

# The Prevalence of *Pediculus humanus capitis* in Two Primary Schools of Hacılar, Kayseri

Kayseri-Hacılar Bölgesinde İki İlköğretim Okulunda *Pediculus humanus capitis* Yaygınlığı

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## ABSTRACT

**Objective:** Pediculosis capitis is a worldwide public health concern, and today, head lice are seen in all socio-economic levels. The infestation usually occurs by head-to-head contact and children, primarily girls, aged 3-12 years are mostly affected. In the present study a total of 405 pupils (214 boys and 191 girls) from two pre- and primary schools in the Kayseri-Hacılar region were examined for pediculosis capitis during March 2010.

**Methods:** Lice and/or eggs were detected by visual examination of the children's hair.

**Results:** Out of 405 children, 44 (10.9%) were infested with head lice. There were significant differences between the schools and the gender while no significant differences could be found between infestation and child's age, education of the parents, income of the family, housing type, source of water, and the presence or absence of a bathroom.

**Conclusion:** Head lice remain a public health problem and more emphasis should be given to the education of parents regarding their biology and control. (*Türkiye Parazitolojisi Dergisi* 2011; 35: 151-3)

**Key Words:** *Pediculus humanus capitis*, head lice, pre-and primary school children, Kayseri, Turkey

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## ÖZET

**Amaç:** Pediculosis capitis dünya çapında bir halk sağlığı sorunudur. Günümüzde, bitlenme her sosyo-ekonomik düzeylerde görülmektedir. Enfestasyon genellikle direkt temasla olmakta ve 3-12 yaşları arasındaki çocuklar özellikle de kız çocukları daha sık etkilenmektedirler. Bu çalışmada, Mart 2010 da Kayseri-Hacılar bölgesindeki iki Anaokulu ve İlköğretim okulunda öğrenim gören toplam 405 (214 erkek ve 191 kız) öğrenci pediculosis capitis yönünden incelenmiştir.

**Yöntemler:** Bit ve/veya yumurtaları çocukların başı görsel muayene edilerek tespit edildi.

**Bulgular:** Toplam 405 öğrencinin 44 (%10.9)'ünün baş biti ile enfeste olduğu gözlemlenmiştir. İstatistiksel olarak değerlendirildiğinde enfestasyon ile öğrencinin yaşı, ailesinin eğitim durumu, evdeki kişi sayısı, konut tipi, su kaynağı ve evde banyo varlığı arasında anlamlı bir fark yokken okullar ve cinsiyet arasında anlamlı bir fark bulunmaktadır.

**Sonuç:** Baş biti bir halk sağlığı sorunu olmaya devam etmektedir ve baş bitinin biyoloji ve kontrolü hakkında ebeveynlere eğitim verilmesine daha çok önem verilmelidir. (*Türkiye Parazitolojisi Dergisi* 2011; 35: 151-3)

**Anahtar Sözcükler:** *Pediculus humanus capitis*, baş biti, anaokulu ve ilköğretim okulu öğrencileri, Kayseri, Türkiye

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## INTRODUCTION

The head louse (*Pediculus humanus capitis*) spends its entire life on the human host. Head lice are endemic both in developing and developed countries and affect people of all socioeconomic backgrounds. Infestation occurs most commonly in school-aged children (1), with the peak incidence occurring in children between 5 to 11 years of age (2).

Transmission is mainly through direct physical contact with the parasite migrating from head to head. Although head lice do not transmit any pathogenic agents, complications derived from parasitism, such as scalp lesions caused by scratching, secondary bacterial infection, unspecific generalized dermatitis, local post-therapeutic dermatitis, chronic anemia by pillaging? And even secondary myiasis, in extreme cases, can occur. In addition, occipital and posterior cervical lymphadenopathy is common (3).

The increasing prevalence of active Pediculosis among school and preschool age children prompted us to conduct a head louse prevalence survey among this population also in the Hacilar- Kayseri district of Turkey.

## MATERIALS AND METHODS

The study included a total of 405 (214 boys and 191 girls) pupils, 6-14 years of age (average:  $9.9 \pm 2.6$ ) in two pre- and primary schools of Hacilar, Kayseri during March 2010. Lice and/or eggs were detected by visual examination of the child's head. The relationship between infestation and child's age, sex, education of the parents, income of the family, nature of the home, source of water, and the presence or lack of a bathroom were investigated. For statistical analyses, SPSS V.11.0 for windows and for comparison of two groups, the Chi square tests were used. A probability value of  $p < 0.05$  was considered statistically significant.

## RESULTS

Out of 405 children 44 (10.9%) were infested with head lice (Table 1). Children from the Saffet Aslan school were significantly less infested with head lice than children from the Feyyaz Mercan school (8.8% and 13.9%, respectively) ( $X^2=2.719$ ,  $p>0.05$ ).

Out of 44 infested children 3 were boys (6.8%) while 41 (93.2%) were girls. The infestation rate was 21.5% among girls and 1.4% among boys, the differences being significant ( $X^2=41,483$ ,  $p<0.05$ ) (Table 2).

No significant differences were found regarding the infestation with lice and education of parents, income of the family, housing type, source of water and the presence or absence of a bathroom.

## DISCUSSION

Pediculosis capitis is an infestation that affects mainly children. Depending on the socio-economic setting, these infestations may affect a large proportion of a population (4). *P. h. capitis* is generally seen in winter months and in cold and mild climates and has a cosmopolitan distribution. Geographical, ethnic, hygienic and climatic conditions play an important role in the distribution of the parasite.

**Table 1.** Total number and percentage of children infested with head lice in two schools pre- and primary schools in Hacilar, Kayseri

School	n	No. infested
Saffet Aslan Pre- and Primary School	240	21 (8.8%)
Feyyaz Mercan Pre- and Primary School	165	23 (13.9%)
Total/Average	405	44 (10.9%)

**Table 2.** Total number and percentage of head louse infested children according to gender

Gender	n	% infested
Boys	3	1.4
Girls	41	21.5
Total / Average	44	10.9

In the present study the infestation rate was 10.9% and is in accordance with earlier epidemiologic studies conducted in Turkey, which showed that the prevalence of pediculosis was 5% in Elazığ (5), 9.5% in Sivas (6), 10.7% in Aydın (7), 0.8% in Afyon (8) and 27.4% in İzmir (9).

Earlier studies conducted in the province of Kayseri showed that 242 out of 1,712 (14.1%) pupils from primary schools were infested with *P. h. capitis* (10), while in another study 2.1% of boys and 16.4% of girls from a total of 1,261 children were infested with head lice (11).

Generally, it is difficult to compare the data obtained in different countries and even within the same country, as these studies are done in different years, seasons, on varying populations, using different methods of examination (louse comb vs. visual examination) and it is not always clear whether the authors reported actual infestation with living lice or also included those who had dead eggs (nits) only.

In Europe, prevalence varied from 0.48% to 22.4% (12). In a study from Egypt, the prevalence varied from 0% to 58.9% (12) The prevalence of pediculosis has been found to be 3.3% in France (13), 13% in Australia (12), 78.6% in Libya (14), 37.2% in Korea (15), 13.4% in North Jordan (16), 35% in Brasil (17), 40% in Taiwan (12), 15-20% in Israel (18), and 28.3% in the U.K (19) respectively.

The percentage of girls with pediculosis (21.4%) was significantly higher than of boys (1.4%). Çetinkaya et al. (8) and Koptürk et al. (1) reported that *P. h. capitis* infestation levels were higher in girls (16.9% and 13.3%, respectively) than boys (3.4% and 1.1, respectively). Noyan and Demir (2) reported that 55.5% of girls in a primary school in İzmir had pediculosis capitis, while none of the examined boys was infested with head lice. This phenomenon was seen also in the studies of other groups in Turkey (1, 2, 6) and abroad (18). The reason for these differences could be explained by the fact that girls usually have long hair, which makes physical contact between heads more probable and because girls tend to be more social, which results in more frequent physical contact with other girls.

In this study, we could not find any significant differences between infestation and education of parents, income of the

family, construction of the house, source of water, and the presence or lack of a bathroom. A study conducted in Van region of Turkey showed that there was a significant relationship between head louse infestation and the education of the parents and the presence of bathroom facilities in the house (20).

In studies done in Izmir, Afyon and Kayseri it was shown that the prevalence decreased with increasing income levels of the family (8-10, 21). The fact that in the present study no such differences were observed, could be explained by the fact that practically all children belonged to the same socio-economic class.

A better understanding of local epidemiology is required to developed effective control measures against lice. This, in combination with health education, would make effective control of head lice easier.

#### Conflict of Interest

No conflict of interest was declared by the authors.

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