

## REVIEW OF "FACTORS AFFECTING THE FAILURE TO REDUCE THE PEDICULOSIS AMONG SCHOOL GIRLS IN BORDERLANDS OF KERMANSHAH"

Elahe Jahandideh <sup>1</sup>, Bijan Kabodi <sup>2</sup>

1 - Department of Kermanshah University of Medical Sciences and Health Services

2 - Department of Kermanshah University of Medical Sciences and Health Services

**ABSTRACT:** Louse is a small, wingless and blood-feeding insect which is an extrinsic human parasite and can infect body, head and pubic area. A louse's egg is called a nit which is oval shaped, white and with the size of pin bottom. It sticks to hair and clothes seam. Different kinds of lice are: 1- head lice, 2- body lice, and 3- pubic lice. Head lice inhabit the scalp hair and bites this region (back of the head and behind ears). Different ways of pediculosis transmission are:

- Direct contact between healthy subjects and infected

- Indirect contact by sharing contaminated personal items (clothes, blankets, bed sheets, combs, hats, scarves, etc.)

Infection to head lice is found in all societies. Patient detection and training are two major parts of health care services in schools. Every school year, the personnel check the students' health status in case of any head lice infections. Having identified patients, follow-up treatments initiates. This program has been running since 2001; some successes are achieved, and in some cities infection rate is approaching to zero. However, in Salas Babajani city, the reduction of the disease burden has encountered some difficulties and despite spending resources and labor no progress has been made in this field. This review aims to determine the "factors affecting the failure to reduce the pediculosis among school girls in borderlands of Kermanshah" this study is a descriptive, cross-sectional research which acts as a groundwork for interventional studies. At first, all 3093 school girls of Salas Babajani city (including urban or rural), were put to skin and hair examination in order to determine the presence or absence of lice and nits. Two separate lists of infected and non-infected girls (as the control group) were prepared during the examination. The number of infections was 320 which is consistent with the existing data. The same number of non-infected girls were selected by simple random sampling as the control group. Both girls and their mothers completed the questionnaires. Analyzed samples were the total of 1208 school girls and their mothers categorized in two groups of head lice-infected girls with their mothers, and non-infected girls with their mothers. In order to obtain the opinions on matters related to culture and lifestyle of samples, focus group meetings were held. At the end, the results from both groups (head lice-infected girls with their mothers, and non-infected girls with their mothers) were analyzed and the relationship between lifestyle, awareness, attitude, the behavior of girls and their mothers, and also results of group discussion were compared with head lice infection. SPSS software was used for analyzing data, and descriptive statistical tests were performed. Independent t-tests were used to compare the two groups. there was no significant difference among literacy or illiteracy of mothers in both infected and control groups. There is a significant difference between living with a single father (single parent) and infection rate. The residence place of 97% of infected and 93.8% of healthy girls was equipped with a bathroom. There is a direct relationship between awareness and level of contamination among girls. 16% of infected girls believe that having head lice does not create health issues. This figure is 5.3% for non-infected girls. The vast majority of the studied samples in both infected and control groups are not willing to speak about having head lice to anybody. 62% of infected girls and 25.1% of healthy girls wear scarves at home. Average awareness about head lice, the ways to control and treat the infection are relatively equal in mothers of both healthy and infected girls. 83% of mothers of infected girls believe that having head lice does not create health problems. This figure is 68.1 for mothers of healthy girls. 74.7% of mothers of infected girls said that no measure is necessary when infecting to head lice and this disorder disappears spontaneously. 16% of mothers of infected girls and 21.6% of mothers of healthy girls have been educated about the ways of controlling head lice. 82.1% haven't done anything about decontamination of their daughters yet. 4.7% of fathers of infected girls were aware about their daughter's infection to head lice. Most of the group members use the word "dandruff" instead of "lice" in group discussions. Infected girls in particular are not willing to use the word "lice". Girls said that it is not common to take their personal

belongings to the barbershops. It is ridiculous. At the barbershop, items like combs, towels, aprons, etc. are public and for everyone. The majority of mothers with school girls in the border city of Salas Babajani are housewives and illiterate. We suggest that: in designing health interventions, especially for the control of pediculosis in here and in similar areas, consider the housewifery of at least 97.3 percent of mothers and the illiteracy of 60 percent of them at minimum. A significant percentage of infected girls considered having head lice peculiar to impoverished communities. It seems necessary to inform them that pediculosis is not just for impoverished communities and it might be found in any other society. The education of self-caring is highly important for those with head lice infections, because history has proven that the role of classic training fades over time. Once awareness brings proficiency, then it shall be more stable.

**Keywords:** *pediculosis, infected to head lice, non-infected to head lice, school girls, borderland.*

**1.INTRODUCTION**

Head louse a small, wingless and blood-feeding insect with three pairs of legs and 1 to 2 mm length. Female louse lies 50 to 150 eggs in a lifetime. The infestation of head lice causes scalp infection. This insect can be seen at the back of head and behind ears, and during the hot months; it is transferred through long term direct head to head contact or by contaminated comb, brushes, clothing, hats, scarves, bed sheets. The most important and prominent symptoms of these disorders are: severe pruritus, irritation and swelling in the root of hair due to excessive scratching, growth and sensitization of lymph glands behind ears and at the back of head and neck. Lice eggs (nits) are asymmetrically attached to the hair trunk and it is difficult to remove them. Eyebrows, beard and eyelashes may also get involved. Reaction to the bite of this insect may be seen in forms of erythematous, papule, and urticaria. In excessive infection, fever, anemia, adenopathy in the neck may also be seen. Head lice infection is called a disorder in many scientific resources and it is not known as a disease. Ways of infection transmission: Direct contact between healthy person and the infected subjects and indirect contact by sharing infected personal belongings (clothes, blankets, bed sheets, combs, hats, scarves, etc.). Head lice infection may be found in all communities. In age-gender groups, it happens mostly among 3 to 12 years old girls. Overcrowding

makes it possible for the louse to move from one head to another. Since the close contact is common among children, pediculosis capitis happens in this age group; although everyone in any climate has a possibility of infection. Without any treatment, the infection remains for a long period and causes the spread of lice to family and society. Detection, control and prevention of health problems among school aged children and adolescents along with timely interventions are of high consequences and ensure the health of this group. Every school year, the personnel check the students' health status in case of any head lice infections. Having identified patients, follow-up treatments initiates. This program has been running since 2001; some successes are achieved, and in some cities infection rate is approaching to zero. However, in Salas Babajani city which is the furthest borderland of Kermanshah, the reduction of the disease burden has encountered some difficulties and despite spending resources and labor no progress has been made in this field. Patient screening and pediculosis treatment, and training the students in the province, including urban, rural and nomadic are all performed with the same pattern and drugs. Despite the efforts in the abovementioned city, we continue to witness high incidence of this disorder among school girls. From 2001 to 2009, the highest incidence of pediculosis capitis among students belonged to Salas Babajani city. The following table illustrates this issue.

Table 1. Comparison of the Students' infection status to head lice in Kermanshah province and the borderland city of Salas Babajani

Year	2006-2007	2007-2008	2008-2009	2009-2010
Infection percentage in Salas city	12.3	10.6	11.7	10.5
Infection percentage in the province	2.9	2.3	2.1	1.2

Health education specialists find the identification of economic, cultural, social and climate factors effective

in the success or failure of health programs. In this study, we aim to recognize the existing difficulties

and obstacles hindering the success of pediculosis reduction initiatives among the students of the furthest borderland of Kermanshah; so that with the publication of results, more effective measures would be devised to eliminate these barriers, and appropriate interventions based on the needs of the region could be designed.

The main purpose of this study: Determining the factors affecting the success of pediculosis reduction initiatives among school girls in borderlands of Kermanshah.

## MATERIALS AND METHODS

this study is a descriptive, cross-sectional research which acts as a groundwork for interventional studies. At first, all 3093 school girls of Salas Babajani city (including urban or rural), were put to skin and hair examination in order to determine the presence or absence of lice and nits. Two separate lists of infected and non-infected girls (as the control group) were prepared during the examination. The number of infections was 320 which was consistent with the current data (this stage is considered as the verification of examination reports by health staff.).

In the second stage: the questionnaire consisting of demographic information and questions about awareness, attitude and behavior of mothers and daughters retrieved from classified questionnaire of World Health Organization known as the global school-based student health survey (GSHS) at the core and expanded core level derived from WHO/NCD/Stepwise model was used. Sampling was not performed for the infected girls. Questionnaires were completed for all mothers. The same number of non-infected girls were selected as the control group by simple random sampling. Both girls and their mothers completed questionnaires. Analyzed samples were the total of 1208 school girls and their mothers categorized in two groups of head lice-infected girls with their mothers, and non-infected girls with their mothers. Mothers were selected due to their prominent role in maintaining their own health, and their families' including their daughters' hygiene.

In the third stage: samples from both groups were randomly selected and group discussions meeting were held for two groups of mothers and daughters. In order to obtain the opinions related to culture and lifestyle, focus group discussion were held. At the end, the results from both groups (head lice-infected girls with their mothers, and non-infected girls with their mothers) were analyzed and the relationship between lifestyle, awareness, attitude, the behavior of girls and their mothers, and also results of group

discussion were compared with the head lice infections. SPSS software was used for analyzing data, and descriptive statistical tests were performed. Independent t-tests were used to compare the two groups.

## FINDINGS

**Findings of this research are classified into eight segments as follows:**

1 - Findings related to demographic factors associated with pediculosis capitis among school girls:

The average age for the group of infected girls was  $12\pm 0.7$  and  $12\pm 0.6$  for the group of non-infected girls. 42.7 percent of infected cases were residing in rural areas and 67.3 percent were in urban areas. There was no meaningful difference between illiteracy or literacy of mothers among the infected and control groups. 73 percent of girls which were infected to pediculosis capitis and 74 percent of non-infected girls had illiterate mothers. 99% of mothers of infected girls and 97.4% of mothers of non-infected girls were housewives. No significant difference was found in this section. 95% of infected group and 98.3% of the control group live with both parents. There is a significant difference between living with single father and the infection rate among single-parent students. The residence place of 97% of infected girls and 93.8% of healthy girls was equipped with a shower. There is a direct relationship between having a personal room and infection to head lice. 19% of infected girls and 2% of healthy girls have personal rooms. Storage place of bed sheets at 24.3% of infected girls and 2.6% of healthy girls were apart from the others'.

**2 - The level of awareness among school girls about the ways of prevention, transmission and treatment of pediculosis capitis:** the differences between the infected and non-infected girls on the average awareness about pediculosis capitis, the ways to control and treat the infection is significant. There is a direct relationship between the level of awareness and rate of infection to pediculosis capitis among the girls under study.

3 - The average awareness score in infected group was 9.5 (from 19 as the top score) with a standard deviation of 0.3 and 15.6 (from 19 as the top score) for the control group with a standard deviation of 0.2. (Table 1)

**4 - The attitude of school girls under study about the ways of prevention, transmission and treatment of head lice:**

19.1 percent of infected girls said that no measure is necessary when having head lice and this disorder

disappears spontaneously. This figure is 86.7% for non-infected girls. The vast majority of the studied samples in both infected and control groups are not willing to speak about having head lice to anybody. Both groups agree that it is hard to talk about head lice. The differences between responses is not significant in this category. 79.1% of infected girls tend to hide their illness. 79.1% of non-infected girls have the same opinion as well. 28% of infected girls stated that if someone notice their infection, he or she will make fun of them, 41.1 percent said people will avoid them and 12.2 percent said people will help them.

**5 - The behavior of school girls under study about the ways of prevention, transmission and treatment of head lice:**

30.6% of infected girls bathe more than once a week. This figure is 60.2% for non-infected girls. The difference between bath frequencies among the two groups is significant. Most girls in both groups brush their hair every day. In this case no significant difference was found. 62% of infected girls and 25.1 of non-infected girls wear scarf at home. 13% of infected girls and 4.2% of non-infected girls wash their school scarf less than a fortnight. 36.8% of infected girls and 84.1% of healthy girls iron their scarves. No significant difference has been found between the places used for drying clothes among the two groups. 37.5% of infected girls and 27.6% of non-infected girls have not had the necessary training about the head lice and the ways of controlling it. 83% of infected girls have not talk to someone about their infection yet.

**6 -Awareness of mothers of school girls under study about the ways of prevention, transmission and treatment of head lice:**

In both groups, average awareness of mothers and daughters about head lice, the ways to control and treat the infection are relatively equal. The average score of mothers in infected group was  $14 \pm 0.3$  (from 19 as the top score) and  $13 \pm 0.2$  for the control group (from 19 as the top score).

**7 -Attitude of mothers of school girls under study about prevention, transmission and treatment of head lice:**

83% of mothers of infected girls believe that having head lice does not create health problems. This figure is 68.1 for mothers of healthy girls. 74.7% of mothers of infected girls said that no measure is necessary when having head lice and this disorder disappears spontaneously, and 16 percent said it is better to take medicine (Permethrin shampoo). These figures were 68.2% and 23.8% respectively for mothers of non-infected girls. The majority of samples in the group of mothers of infected are not willing to talk to someone

about having head lice. This figure is 41.5 percent for mothers of the control group. Both groups agree that it is hard to talk about head lice. The differences between responses is not significant in this category. 28.1% of Mothers of infected girls and 28% of mothers of non-infected believe girls are permitted to take off their scarves or hair covers only on bedtime. 87.4% of mothers of infected group and 89.4% of mothers of non-infected group opposed to short haircut for girls. 91.7% of fathers of infected girls and 89.7 percent of fathers with no infected girl are completely opposed to shorten their daughters' hair.

**8 - Behavior of mothers of school girls under study about prevention, transmission and treatment of head lice:** 75.5% of mothers with an infected girl have not talk to someone about the infection of their daughters yet. 59.8% of mothers with infected girl and 73.9 percent of mothers with non-infected girls supervise their brushing. In this case, the difference is significant. Bed sheets washing frequencies among the two groups is relatively equal. 16% of mothers of infected girls and 21.6% of mothers of non-infected girls have not had the necessary training about the head lice and the ways of controlling it. 17.9% of mothers of infected girls had already take measures to cure their daughters and 82% have not yet taken any action about it. 95.3% of fathers with infected girls are unaware of her daughter's infection. 91 percent of fathers with infected girls and 94.4% of fathers with non-infected girls are comfortable with paying for the cost of purchasing bathing suites.

**8 - Findings from focus group discussions with girls and their mothers, sorted by the highest replication among participants:**

**-A) Girls:**

- Tell mothers to force us to take a bath. We are too sluggish at this age to go to bath.
- Most of the group members use dandruff instead of lice. Infected girls in particular are not willing to use the word "lice".
- It is not common to take our personal belongings to the barbershops. It is ridiculous. At the barbershop, items like combs, towels, aprons, etc. are public and for everyone.
- The prescribed medications smells bad, we fear that smell remains and everyone would figure out about the usage. It is disgraceful.
- It is embarrassing if someone find that we have nits and lice, or if we talk to someone about it.
- In this case, peer education is not the solution. We are all friends, our friends would feel embarrassed. It could be done in an indirect way.
- Train Mothers, because we're more comfortable with them. If they know, then they would help;

otherwise, even if we are willing to do something, they disagree and won't let us to do so.

- Some of us live in houses with well water supply. It's been said that well water brings lice. No matter what you do, you'll have lice if you bathe with well water.

B) Mothers:

- All mothers, whether with or without infected girls are in denial and reluctant to talk about this issue.

- Most of them would say: We are not aware of it. There is no problem.

- High school students are adults. They must take care of their own health. It's wrong to expect us to watch out for their hair.

- We are fine. We won't interfere with others' problems.

- Maybe the reason why we are unaware of their problem is because we do not allow girls to take off their scarves at home. Some girls even sleep while wearing a scarf because the room is shared.

- All consider having lice to be blemish and they deny it strongly.

- If a girl was accused of having parasites, no one would come to woo her. (Most of mothers feel worried about this)

Table 2. Awareness of girls under study about head lice in each item

Issue	Question	Infected		Healthy	
		Frequency	Frequency Percentage	Frequency	Frequency Percentage
The definition of head lice		293	33	302	83
Types of lice	Head	300	73	302	95
	Body	299	22	301	59
	Pubic	299	21	301	54
Difference between head lice and body lice		298	48	302	92
Head lice location		299	29	300	93
The definition of nits		300	43	302	40
Accumulation spots of nits and lice		299	42	302	92
Age groups subject to lice		301	39	302	18
Communities at risk		300	46	299	82
Being contagious		299	42	301	48
Symptoms of head lice		302	83	302	83
Ways of catching head lice		302	50	302	55
Treatability of head lice		295	59	302	77
Ease of treatment		295	57	302	55
The best way to treat		300	53	302	72
Disease transmissibility from one person to other members of the family		301	44	302	78
Treatment of other members in case of an infection in family		301	49	302	53
Predictability of the disease		300	58	299	65
Prevention methods		300	38	300	66
Noticing your own disease		300	17	-	-

**DISCUSSION AND CONCLUSION**

Findings show that individuals' attitudes affect the success of reducing head lice among students. Opposition of mothers and girls to short haircut, reluctance to use personal belongings in the hairdresser's, forcing to wear scarf at home, believing that having lice is not a health issue, and also unwillingness to talk about the problem and ways to deal with this are examples of this category. Behavior of investigated individuals who represent the people of the region is also effective on head lice infection.

Bathing with prolonged intervals, using common items, reluctance to use iron, covering hair all the time even indoors and in her own room are in this category; additionally low awareness of individuals should also be considered. Most of scientific sources relate the level of individual's literacy with health status. The results of this study indicate that literacy (or illiteracy) of mothers has no effect on the infection of daughters to head lice. The same thing applies to housekeeping or working mothers as well, i.e. having employed or housekeeper mothers has no effect on the infection of daughters to head lice. In the

region under study, the majority of mothers with school girls are housewives and illiterate. We suggest that: in designing health interventions, especially for the control of pediculosis, consider the housewifery and illiteracy of majority of mothers. Direct relationship between living with a single parent, especially with father and having head lice is a small figure, however the transmissibility of head lice from an infected student to a large number of classmates, raises the following issues: Attention to the training and support of single-parent students, especially in the students who live with their father would be a facilitator for pediculosis control initiatives in school.

- One of the considerable results is that a large number of infected girls (19.7 percent) have a separate room compared to non-infected girls (2%). This issue raises the possibility of a direct relationship between unawareness of most of mothers about their daughters' infection due to lack of involvement with family (in the Salas Babajani region).

Results of this study show a significant difference between infection to head lice and awareness about prevention and controlling methods of pediculosis. Effects of training on the knowledge and consequently the change and modification of behaviors of different age, gender and social groups is evident. But what amplifies or undermines this effect is the method that we choose. If we choose the proper procedures according to existing requirements, conditions, facilities and potentials of audience, it will surely have a greater impact on them. **Targeted training is an effective way to raise awareness and reduce the infection rates to pediculosis among girls.**

A significant percentage of infected girls considered having head lice peculiar to impoverished communities. Regarding the poverty in borderland city of Salas Babajani, informing these girls about the issue that this disorder might be found in any community, seems necessary. A greater number of healthy girls (compared to infected girls) considered their mothers as the main source of assistance in head lice infection which reaffirms the issue that:

Participation of mothers is a must in the control of pediculosis among daughters. In the design of necessary health interventions to reduce infection to head lice in borderland of Salas Babajani and other similar areas, it is recommended to consider the indirect methods. Hair cover (with scarf) in home is much more common among infected girls than non-infected girls. Infected girls wash their school scarf less often than non-infected ones. Also ironing scarves in healthy girls is more than twice of those infected. Fewer scarf (hair cover) wash, bathing with

prolonged intervals, wearing a scarf at home and even at nights, not ironing school scarf are directly related to the infection among girls and these may be considered as high-risk behaviors associated with infection to head lice and nits in this group. Practical training including self-care activities may have greater impact compared to classical and theoretical education.

School girls who are infected to head lice are concerned about the reaction of others because they have been exposed to the problem and they may have encountered these reactions. Considering the fact that mothers in both groups are better informed than girls about the physical ways of removing nits, encouraging them to transfer information to daughters is recommended. A small percentage of mothers with infected daughters consider the use of medicine (Permethrin shampoo) as the best way of decontamination. It seems that this issue is related to the viewpoints of girls who expressed that Permethrin shampoo smells funky and the stench remains for a long time.

Using effective training styles in order to motivate mothers to participate and consult on the reduction of pediculosis is suggested. According to the views of girls and mothers, the type of medicine and the consumer acceptance should be noted. Furthermore, a variety of medication should be available at drugstores for patients to access easily, since as repeatedly noted, regional culture insists on hiding pediculosis. Meanwhile, home remedies and its effectiveness must be reminded. About two-thirds of mothers with infected daughters have not talk to someone about the infection. These findings reaffirm other results that confirm the unwillingness to reveal this disorder. This issue is inconsistent with the views of mothers and daughters regarding that head lice do not cause health problems, which is much thought provoking. As noted at the results section, majority of fathers with infected daughters are not aware of their infection and the majority of fathers in both groups are completely opposed to shorten their daughters' hair. In the selection of training methods and effective interventions, we must pay special attention to the area's culture and attitude of the audience.

Case consultations have been considered in recent years, and is being used due to numerous reasons including expressing individual problems, questions and comments which should be consulted about. This type of counseling is advised in this group. For the success of health programs, the attention and trust of the group at risk should be drawn. While presenting the right information about harmful behaviors, unhealthy behaviors and their hazards should be

identified to them, the provisions of promoting the correct behaviors for them should be procured and finally, the target group should be guided towards the healthy behavior. In this regard, self-care education is of high consequences, because history has proven that the role of classic training fades over time. Once awareness brings proficiency, then it shall be more stable.

Keywords: pediculosis, infected to head lice, non-infected to head lice, school girls, borderlands.

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