

An evaluative study to find the effectiveness of two methods of management of pediculosiscapitis among children of selected schools of Udupi District

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I. Introduction

Pediculosis is an important communicable infestation posing a public health problem in India. Infestation with pediculushumanuscapitis (head louse) is more commonly observed among population who live in an overcrowded and insanitary environment. Though pediculosis can occur in any age group, younger children are more frequently affected as they probably have more contact with other affected children in overcrowded houses and schools. This infestation adversely affects not only their health but also their curricular activities.¹

Currently, pediculosis affects 6-12 million persons in the United States each year, and this number continues to rise. Social stigma and persistent misconceptions complicate the implementation of appropriate management strategies. Diagnosis is made on the basis of finding nits (i.e., silvery-white eggs firmly attached to the hair shaft), concentrated on the crown, behind the ears, and at the nape of the neck. Transmission occurs by direct contact with an infested person or indirectly by contact with clothing, personal grooming articles, bedding, or upholstered furniture containing viable nits or lice. Although three chemical agents are currently available; permethrin 1.0% (Nix Crème Rinse) is the treatment of choice. Environmental treatment is also necessary for the eradication of the infestation. Health care personnel who come in contact with this population need to be well informed of the facts in order to disseminate accurate information for diagnosis and management.²

Indian studies have reported a wide – ranging prevalence of pediculosis in different groups, 51.26% among villagers, 6.4% among school children, and 4.6% in the semi urban community. Pediculosis is one of the most common parasitic infestations in the community, responsible for a high level of morbidity. The condition in most cases simply reflects poor hygiene. A house to house survey was conducted in 5 villages of Wardha district, Maharastra, with a combined population of 2063. A study conducted among 337 males and 329 females up to age 14 years found a prevalence rate of pediculosiscapitis infestation of 20.42%. Infestation was detected in 8.9% of males and 32.2% of females. The infestation rate increased from 9.31% to 30.17% with the age group from 0-4 years to 10 – 14 years. 54.4% of children did not wash their hair daily; 35.6% of females and 21.3% of males. When hair was washed on a daily basis, the infestation rate was 11.8%, compared to 27.6% when the washing was done irregularly. Teaching the community about personal hygiene and the availability of anti- pediculosis drugs could lead to the reduction in the prevalence of pediculosiscapitis among children.³

Objectives:

1. To compare the effectiveness of two methods of management of pediculosiscapitis.
2. To find the effectiveness of each methods of management of pediculosiscapitis.

Hypotheses:

H₁: There will be a significant difference between median scores of two methods of management of pediculosiscapitis.

H₂: There will be a significant difference between median scores of pre and post pediculosis management of perlice cream rinse 1%.

H₃: There will be a significant difference between median scores of pre and post pediculosis management of wet combing.

II. Materials and methods

In this study schools were selected by random method, children for identifying the prevalence of pediculosis were by purposive and for the management by random sampling technique. Data collection instrument was, Tool 1 Section A: Information related to hair, Section B: Observation checklist to diagnose the degree of infestation and to check the effectiveness of the management.

The content validity of the tool was obtained by submitting the tool to 7 experts. The reliability of the tool was established by administering on 20 children with Pediculosiscapitis. The reliability of the tool was established by using Sphereman rank correlation for the observation checklist and the value obtained was 0.99 and the tool was considered reliable. Pilot study was conducted to assess the feasibility and practicability.

The main study was conducted in Aided Higher Primary School, Herebettu and ZillaPanchayath Higher Primary School, Athrady in 2010. The pediculosiscapitis infestation among children was identified by visual inspection. The children were selected for the management, were informed to ask their mothers or care takers to come to school on a fixed date to explain the treatment. On that day the selected children were checked for the degree of infestation by using observation checklist and management was explained to them. Follow up was done on next two days to their house who were selected for the study. The effectiveness of the management was checked with the observation checklist in school after 14 days in wet combing and after 7 days in case of perlice cream rinse 1% application.

The obtained data were analyzed based on the objectives and the hypotheses by using descriptive and inferential statistics and hypothesis was tested at 0.05 level of significance.

III. Results

Section 1: Frequency and percentage distribution of information related to hair.

Analysis of the data obtained to describe the information related to hair is shown in Table 1.

Table 1: Frequency percentage distribution of information related to hair.

N=135			
Sl. No	Information related to hair	f	%
1	Hair length (in centimetres)		
	≤ 38	54	40
	> 38	81	60
2	Cosmetic used for the hair wash		
	Shampoo	14	10.4
	Soap	121	89.6
3	Sharing of comb		
	No	6	4.4
	Yes	129	95.6
4	Number of hair washes/ Week		
	≤ 4	109	80.7
	> 4	26	19.3

Data presented in table 1 show that majority of the children had hair length more than 38cm(60%), were using soap for the hair wash (89.6%), were sharing the comb among the family members(95.6%) and had less than 4 hair washes/ week(80.7%).

Section 2: Frequency distribution of sample in terms of degree of infestation before and after the management

Data obtained to describe the degree of infestation before and after the treatment of pediculosiscapitis with perlice cream rinse 1% and wet combing are shown in Table 2&3.

Table 2: Frequency and percentage distribution of degree of infestation before and after the treatment in group I (perlice cream rinse 1%)

Degree of infestation	N = 40			
	Before treatment		After treatment	
	Frequency f	Percentage %	Frequency f	Percentage %
0 - No infestation	Nil	Nil	28	70.0
1 - < 2 Mild	02	5.0	08	20.0
2 - < 4 Moderate	06	15.0	04	10.0
4 - < 6 Severe	31	77.5	00	00
6 - < 8 Extremely severe	01	2.5	00	00

Data presented in the table 2 show that among group I there was significant reduction in degree of infestation from severe (77.5%) to no infestation (70%) after using perlice cream rinse 1%.

Table 3: Frequency distribution of sample in terms of degree of infestation before and after the treatment in group II (wet combing)

Degree of infestation	Before treatment		After treatment	
	Frequency f	Percentage %	Frequency f	Percentage %
0- No infestation	Nil	Nil	16	40.0
Mild	7	17.5	13	32.5
2- <4 Moderate	5	12.5	11	27.5
4- <6 Severe	28	70.0	00	00
6- <8 Extremely severe	00	00	00	00

N = 40

Data presented in table 3 show that among group II there was significant reduction in degree of infestation from severe (70%) to no infestation (40%) after wet combing.

Section 3: Comparison of two methods of management of pediculosiscapitis.

In order to compare the two methods of management of pediculosiscapitis between two groups, the research hypotheses was stated as:

H₁: There will be a significant difference between median scores of two methods of management of pediculosiscapitis.

Table 4: Mann Whitney U test- between group I (perlice cream rinse 1%) and group II (wet combing).

Groups Range	Median	Inter quartile range	Z value	P value	Remarks
Perlice cream rinse	4	2 (2 – 4)	- 2.775	0 .006	Significant
Wet combing	3	3 (1-4)			

(N= 40 + 40)

Table 4 show that the median of the two different management of pediculosiscapitis between two groups (group I and group II) were significantly different. The “Z”value of two methods of management (Z= - 2.775) is significant at p<0.05 level of significance Thus it was inferred that the perlice cream rinse1% shown a better outcome than wet combing. Hence the research hypothesis is accepted stating that there will be a significant difference between median scores of two methods of management.

Section 4: Comparison of the pre and post treatment of each method of pediculosiscapitis.

In order to compare the effectiveness of the management before and after the treatment the research hypotheses were stated as:

H₂: There will be a significant difference between median scores of pre and post treatment of perlice cream rinse1%

H₃: There will be a significant difference between median scores of pre and post treatment of wet combing.

Table 5A: Wilcoxon sign rank test: comparison of pre and post management of perlice cream rinse 1%.

N= 40

	Median	Range	Z value	P value
Before the treatment	4	1- 5	-5.609	0.001
After the treatment	0 .00	0 - 1		

Table 5 B: Wilcoxon sign rank test: comparison of pre and post management of wet combing

N = 40

	Median	Range	Z value	P value
Before the treatment	4	1 - 5	- 5.348	0.001
After the treatment	1	0 - 2		

Table 5 A & 5 B show that the median change in two groups was statistically different. The Z value of group I (Z = -5,609 p<0.05) is significant at p<0.05 level of significance and also Z value of group II (Z= - 5,348, p< 0.05) is significant at p<0.05 level of significance. Thus it was inferred that there is a significant reduction in degree of infestation after the each method. Hence research hypothesis is accepted stating that there

will be a significant difference between median scores of pre and post treatment of perlice cream rinse 1%.and wet combing.

IV. Discussion

The present study findings revealed that majority (60%) of the children had hair length more than 38(60%)cm, were using soap for the hair wash (89.6%),were sharing the comb among the family members(95.6%) and had less than 4 hair washes/ week(80.7%). The present study findings supported by the study conducted in Maharashtra where the prevalence was higher (36.27%) in children with poor personal hygiene as compared to those with satisfactory personal hygiene. The prevalence of head louse infestation was higher (41.97%) in children with hair length more than 5cm than in those whose hair length was less than 5cm (22.16%). This difference was found to be statistically highly significant ($p < 0.05$)¹

The present study findings revealed that the perlice cream rinse 1% shown a better outcome than wet combing. ($Z = -2.775, P < 0.05$). The similar result reported with the use of other pediculicide in a pragmatic randomised controlled trial which was conducted to compare the effectiveness of wet combing with Malathion for treatment of head lice in UK. Seventy four children completed the study and 72 were included in the analysis. The cure rate was 38% (12 of 32) for bug-busting and 78% (31 of 40) for Malathion. Children assigned bug-busting were 2.8 (95% CI 1.5–5.2) times more likely than those assigned malathion to have lice at the end of treatment ($p = 0.0006$). The study concluded that malathion lotion was twice as effective as bug-busting.⁴

Similar finding reported by a study conducted to assess the prevalence of head louse infestation and the effectiveness of 1% permethrin against head lice in Kosovar refugees. Study concluded that 1% permethrin treatment was effective in louse control in this refugee population.⁵

The present study findings contradicted by the findings of a single blind randomised comparative study which revealed that the cure rate for malathion and permethrin were 17% and 10% respectively. The cure rate for the bug buster kit was significantly greater than that for the pediculicides (57% versus 13%; relative risk 4.4, 95% confidence interval 2.3 to 8.5). Study concluded that the bug buster kit was the most effective over the counter treatment for head louse infestation in the community when compared with the pediculicides.⁶

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