

Prevalence of Pediculosis Capitis in School Going Boys in Schools of North Nazimabad Town, Karachi

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ABSTRACT

Aim: To determine the prevalence of Pediculosis capitis in school going boys in schools of North Nazimabad Town, Karachi.

Study Design: Cross-sectional

Place and Duration: Study was conducted in schools of North Nazimabad Karachi for six months duration from January 2017 to June 2017.

Methodology: Total 190 school going boys of age 05-12 years, both private and government schools selected after taking valid written consent from the school authorities. Boys treated with anti-lice shampoo within last week & case of psoriasis and eczema were excluded. Mean \pm SD were expressed for continuous while frequencies & percentages for categorical variables. Chi-square was used as test of significance with a P value <0.05 was taken as significant.

Results: Mean \pm SD age was 8.87 ± 1.93 years. Mean \pm SD number of siblings was 2.84 ± 1.24 (Range: 01 to 05). Majority of students belonged to urban area (93.68%). Student from government schools were 55.26% and private schools were 44.74%. Frequency of pediculosis capitis detection was 28.42%. Government schools were associated with higher frequency of pediculosis capitis (P values <0.05).

Conclusion: Pediculosis capitis is common in male students of schools of Karachi. Government schools are associated with occurrence of more head lice infestations.

Keywords: Pediculosis capitis, Head louse, Frequency, Male school students

INTRODUCTION

Pediculus capitis which in laymen words is called as human head lice is common parasitic infestation of human species. These small insects (*Pediculus humanus var capitis*) are external obligatory parasites & feed on human blood. Their mode of spread is from child to child by close head-to-head contact and by sharing belongings that are infested with lice. The school going boys of age 03 to 12 years are most commonly affected age group however; all ages can become infested with *Pediculus capitis*/lice. [1-2]

Although it is thought that school environment is major contributor of a child getting head lice yet living in large family size/ overcrowding is also a reason. Simultaneously; any socioeconomic group, observing any level of personal/ environmental hygiene can be affected with this infestation. Moreover, lice resistance to common pesticides may contribute to increase infestation rate nowadays [3]. Overall head lice has frequent occurrence in both the developing and developed countries with a reported prevalence rate upto 24% [4-5].

The symptoms include severe itching, small red bumps or sores on the scalp, neck, and shoulders. In some cases; the lymph nodes behind the ears or in the neck may be swollen and tender. Progression to popular wheal like lesions, pruritus, secondary excoriation in intrascapular region firmly attached to hair shaft in head [4]. Sleep of affected child may be disturbed due to severe itching & scabbing. Also, the infected boys may feel depression and

are obliged to have unwarranted absence from schools or nurseries [6-7].

School going boys are affected with head lice world over. In a study from India reported that overall lice infestation rate 16.59% among which a significantly (p value <0.05) higher proportion of girls (20.42%) were infested compared to boys (13.86%) [8]. One study from Thailand found that prevalence of head lice infestation rate was 23.32% and infestation rate was higher in girls (47.12%) than in boys (0%) [9]. In Pakistan, there was very little research done on this issue of much importance. A very old study (1986) which was conducted in general population in NWFP showed that infestation rate was 36.7%, with females showing a higher prevalence (41.5%) than males (27.7%) [10], while infestation rate of head lice among school children at Peshawar was 46% [11]. A more recent study from Lahore states that the rate was too high and 77.40% school going children were positive for Pediculosis in which affected boys were 52.45%. This shows that there is a difference of prevalence of pediculosis among different population of school going boys.

Pediculosis is a global problem of school going boys just like girls. Head lice create some complication which lead them to illness on the one hand & from studies on the other hand. The available data regarding prevalence of this problem in boys is highly varying & contradictory [8-12]. Research in local population of boys is thus warranted.

With this rationale, the current was conducted to measure the magnitude of burden of pediculosis among school going boys in our local population. The results of this study will help in prioritizing the treatment measures for the commonest infestation among school boys and health education messages.

MATERIALS AND METHODS

This descriptive/cross-sectional study was conducted in schools of North Nazimabad Karachi for six months duration from January 2017 to June 2017. Total 190 school going boys of age 05-12 years, both private and government schools selected after taking valid written consent from the school authorities. Boys treated with anti-lice shampoo within last week & case of psoriasis and eczema were excluded. During the recess time data collection was done & boys were randomly approached. Boys who were eligible as per selection criteria were enrolled after taking valid written consent.

Data were collected on prescribed proforma by the investigator on demographic variables like name, father's name, age, number of siblings, monthly family income, educational status father & mother, residence, year of study, name of school & type of school (government of private). Physical examination of head for the presence of lice (*Pediculosis capitis*) was done by the investigator in supervision of the consultant dermatologist. Naked eye examination when followed by magnifying lens examination was the confirmatory method.

Software used for data entry and analysis was SPSS-19. The continuous variables age & number of siblings were expressed in mean & standard deviation (Mean ± SD). Categorical variables like educational status father & mother, residence, type of school (government of private) & presence of lice (primary outcome = Yes/ No) in school going boys was expressed in frequencies and percentages.

To evaluate the effect modification, age, number of siblings, residence, type of school (government of private), year of study & duration of symptoms were stratified followed by application of chi-square to test the difference with a p value <0.05 taken as significant. Other effect modifiers like socioeconomic status (monthly family income) and the educational status of parents were also noted and stratified. Again these were followed by application of chi-square to test the difference with a p value <0.05 taken as significant.

RESULTS

Mean ± SD age of students was 8.87 ± 1.93 years with a range from 05-12 years. Mean ± SD number of siblings was 2.84 ± 1.24 & minimum & maximum number of siblings was 01 & 05 respectively. Majority of students belonged to urban area of living i-e; (93.68%, n=178). Monthly family income of students was asked and found that it was <10,000/ month of 19.47% students, 10,000-20,000/ month of 36.84% students, 20,000-30,000/ month of 21.05% students, 30,000-40,000/ month of 15.26% students, 40,000-50,000/ month of 4.74% students and >50,000/ month of 3.15% students. Illiteracy rate among parents was (12.6%) while 87.4% of parents were literate. The number of students chosen from these schools were government

schools (55.26%, n= 105) and private schools (44.74%, n= 85). (Table 1)

Table No 1: Baseline details of all the included students

Variables	Frequency No.	%age
Mean Age (yrs)	8.87 ± 1.93	-
Mean No. Siblings	2.84 ± 1.24	
Residence		
Urban	178	93.68%
Rural	12	6.32
Monthly Family Income		
<10k	36	19.47%
10k to 20k	70	36.84%
21k to 30k	40	21.05%
31k to 40k	29	15.26%
41k to 50k	9	4.74%
Above 50k	6	3.15%
Parents Education		
Illiterate	24	12.60%
Literate	166	87.40%
Types of School		
Government	105	55.26%
Private	85	44.74%

Table # 2 elaborates the class of study in which the male students were enrolled. These were from class one to class seven. (Table 2).

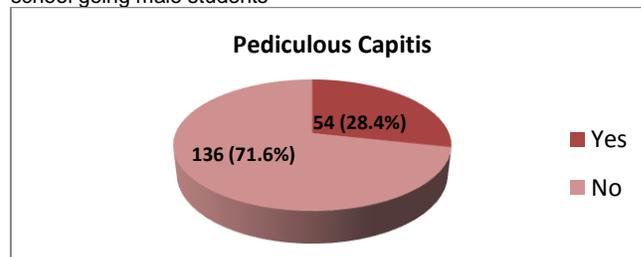
Table: 2. Distribution of study class of students.

Class	Frequency	Percentage
One Class	5	2.6
Two Class	34	17.9
Three Class	30	15.8
Four Class	49	25.8
Five Class	58	30.5
Six Class	6	3.2
Seven Class	8	4.2
Total	190	100

Table No 3: Frequency of detection of adult louse, nymph and the nits. (n =190)

Variables	Frequency	Percentage
Adult Louse		
Yes	36	18.9
No	154	81.1
Detection of Nymph		
Yes	40	21.1
No	150	78.9
Detection of Nits		
Yes	17	8.9
No	173	91.1

Figure: 1. Frequency of pediculosis capitis (Head Lice) among school going male students



Among all these 190 male students, adult louse was detected in 18.9% (n=36), nymph was found present in 21.1% (n=40) while 8.9% (n= 17) had nits detected in their heads. (Table 3). Thus; overall frequency of pediculosis capitis (the outcome variable) was present among 28.42% (n= 54) male students. (Figure 1).

It was very highly significantly noted that the students of government schools had much higher frequency of pediculosis capitis in their heads (39%) compared to those of the private schools (15.29%) students. (P value < 0.05; Table: 4).

Table 4: Effect of school type on frequency of pediculosis capitis among male students.

Type of School	Pediculosis capitis detected		Total	P value
	Yes	No		
Government	41	64	105	0.001
	39.04%	60.96%	100.0%	
Private	13	72	85	
	15.29%	84.71%	100.0%	
Total	54	136	190	
	28.4%	71.6%	100.0%	

DISCUSSION

Increase in human population has given rise to many new clinical and social problems on one side while it has led to worsening of various issues on the other hand. Large population and overcrowding of schools superimposed by the lack of hygiene practices among students is cause of spreading of different parasitic infestations in them. One such infestation commonly described is Pediculosis capitis (Head louse). It is the reason of social stigma, embarrassment, low self- esteem, and disgust for human beings. The school going boys of age 03 to 12 years are most commonly age group affected of head lice (pediculosis capitis).¹³⁻¹⁵

It is a popular belief that female students are more affected with the head lice, however; a vast majority does not agree with this. As it was found by a study in Kerman, Iran that among all children infected with head lice 95.5% were girls and 4.5% were boys. The current study was conducted with the objective of assessing the prevalence of head louse among male students in the North Nazimabad area of Karachi. For this purpose Fifty (50) schools from public and private sector were randomly chosen and a sample of fairly randomly selected 190 students from these schools was included in this study. Among these students almost half were taken from government schools (55.26%) while others were from private schools (44.74%). The participants were enrolled in class one through seven.

The current study noticed that more than one quarter (28.42%) of male students were affected with head lice. This finding is in matching with other studies. As one study by Shyeghi M, et al., documented that in Iran, primary school boys, the lice infestation rate was 24%.⁵ Other neighbouring countries data suggest similar results wherein the head lice incidence rate ranges from 16% to 23%.^{8,9} However; it was interesting to note that in Thailand male students did have zero percent head lice infestation. A local study from a distant area of Peshawar reported that head lice incidence was 46%.¹⁰ This, difference may be due to difference of area as well as hygiene practices of the two areas.

Adult louse and nymph were present in majority of affected students, however; nits were also detected in the

heads of some of male students. Majority of the affected students were of lower age and were enrolled in junior classes like one through four. The elder children (which were enrolled in classes five through seven) had lesser frequency of lice. Although statistically not significant finding (P values 0.180 & 0.167 respectively) but, it may be due to the reason that elder children are more careful and are more aware of keeping self hygiene. Other studies from different regions have also noted mimicking relationship of higher frequency of lice infestation with younger age.¹⁶⁻¹⁸

Although public sector schools are badly known for their education as well as administration compared to the private sector schools in our country, however; the current study find a major difference in prevalence of head lice among the male students of both types of schools (39.04% versus 15.29% with P value = 0.001). A significant difference was investigated or documented by other researchers.

The role of school hygiene and health education is critical. There should be appropriate measure taken by the health departments and education department conjointly to fight this sporadic condition. School mass awareness programmes on such types of diseases can be easily conducted at large scales. It will potentially reduce the burden of this severe condition which is an illness on the one hand & barr students from studies on the other hand.¹⁹⁻²⁰

The current study had certain limitations. A limited zone/ area of the Karachi was selected for sampling. Some of students were not living in the selected areas and travelled either from the rural or remote urban areas of Karachi. Therefore; the results can not be inferred to the whole population. The current study did not record or compare the clinical severity of the lice infestation among students or schools because it was beyond the scope of its approved proposal. However; this study has raised and highlighted a very critical health related issue of young male students. The study further suggests a large study which not only investigates the above mentioned questions but also the rate of recurrences, the local level of resistance, and the potential for transmission.

CONCLUSION

Overcrowding and scarcity of resources is potential threat for the health and well being of our nation and ultimately the most brutal and negatively affecting factors for development of our country. Simple, yet most common of many disease conditions which spread in overcrowding is lice infestation. Pediculosis capitis or head louse infestation is pretty much common in the male students of schools of Karachi. Government schools are associated with occurrence of more head lice infestations. Mass awareness and education and treatment of all students (affected as well those who are in contact with them) is the way through which the prevalence and spread of louse infestation can be minimized and controlled.

REFERENCES

1. Mohammed AL. Head lice infestation in school children and related factors in Mafraq governorate, Jordan. *Int J Dermatol.* Feb 2012;51(2):168-72.
2. Karakus M, Aric A, Toz S, Ozbel Y. Prevalence of head lice in two socio-economically different schools in the center of Izmir City, Turkey. *Turkiye Parazitoloj Derg.* 2014;38(1):32-6.
3. Dehghani R, Davari B, Moosavi SG, Esalmi H, Kachoei E, Rahimi M, et al. Prevalence of head lice infestation among 3-6 years old nursery children in Kashan. *J Occupation Health Epidemiol.* 2012;1(2):81-6.
4. Feldmeier H. Diagnosis of head lice infestations: an evidence-based review. *Open Dermatol J.* 2010;4:69-71.
5. Shyeghi M, Paksa A, Salim abadi Y, Sanei dehkordi A, Ahmadi A, Eshaghi M, et al. Epidemiology of head lice infestation in primary school pupils, in Khajeh City, East Azerbaijan Province, Iran. *Iran J Arthropod Borne Dis.* 2010;4(1):42-6.
6. Alzain B. Pediculosis capitis infestation in school children of a low socioeconomic area of the North Gaza Governorate. *Turk J Med Sci.* 2012;42 (Sup.1):1286-91.
7. Davarpanah MA, Mehrabani D, Khademolhosseini F, Mokhtari A, bakhtiari H, Neirami R. The prevalence of pediculus capitis among School Children in Fars Province Southern Iran. *Iran J Parasitol.* 2009;4(2):48-53.
8. Khokhar A. A study of pediculosis capitis among primary school children in Delhi. *Indian J Med Sci.* 2002;56:449-52.
9. Rassami W1, Soonwera M. Epidemiology of pediculosis capitis among school-children in the eastern area of Bangkok, Thailand. *Asian Pac J Trop Biomed.* Nov 2012;2(11):901-4.
10. Suleman M, Jabeen N. Head lice infestation in some urban localities of NWFP, Pakistan. *Ann Trop Med Parasitol.* Oct 1989;83(5):539-47.
11. Suleman M, Fatima T. Epidemiology of head lice infestation in school children at Peshawar, Pakistan. *J Trop Med Hyg.* Dec 1988;91(6):323-32.
12. Chaudhry S, Maqbool A, Ijaz M, Ahmad N, Latif M, Mehmood K. The importance of socio-economic status and sex on the prevalence of human pediculosis in government schools children in Lahore, Pakistan. *Pak J Med Sci.* 2012;28(5):952-5.
13. Roberts RJ. Clinical practice: head lice. *New England J Med.* 2002;346:1645-50.
14. Leo NP, Campbell NJ, Yang X, Mumcuoglu K, Barker SC. Evidence from mitochondrial DNA that head lice and body lice of humans (Phthiraptera: Pediculidae) are conspecific. *J Med Entomol.* 2002;39:662-6.
15. Mimouni D, Ankol OE, Gdalevich M, Grotto I, Davidovitch N, Zangvil E. Seasonality trends of Pediculosis capitis and Phthirus pubis in a young adult population: follow-up of 20 years. *J Eur Acad Dermatol Venereol.* 2002;16:257-9.
16. Canyon DV, Speare R, Muller R. Spatial and kinetic factors for the transfer of head lice (Pediculus capitis) between hairs. *J Invest Dermatol.* 2002;119:629-31.
17. Weir E. School's back, and so is the lowly louse. *Can Med Assoc J.* 2001;165:814.
18. Angel TA, Nigro J, Levy ML. Infestations in the pediatric patient. *Ped Clin North Am.* 2000;47:921-35.
19. Kimchi N, Green MS, Stone D. Epidemiologic characteristics of scabies in the Israel Defense Force. *Int J Dermatol* 1989; 28:180-2.
20. Downs AM, Harvey I, Kennedy CT. The epidemiology of head lice and scabies in the UK. *Epidemiol Infect* 1999; 122:471-7.