence of many factors influencing

its prevalence. In some regions, association to some factors is predominant in relation to others that in turn may be epidemiologically more important in other ones (Lee *et al.*, 2000). In a survey of 1879 pupils in primary schools in Victoria (Australia) were found 13% had an active head lice infection and 3.3% had inactive head lice infestation (Counahan and Andrews, 2004). In another survey on head lice infestation among 7495 children in primary schools of Korea the prevalence of head lice infestation was found to be 5.8%. Head lice were much more commonly detected in girls than boys with prevalence of 11.2 and 0.9%, respectively (Sim *et al.*, 2003). The present study was conducted to provide data on prevalence of head lice in primary school pupils and factors associated with it in Qeshm, south of Iran.

MATERIALS AND METHODS

This is a cross-sectional study. The study population consisted of primary schools children in Qeshm island that is located in Hormozgan province in south of Iran with warm and humid weather. Five hundred and fifteen children was selected randomly from six schools in different parts of the city. The hair and scalp were examined for head lice, eggs, or nits by two experts of medical entomology. If any evidence of head lice was detected, the child was classified as infested with head lice. After each exam, an individual form with age, sex, grade, parent's education and family size was filled. The collected louse samples were investigated and identified in the laboratory using identification characters. Data were analyzed using Minitab software program and Chi-square test was used.

RESULTS AND DISCUSSION

A total of 515 children including 246 boys and 269 girls examined for head lice infestation. 45.5% of fathers students were illiterate or primary school, 31.1% secondary school, 15.53% high school and 7.96% had higher education. Seventy percent mothers' students were illiterate or primary school, 21.4% secondary school, 8.2% high school and 0.98% had higher education. 88.9% mothers' students were housewife and 11.1% office worker. 53.4% fathers' students were day-labor, 12.4% worker, 27.84% employed and 6.46% unemployed.

The overall prevalence of Head lice infestation was 23.9%. Head lice were much more commonly detected in girls than boys with prevalence of 35.3 and 11.1%, respectively ($p = 0.000$). There was a significant difference between head lice infestation and grade of students ($X^2 = y^2$), ($p < 0.05$), (Fig. 1).

There was relationship between head lice infestation with educational levels of students' fathers ($p = 0.003$),

educational levels of students' mothers ($p = 0.000$), family size ($p = 0.008$) and fathers' job ($p = 0.003$) but there was no significant relationship between head lice infestation with mothers' job ($p = 0.39$) (Table 1).

The purpose of this study was to determine prevalence of head lice infestation in primary school pupils and factors associated with it in Qeshm. According to the results of the study, the prevalence of pediculosis in primary school students is 23.9%. One possible explanation for the high prevalence of pediculosis capitis among students in this survey is poor hygiene. Other investigations in different parts of the country showed the rate of infection 11% in Yasooj, 27.1% in Iranshahr (Aempour-salemi *et al.*, 2003). Similar studies in other countries represent the prevalence rate of head lice 2.4%

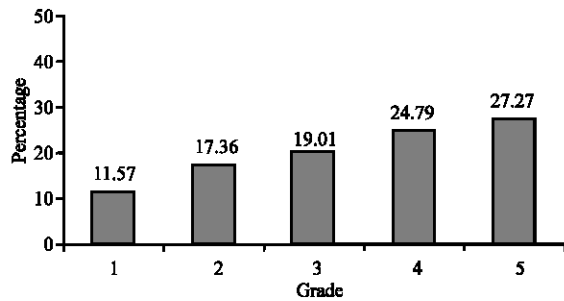


Fig. 1: Prevalence of head lice infestation by school grade in primary school of Qeshm

Table 1: Related factors on prevalence of head lice among primary school pupils of Qeshm

Variable	No.	Head lice infestation		p.value
		No.	(%)	
Sex				
Male	269	96	35.69	0.000
Female	246	27	11.02	
Family size				
1-5	253	46	18.18	0.008
6-10	237	69	29.1	
>10	25	8	32	
Fathers' Education				
Illiterate/primary	234	74	66.95	0.003
Secondary	160	30	18.75	
High school	80	13	5.58	
Higher Education	41	6	4.63	
Mothers' Education		107	70	
Illiterate/primary	360	12	21.4	0.000
Secondary	110	4	9.18	
High school	42	0	0	
Higher Education	3			
Fathers' Job				
Day-Labor	276	56	23.25	0.003
Worker	64	24	38.71	
Employed	142	23	6.2	
Unemployed	33	11	33.3	
Mothers' Job				
Office Worker	57	11	9.3	0.39
Housewife	458	111	24.45	
Total	515	123	23.9	

Demis, 1998; Courtiade *et al.*, 1993; Sim *et al.*, 2003; Borgs *et al.*, 2002; Shakkoury and Abu-wandy, 1999). According to the standard of the international in England, 13% in Australia, 3% in United States, 4.87% in France, 5.8% in South Korea, 35% in Brazil and 11.01% in Jordan (Champion *et al.*, 1998; Counahan *et al.*, 2004; collaboration institute for head lice control, the prevalence of head lice infestation more than 5% is considered as epidemic (Graz, 1997), our results show the high prevalence of head lice infestation.

In this study the infestation rate in girls was much more than boys ($p = 0.000$). Some possible explanations for this are due to hair length and using scarf in girls that prepares a good place for the lice activities, blood-feeding, reproduction and transmitting. This result is in agreement with the results of previous studies (Aempour-salemi *et al.*, 2003; Counahan *et al.*, 2004; Sim *et al.*, 2003; Borges and Mendes, 2002).

Family size was one of the factors related to head lice infestation ($p = 0.008$) and in crowded homes the rate of it was high. One explanation for this is that if one member of a family is infested, other family members have a greater risk of infestation.

This study showed significant relationship between educational levels of parents and the infection rate. This may be due to knowledge and positive attitude of educated parents towards health. Other studies have supported our finding (Shakkoury and Abu-wandy, 1999; Sim *et al.*, 2003).

To decrease head lice infestation health education for students, teachers and parents about head lice and the ways of prevention is necessary. Also regular visit of student's hairs, especially the hairs of girls by the health tutors is important

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