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## The Prevalence of Pediculosis and Treatment Needs among the School Children of Age 8-12 Years in Selected Rural Schools of Indore with a View to Develop Health Education Module

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### ABSTRACT

**Background:** Head and body lice (pediculus humans) are similar in appearance, but head louse is often smaller in size. While, pubic lice (pthirus pubis), are quite distinctive. They have shorter bodies and a pincher-like claw, which makes them look like crabs. However, most common symptom of lice infestation is itching. **Materials and Methods.** Study originated with a sample of 150 children for explicating prevalence and knowledge of pediculosis among school children with age from 8-12 years. The study objectives were: - **1-** assessing the school children knowledge regarding pediculosis. **2-** Determining the scalp status for prevalence of pediculosis among studied subjects . **3-**Determine the association between pediculosis and studied subjects demographic variables. **4-** Determine the treatment needed for pediculosis. **5-** Developing a health education module needed . This is a descriptive survey approach and design was descriptive cross sectional study. Which found to be appropriate for assessing pediculosis prevalence and knowledge among the studied subjects, with utilizing stratified random sampling technique. Study was conducted in selected schools of Indore. All children within age between 8-12 years from selected area of Indore constitute target population for the study. **Results:** Current results showed that, mean of knowledge among studied children was **57.2%**. As well as it was detected that, moderate knowledge regarding pediculosis and there is significant association between pediculosis knowledge with studied children's age. Prevalence of pediculosis was noticed among 54.6% and this put a flash light regarding treatment needs among children school. The treatment proportion needs identified among studied children was **20.7%** for scalp hygiene, 67.1% for recommendation of OTC and 12.2% for special treatments. **Conclusion:** it can concluded that, clearly depicted that, school childrens were having moderate knowledge about pediculosis prevention. As well as based on the findings, health education module was developed to enhance the children awareness about pediculosis.

**Keywords:** Assess, Prevalence, Pediculosis, Treatment, School children

## 1. INTRODUCTION

Hair is vitally personal to children, they weep vigorously when it is cut for first time; no matter how it grows, bushy, straight or curly, they feel they are being shorn of a part of their personality. Children are more common to develop skin diseases by contact between classmates is an important cause of skin infection and infestation among school children<sup>(1)</sup>. The three major lice that infest humans are *Pediculus humanus capitis* (head lice), *Phthirus pubis* (crab lice), and *Pediculus humanus corporis* (body lice)<sup>(2)</sup>. The head louse is a parasitic arthropod with incomplete metamorphosis. Among the three types of human lice, i.e. head, body, and pubic lice<sup>(3)</sup>, head lice were the first identified species in humans<sup>(4)</sup>. Human lice cannot survive long away from their host<sup>(5)</sup>. Infestation with pediculosis capitis or head lice is a common health problem that most commonly involved children between 5 and 13 years old<sup>(6,7)</sup>. It is the most common parasitic infection of children<sup>(8)</sup>.

However, head lice can be transmitted through either direct (head-to-head) contact with the infested person or contact with his/her personal items such as comb, hair brush, hat, scarf, bedding, and towels. While, body lice are spread through direct contact with body, clothing or other personal items of a person which already causes lice. On the other hand, pubic lice are most often spread by intimate contact with an infested person. Head lice occur on the head hair, body lice on clothing and pubic lice mainly on hair near the groin. Each egg or "nit" may hatch one nymph that grows develop into an adult louse. Full-grown lice are about the size of a sesame seed. Lice feed on blood by skin piercing with their tiny needle-like mouthparts. Lice cannot burrow into the skin<sup>(9,10,11)</sup>.

Head and body lice (*Pediculus humans*) are similar in appearance, but head louse is often smaller in size. While, the pubic lice (*Phthirus pubis*), are quite distinctive. They have shorter bodies and a pincher-like claw, which makes them look like crabs. As evidenced itching is most common symptom of lice

infestation. As well as, excessive scratching of the infested areas can cause sores, which finally may become infected. Moreover, body lice can be a vector for louse-borne typhus, louse-borne relapsing fever or trench fever. However, hair and body lice are usually treated with medicated shampoos or cream rinses. Otherwise, nit combs can be used for lice and nits removal from hair. Thus, the clothes laundering needed for a high heat to eliminate body's lice. Efforts to treat should focus on the hair or body (or clothes), and not on the home environment<sup>(9)</sup>. Furthermore, inadequate knowledge of family members, health workers, and school staff about louse infestation may have psychological effects on the patients, and also their family members and the society<sup>(12)</sup>. Health education is essential to enhance public knowledge about the preventability of pediculosis<sup>(9)</sup>.

## 2. MATERIALS AND METHODS

In view of the selected, problem nature for the study and objectives to be accomplished an evaluative research for the current study. This study approach was descriptive survey and design, of descriptive cross sectional was found to be appropriate to assess the prevalence and knowledge on pediculosis among school children age group from 8-12 years.

All the school children within the age group between 8-12 years from selected schools under the study area of Indore constituted target population for the study. This setting was chosen on basis of investigator's feasibility, in terms of availability and accessibility of the school children.

The sampling technique was stratified random sampling. It was found to be most suitable and easy means for selecting a random sample consists an equal proportion of school children over the three age groups so as to get a complete representative of the population of all school children within age of 8-12 years by reducing heterogeneity over the age.

The study originated with a sample of 150 children as a sample size for explicating the prevalence and knowledge regarding pediculosis among school children within 8-12 years of age.

### 3. RESULTS

The data are organized and presented in the following four sections.

#### Section-I

#### **Description of demographic variables of studied school children**

Table 3.1: Distribution of subjects by Age

**N=150**

Sl no	Age in Years	subjects N=150	Percent%
<b>1</b>	<b>8-10</b>	<b>75</b>	<b>50.0</b>
<b>2</b>	<b>10-11</b>	<b>75</b>	<b>50.0</b>

Distribution of studied children according to their age depicts that equal proportion are between their age group of 8-10 (50%) are of the age group 10-12years.

Table 3.2: Distribution of children by Sex

**N=150**

Sl no	Sex	No of subjects	Percent%
<b>1</b>	<b>Female</b>	<b>63</b>	<b>42.0</b>
<b>2</b>	<b>male</b>	<b>87</b>	<b>58.0</b>

Distribution of studied children according to their sex this table revealed that, more than half of children (58.0%) were males and only (42%) females.

Table 3.3: Distribution of the children by religion

**N=150**

Sl no	Religion	No of subjects N=150	Percent%
<b>1</b>	<b>Hindu</b>	<b>108</b>	<b>72.0</b>
<b>2</b>	<b>Muslim</b>	<b>32</b>	<b>21.4</b>
<b>3</b>	<b>Christian</b>	<b>10</b>	<b>6.6</b>

Distribution of studied children according to their religion, it was detected that high percentage of children (72%) Hindus ,and (21.4%) Muslim as well as lowest percentage of them were Christian (6.6%) .

Table 3.4. Distribution of School children by frequency of head wash

**N=150**

Sl no	Frequency of head wash	No of subjects	% Percentage
<b>1</b>	<b>Daily</b>	<b>43</b>	<b>28.7</b>
<b>2</b>	<b>Alternate Days</b>	<b>49</b>	<b>32.7</b>
<b>3</b>	<b>Weekly</b>	<b>58</b>	<b>38.6</b>

Distribution of studied children according to frequency of their head wash it was observed that more than one third of them (38.6%) weekly washed their head. While, (32.7%) of them washed it alternate days and more than one quarter (28.7%) washed it daily.

**Section – 2****Assessment of knowledge of school studied children regarding pediculosis**

Table.3.5: Frequency and percent of studied children according to level of knowledge regarding pediculosis.

Level of knowledge	<u>Respondents</u>	
	Number	%
• Inadequate • (< 50%)	54	35.8
• Moderate (50-75%)	96	64.2
• Adequate (> 75%)	-	-
<b>Combined</b>	<b>150</b>	<b>100</b>

Table. 3.5 depicts that 35.8 % ( 54) of studied children have inadequate knowledge regarding pediculosis. While, 64.2 % ( 96) having a moderate level of knowledge ,as well as none of them was achieved to the adequate level of knowledge .

**Section – 3****Association between pediculosis knowledge and studied children demographic characters.**

Table 3.6 : Association between knowledge regarding pediculosis among studied children and their demographic characters. N = 150

S. No.	Demographic characters	Knowledge on pediculosis				Chi square value	df	P value
		≤median		➤ median				
		No.(95)	%	No.(55)	%			
1.	<u>Age (yrs)</u>					24.14*	1	P<0.05
	-8-10	62	44.3	13	14.5			
	-10-12	33	35.7	42	29.1			
2.	<u>Sex</u>					12.02*	1	P<0.05
	Male	45	47.4	42	76.3			
	Female	50	52.6	13	23.7			
3.	<u>Religion</u>					26.34*	1	P<0.05
	Hindu	82	86.4	26	47.3			
	Others	13	13.6	29	52.7			
4.	<u>Type of family</u>					4.261 <sup>NS</sup>	2	P>0.05
	Joint	26	27.4	31	56.4			
	Nuclear	62	65.3	19	34.5			
	Others	7	7.3	5	9.1			
5.	<u>Mothers education</u>					0.013 <sup>NS</sup>	2	P>0.05
	Illiterate	25	26.4	13	23.7			
	Literates	70	73.6	42	76.3			
5.	<u>Fathers education</u>					2.79 <sup>NS</sup>	2	P>0.05
	Illiterate	6	26.4	8	23.7			
	Literates	89	73.6	47	76.3			
6.	<u>Mothers occupation</u>	15	15.8	21	38.2	8.692*	2	P<0.05
	Working	26	27.4	16	29.1			
	House wife	54	56.8	18	32.7			
	Others							
8.	<u>Fathers occupation</u>	51	53.7	43	78.2	9.412*	2	P<0.05
	Employed	13	13.7	5	9.1			
	Unemployed	31	32.6	7	12.7			
	Others							
9.	<u>No. of children</u>					9.462*	2	P<0.05
	One	34	35.8	33	60.0			
	Two	43	45.3	16	29.1			
	Three and above	18	18.9	6	10.9			
10.	<u>Frequency of head wash</u>					14..62*	2	P<0.05
	Daily	18	18.9	25	45.5			
	Alternate days	38	40.0	11	20.0			
	Weekly	39	41.0	19	34.5			

**Note:** ‘\*’ – Significant at 5% level, i.e., P<0.05, ‘NS’ – Not significant at 5% level i.e., P>0.05.

The above table represent the association between knowledge and demographic characters of studied children. Chi-square test was carried out to determine the association between knowledge and socio demographic characters as age, sex, religion, family type, mothers and fathers education, as well as occupation, children's birth order, no. of children in age group of 8-12 years, total family

members, monthly income and frequency of head wash. Based on the current characters, age ( $\chi^2=16.69$ , df=2), sex ( $\chi^2 =12.02$ , df=1), religion ( $\chi^2 =26.34$ , df=1), mothers and fathers occupation ( $\chi^2 =8.692$ , df=2), & ( $\chi^2 =9.412$ , df=2) respectively . As well as children number of age group of 8-12 years ( $\chi^2 =9.462$ , df=2). Furthermore, the head wash frequency ( $\chi^2 =14.62$ , df=2) were detected to be significant at 5% level (P<0.05). The rest of the variables were not statistically significant .

**Section-4****Prevalence of Pediculosis among studied children****Table 3.7. Prevalence of pediculosis among studied children.**

SL No	Pediculosis	No.	%
1	Present	82	54.6
2	Absent	68	45.4
<b>Total</b>		<b>150</b>	<b>100.0</b>

The above table presents the prevalence of pediculosis among the studied children. As 54.6%(82) of studied children were suffering from pediculosis problem and 45.4% (68) not suffering from it.

**Table 3.8 Distribution studied children and the treatment needs**

Treatment need	<u>Requiring treatment</u>	
	No.(82)	%
• Scalp hygiene	17	20.7
• Recommended for OTC	55	67.1
• Special treatment	10	12.2

The above table shows the studied children distribution and their treatment needs. It was observed that 20.7%(17) were needed for scalp hygiene, 67.1% (55) were recommended for OTC and only 12.2% (10) were needed for some special treatment.

**Table 3.9. Status of pediculosis among studied children over selected demographic variables**

Demographic Characteristics	Sample size (150)	Prevalence of pediculosis				$\chi^2$	Df	P-value
		Presence		Absence				
		No(82)	%	No (68)	%			
<b>1. Age</b>	75	60	73.1	15	22.1	38.85*	1	P<0.05
8-10 Years	75	22	26.9	53	77.9			
10-12 years								
<b>2. Sex</b>	87	30	36.6	57	83.8	34.05*	1	P<0.05
Male	63	52	63.4	11	16.2			
Female								
<b>3. Religion</b>	108	56	68.3	52	76.5	1.23NS	1	P>0.05
Hindu	42	26	31.7	16	23.5			
Others								
<b>4. family type .</b>	57	49	59.7	8	11.7	0.043NS	2	P>0.05
Joint	81	33	40.3	48	70.6			
Nuclear others	12	-	-	12	17.6			
<b>5. Mother's educations</b>	38	35	42.7	3	4.4	28.78*	1	P<0.05
Illiterate	112	47	57.3	65	95.6			
literate								
<b>6. Father's education</b>	14	12	14.6	2	2.9	6.01*	1	P<0.05
Illiterate	136	70	85.4	66	97.1			
literate								
<b>7. Mother's occupation</b>	36	4	4.8	32	47.1	21.95*	2	P<0.05
Working	42	26	31.7	16	23.5			
House wife Others	72	52	63.5	20	29.4			
<b>8. Father's occupation</b>	94	36	43.9	58	85.3	23.16*	2	P<0.05
Employed	18	12	14.6	6	8.8			
Unemployed Others	38	34	41.5	4	5.9			
<b>9. No. of children</b>	67	15	18.3	52	76.5	17.39*	2	P<0.05
1	59	48	58.5	11	16.2			
2	24	19	23.2	5	7.3			
<b>10. Frequency of head wash</b>	43	8	9.7	35	51.5	59.796*	2	P<0.05
Daily	49	20	24.4	29	42.6			
Alternate Weekly	58	54	65.9	4	5.9			

**Note:** '\*\*' – Significant at 5% level, i.e., P<0.05, 'NS' – Not significant at 5% level i.e., P>0.05.

The above table reflecting the prevalence of pediculosis over the subjects socio demographic characters. It was noticed that 73.1% (60) of subjects in aged group of 8-10 years and 63.4%(52) of them female children. As well as 68.3%(56) of subject belong to Hindu religion and 42.7%(35) of them their mothers were illiterate. While 14.6% (12) of them their fathers were illiterate and 63.5%(52) of children their mothers

were house wife and working. Otherwise it was detected that ,41.5%(34) of studied children their fathers were engaged in occupation as well as some of fathers employed and unemployed. **Furthermore** , only 23.2% (19) from children found to be with third order and 65.9%(54) of them were weekly once head wash had pediculosis prevalence .

#### 4. DISCUSSION

One of the most important indicators of developed countries is the level of health and well being of their people<sup>(13)</sup>. Protecting children's health includes the growth and development of the country and has been considered as a great investment in its economic growth and political stability<sup>(14)</sup>. Head lice contamination is common worldwide and has been proposed as a major health problem not only in poor countries but also in developed and industrial countries<sup>(15)</sup>. The pattern of skin diseases in India is influenced by the developing economy, social backwardness, level of literacy, varied climate, industrialisation, access to primary health care, and different religious, ritual and cultural factors<sup>(16)</sup>.

**4.1** First study objective was to assess the knowledge of school children regarding pediculosis.

The findings of the current study revealed that school children have a little knowledge regarding the pediculosis with mean of **12.6** over the anticipated score of 22 and mean score was 57.2%. This may be due to lack of their awareness regarding the health status of the scalp. Consequently most of the school children were not insisted regarding the scalp health either by their parents or teachers.

**4.2** Second study objective was to determine the status of pediculosis among school children of age group between 8-12 years.

The findings of this present study showed that out of 150 school children sample, the prevalence of pediculosis was detected among 54.6% (82) and not for 45.4% (68) of them .On the other hand 20.7% (17) of were required scalp hygiene, 67.1% (55) require recommended for OTC and only 12.2%(10) was detected as required a special treatment.

**4.3** Third study objective was to determine the association between pediculosis and demographic variables of studied children.

The study found a significant association between pediculosis knowledge and socio demographic characters of subjects such as age, sex, religion, family type, mothers knowledge, mothers occupation, fathers education, fathers occupation, children 's birth order , no. of children among aged

group of 8-12 years, total family members, monthly income and frequency of washing their head. Of these characters, age ( $\chi^2 =16.69$ ,  $df=2$ ), sex ( $\chi^2 =12.02$ ,  $df=1$ ),religion ( $\chi^2 =26.34$ ,  $df=1$ ), mothers occupation ( $\chi^2 =8.692$ ,  $df=2$ ), fathers occupation ( $\chi^2 =9.412$ ,  $df=2$ ), number of children among age of 8-12 years ( $\chi^2 =9.462$ ,  $df=2$ ) and frequency of head washing ( $\chi^2 =14.62$ ,  $df=2$ ) were noticed as significant at 5% level (.ie  $P<0.05$ ). While, the rest of variables was not statistically significant ( $P>0.05$ ).

**4.4** Fourth study objective was to determine the treatment needed for pediculosis

In the present study showed that out of 150 studied school children, the prevalence of pediculosis was noticed among more than half of them 54.6% (82) and not among 45.4% (68).As well as it was noticed that, with pediculosis 20.7% (17) were required scalp hygiene, 67.1% (55) require recommended for OTC and 12.2%(10) only required a special treatment.

**4.5** Fifth study objective was developing the health education module

The findings of the current study clearly depict that school children with moderate level of knowledge regarding pediculosis prevention . Based on the findings, health education module was developed to enhance the school children awareness .

#### Conclusion

Since head louse infestation is a common problem among school going children both parents and teachers along with the students should be taught how to recognize this infestation. Also school health teams should be responsible for prevention and treatment of louse infestation besides carrying our other school health services and functions.

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