

OCCURRENCE OF *PEDICULUS HUMANUS CAPITIS* IN RELATION TO THEIR PERSONAL HYGIENE AND SOCIAL BEHAVIOUR AMONG THE CHILDREN IN DHAKA CITYTahmina Karim, Sharmin Musa¹, Hamida Khanum and Dinesh Mondal**Department of Zoology, University of Dhaka, Dhaka 1000*

Pediculus humanus capitis (Anoplura: Pediculidae) (De Geer 1778) or head louse is an obligate ectoparasite (Linardi *et al.* 1988). Head louse feeds on blood which may lead to anemia and in the scratch sites can lead to secondary infection (Slonka *et al.* 1976). Head lice infestation (HLI) caused by *Pediculus humanus capitis*, which has existed for more than 10,000 years, is a common, worldwide problem (Ha *et al.* 2000). It is a human parasite, which 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 (itching) 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 (Bailey and Prociw 2000).

According to Krasnov *et al.* (2002), for head lice, persons with close social interactions can be viewed as discrete, hierarchical nested habitat patches on different spatial scales. A patch can comprise just one host or a group of hosts defined by households, friends, class, grade, school, closely spaced schools in a municipality or whole municipalities. Habitat patch size also seems important at the household level, as several studies have found that risk of pediculosis increased with the number of members in a congested household (Willems *et al.* 2005, Sultana *et al.* 2009). Mossong *et al.* (2008) found that the number of daily contacts with other persons is higher for members of large households compared to small households. The objective of the study was to determine the prevalence of head louse among the children according to their sharing and cleaning habits (personal hygiene), hair type, duration of suffering and family history of pediculosis and the result of cure after application of anti-lice shampoo.

A cross sectional study was carried out during February, 2011 to January, 2012 among the children in Mirpur Bihari Camp in Mirpur 11, Dhaka. A total of 300 children aged 1 to 7 years were examined. Head louse infestation was

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identified by examining the scalp and hairs for the presence of adult lice, nymphs or viable nits in naked eyes and by using a magnifying glass or running a comb through the child's hair. The detection of lice or egg by visual examination of the child's head and their classification into "not infested" and infested was also made according to Wegner *et al.* (1994). A structured questionnaire was selected for data collection and a completely randomized sampling procedure was carried out for the study. The questionnaire was filled up for each child and their families through face to face interviewing. Prevalence rate was showed by calculating percentage of infestation and result was analyzed by statistical test.

A total of 300 children were examined and of them 179 were found to be infested with single species of louse, namely, *Pediculus humanus capitis*, so the overall prevalence was 59.67%. It was observed that, 205 children are used to share bed and of them 157 child was infested with head lice and here prevalence was 76.59%. Whereas 95 child were were not used to share bed and of them 22 (23.16%) was infested. 170 children had the habit of cloth sharing and the rate of infestation was higher in 142 (83.53%) among them. 130 children did not share their cloth and of them 28.46% was infested with head lice. It was detected that, majority of the children (217) shared their towels and 77.42% of them was infested by the head lice while 13.25% children were infested who did not share. It was found that, majority of the children (230) shared their comb and the rate of infestation was higher (74.35%) among them. While among children those did not share comb, only 11.43% was infested. 155 children did not have the habit of bed cleaning and of them 84.52% were infested. 90 (30%) study populations bathed irregularly. The rate of infestation was 87.78%. On the other hand, who took their bath regularly, 47.62% was infested. The infestation rate was 80.56% among who worn the same cloth after bath. On the other hand, 120 children did not wear the same cloth after bath, among them 28.33% were infested and above all this cases difference was statistically significant ($p < 0.05$) (Table 1).

Pediculosis was significantly higher (78.19%) among children with families those living in overcrowding condition than those not living in overcrowding condition (28.57%). It was found that, most of the families 195 (65%) washed their bed cloths once in a month, 60 (20%) did so once in a week and 45 (15%) washed their bed cloths above one month. The infestation rate was highest in those who used their bed cloths above one month (77.78%), than those who used up to month (66.15%). Those washed their bed cloths once in a week showed the lowest infestation rate (25%). The children who washed their hair regularly with shampoo showed lowest prevalence were 40% and the children who did not use anything for washing hair, 85% were infested. Most of the family members (185) were suffering in pediculosis, and within family 91.89% child was infested. In above all cases results were statistically significant (Table 2).

The number of straight hair children was 169 and of them 56.80% was infested with lice, whereas, 131 children have curly hair and the rate of infestation was 63.36%. Here, hair type did not determine the lice infestation rate and statistical result showed not significant ($p > 0.05$) (Table-2).

Among 179 infested children, maximum 59.22% children suffered for years, 17.88% for months, 12.85% for weeks and lowest number 10.05% was suffered for days (Table-3).

Among the infested children, 80 used anti lice shampoo (those are found in market, English anti-lice shampoo) and of them 22.5% were cured and 77.5% children were not cured. It was stated that, at first time treatment of head lice, it reduces the number but not completely eradicated and later it becomes resistant to lice shampoo but remains under control with low infestation.

Head lice infestation is a public health problem among school children in both developed and developing countries (Ali and Ramzan 2004). Certainly, personal hygiene practices and socioeconomic status influence the level of prevalence (Zuhair *et al.* 2000). The present study, infestation rate was 59.67% which is attributed to the lower living standards and lack of awareness. In other different parts of the world, 59.7% reported in Shillong, India (Roy and Tandon 1992), and 56.8% in Argentina (Milano *et al.* 2007). However, much lower rate of infestation was recorded by 10.7-12.9% in Malaysia (Sinniah *et al.* 1981, 1983) and 12% in Saudi Arabia (Boyle 1987). These variations in infestation rate might be due to social status and personal hygiene practices of people and environmental factors.

Sarov *et al.* (2004), Suleman and Jabeen (2003) and Khokhar (2002) studied overcrowding condition of head lice infestation and among Primary school children in Delhi, Khokhar (2002) observed that those who shared both beddings and comb showed a statistically higher significance as compared to others. This may be, because the head lice can move freely from one person to another person through the use of same comb, dress and other materials of such nature. Ramusen (2004) who opined that, lice are spread more rapidly in large families living in crowded conditions, where bed-sharing and poor hygiene exist. Bathing (washing) factor was indirectly correlated with infestation as it was also observed by Schenonel and Lobos (1997) and Ali and Ramzan (2004). Maximum children suffered for years, and their hair becomes dull, cause skin infection and hair fall. The rate of cure by using anti lice shampoo was lower among the infested children because head lice become resistant after 2nd and 3rd time application of shampoo. In recent years resistance to insecticides have contributed to the increase of head lice prevalence (Nazari *et al.* 2006).

This study provides some important factors of the epidemiology of pediculosis in a group of people in Bangladesh. The result of this study revealed that a clear relationship exist between the effectiveness of pediculosis and behavior of the children. This infestation is part of ignorance and unhygienic

habits of children and mother. Parents need to involve themselves more in ensuring personal hygiene for their children. Pediculosis can be prevented by better personal hygiene and good environment condition. Infested children should be examined daily for 7 days. It is the best to treat everyone at the same time to avoid re-infection.

Table 1. Head lice infestation according to sharing and cleaning habits

Personal hygiene	Yes	No. of infested child	% of infested child	Do not share	No. of infested child	% of infested child	X ²	p - value
Habit of bed sharing	205	157	76.59	95	22	23.16	77.000	0.000
Habit of cloth sharing	170	142	83.53	130	37	28.46	92.826	0.000
Habit of towel sharing	217	168	77.42	83	11	13.25	102.715	0.000
Habit of comb sharing	230	171	74.35	70	8	11.43	88.283	0.000
Habit of bed cleaning	145	48	33.10	155	131	84.52	82.285	0.000
Habit of taking bath regularly	210	100	47.62	90	79	87.78	42.219	0.000
Habit of wearing same cloth after bath	180	145	80.56	120	34	28.33	81.592	0.000

Table 2. Head lice infestation according to overcrowding and washing habits

Characteristics	No. of child examined	No. of infested child	Prevalence of infested child	X ²	p - value
Overcrowding condition-				71.808	0.000
Yes	188	147	78.19		
No	112	32	28.57		
Bed cloth washing-				39.506	0.000
Once in a week	60	15	25		
Once in a month	195	129	66.15		
Above one month	45	35	77.78		
Hair washing with-				53.797	0.000
Shampoo	80	32	40		
Soap	100	45	45		
Nothing	120	102	85		
Hair type-				1.317	0.217
Straight	169	96	56.80		

Characteristics	No. of child examined	No. of infested child	Prevalence of infested child	X ²	p – value
Curly	131	83	63.36		
Family members suffering from pediculosis-				208.253	0.000
Yes	185	170	91.89		
No	115	9	7.83		

Table 3. Head lice infestation on the basis of period of suffering of pediculosis

Period of suffering	No. of suffering child among 179 infested children	% of infested suffering children
Years	106	59.22
Months	32	17.88
Weeks	23	12.85
Days	18	10.05
Total	179	100

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