

Original Article

The Prevalence of *Pediculus Capitis* among Primary Schools of Shahriar County, Tehran province, Iran, 2014

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Abstract

Background: Pediculosis capitis is a common parasitic infection of children, which has been neglected in many areas as well in Shahriar County, Tehran province. This study was conducted to determine the prevalence of pediculosis capitis among pupils in primary schools of Shahriar County.

Materials and Methods: This descriptive-analytical study was conducted in Shahriar for the period of 2012 to 2013. Data were collected by questionnaires and direct head inspection. The prevalence rate was determined in three primary schools and 750 girls participated, which were selected by a randomized cluster method. Data were analyzed using Statistical Package for Social Sciences (SPSS₁₆) and Chi-square test.

Results: Among the 750 girls who were examined, head pediculosis was observed in 36 cases (4.8%). There was a significant relationship between head lice infestation and two factors, father's job and using private tools in hair salon.

Conclusion: The results showed that pediculosis capitis could be a potentially health threatening problem for school children. It is necessary to give health education to families in order to prevent pediculosis in the study areas.

Keywords: *Pediculus capitis*, Primary school, Iran

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Introduction

Human pediculosis is defined as infestation to body lice (*Pediculus humanus*) and head lice (*Pediculus capitis*), whereas Phthiriasis caused by pubic lice (*Phthirus pubis*)^{1,2}.

Human lice are wingless insects, with brown or gray colour¹. There are only very minor morphological differences separating body and head lice. The life cycle is also very similar, except for the eggs (nits) that are not laid on cloths in the case of head lice, but are cemented to the hairs of the head, usually at their

base, especially behind and above the ears and at the back of the neck¹. Head louse is a true ectoparasite of humans; unfed lice die within 2 to 4 days if kept away from humans and without a blood-meal^{1,3,4}.

Pediculosis capitis still remains a public health problem and as an emerging problem, consumes a lot of resources from public health institutions^{3,4}. Although, school-age children are the groups that are mostly at risk of the infection, but it could be found in any age and race. Except for the common cold, the head louse infestation among elementary school-age children is the most prevalent communicable disease³.

Pediculosis affects school children of all socioeconomic strata, not just poor, uneducated or those living in unhygienic conditions^{5,6}. Although, in crowded living conditions such as in prisons or refugee camps after disasters and wars, the prevalence rate of the disease would be increased^{5,6}. Pediculosis capitis is highly contagious and dissemination of head lice is occurred only by close contact, such as children playing together and their heads frequently touching^{3,7}. There is no evidence that head lice are vectors of the disease which were transmitted naturally by body lice, such as epidemic typhus or relapsing fever. Scalp pruritus is the most common symptom caused by sensitization to louse saliva component; subsequently, lead to secondary bacterial infection^{3,8,9}. The patients suffer not only from physical symptoms but also psychological disorders, which are more important in children, influencing on their learning performance, due to severe itching and sleep loss^{8,10}.

Considering the increasing trend of pediculosis prevalence among children in Shahriar schools, this study was conducted to determine the disease situation and some of its related risk factors in the study area.

Methods

Study area: Shahriar County is located in the west of Tehran, with a semi-arid climate¹¹.

Clinical examinations: This school-based descriptive-analytical study was conducted on 750 girls, ranging between 7 and 11 years old, studying in primary schools of Shahriar County for the period of 2012 to 2013. Samples were collected by a randomized cluster method from 3 schools, each school comprises 30 classes, and 25 students were randomly selected from each class. A standard questionnaire was designed to record data about parents' education and their job, bathing repetition per week, using private tool in hair salon, number of children in family and type and length of hairs. Questionnaires were addressed to the parents of the participating students.

Pediculus capitis infestation was diagnosed by visual inspection of the scalp. Inspection was carried out carefully by dividing the scalp into four sections by using rat-tail comb in a well-lighted area. Each

section was examined carefully for about 3-5 minutes. Special attention was paid to the area around ears and behind the neck. The presence of adult lice, immature stages (nymphs) or eggs (nits) found in less than 1 cm from the hair basis was considered as positive.

Statistical analysis: Collected data were analyzed using Statistical Package for social sciences (SPSS version 16) and proper statistics test.

Results

During the study period (2012-2103), 750 students were examined for pediculosis. In total, 36 cases (4.8%) of students were infested with head lice. In analyzing the correlation between the risk factors and head louse infestation, it was revealed that just two of the factors, father's job and using private hair-cut tools affected pediculosis capitis significantly ($P < 0.05$). Pediculosis was more prevalent in children whose fathers were workers ($P = 0.013$). Moreover, girls who did not use their own tools in hair saloons would be affected more than the others ($P = 0.021$). Table 1 represents the details. Other factors, such as parent's education, bathing repetition per week, number of children in the family, type and length of hairs did not show significant correlation ($P > 0.05$).

Discussion

Pediculosis capitis is still a great pediatric problem, mostly common between children of ages 5 to 13 years old^{3,9,12}. During the last decades, a significant increase has been reported in pediculosis worldwide as a result of improper application and louse resistance to routine insecticides and misdiagnosis¹³. The current study showed that the prevalence rate of the head lice contamination is 4.8%. Based on National Pediculosis Association of USA criteria, an epidemic occurs when 5% of the children of the study area are infested¹⁴; hence, based on the results of this study, head pediculosis is going to be epidemic in Shahriar schools, if neglected.

Many population based studies were conducted in the world and they revealed different prevalence rates regionally; in the Middle East, it ranged between 4.2 to 78%^{7,15}, 33% in Australia, and 1 to 20% in European countries^{9,16}. Head lice prevalence rate is also very different in the various parts of Iran, as in

Table 1: Head louse infestation in primary schools of Shahriar County according to father's job and using private hair-cut tools in participating girls for the period of 2013 to 2014.

Characteristics		Observed pupils out of 750 participating girls	No of infested pupils out of 36 cases	P-Value
Father's job	Official employer	219 (29%)	7 (19.4%)	p<0.05
	Worker	195 (26%)	15 (41.71%)	
	Private section	277 (36.9%)	8 (22.21%)	
	Others	59 (7.7%)	6 (16.7%)	
Private hair tools	Use	327 (43.6%)	9 (25%)	p< 0.05
	Not-use	423 (56.4%)	27 (75%)	

Iran-Shahr 27.1%⁸, Fars province 0.2% up to 49%⁹, Abadan 4.33%¹⁷, Urmia 4%¹³ and Sanadaj 4.7% were reported¹⁰.

According to the statistical analysis of the current results, just two factors showed significant association with infestation. Pediculosis capitis infestation was significantly higher in students who their fathers were workers. Job could be assumed as a representative of socio-economic level, so higher infestation might be attributed to the lower income and poor public health situation. Pediculosis was transmitted by close contact so, it is not limited to uneducated or poor strata, but it is has been proved that poor socio-economic and public health conditions could worsen infestation^{16,18}.

Moreover, it was observed that infestation was higher in children that did not use private tools for hair-cut, which could be concluded that hair cutting tools, if not well disinfected well in hair salon, could be regarded as a way of *P. capitis* transmission. No correlation was found between infestation and other factors, as well in the type and length of hairs and also number of bath per week, as a matter of fact infested children took more bath compared to non-infested children, partly due to the head scalp itching caused by pediculosis.

Conclusion

Based on the results, it seems that pediculosis is going to be epidemic in primary schools of Shahriyar. As a global pediatric problem, it is necessary to be considered more by health and school authorities. Head louse transfers to a new host by intimate contact and these opportunities would be easily available in school. Therefore, the main epidemiological message is that being aware of

pediculosis would be quite useful. Training courses help staff and parents of students to know the symptoms, transmission routs and preventive programs as well control method. Periodically inspection of children for pediculosis would provide good prediction for future epidemic. The best time to prevent infestation is in the schools opening time, when students return back from summer vacation, they should be examined and if infested, treatment should be done. The same investigation is highly recommended for boys in Shahriar primary schools.

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