The Effect of Education to Increase the Awareness and Preventive Behaviors of Pediculosis in Female School Students According to the Health Belief Model in Mashhad

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Abstract

Aim: Pediculosis is a common serious infection and one of the public health problems in different countries. The aim of this study is to determine the effect of education on the preventive behaviors of pediculosis based on the Health Belief Model (HBM) in female students in Mashhad.

Methods: This quasi-experimental study was conducted on 60 seventh grade female students in Mashhad, in two groups. Cluster sampling was performed using the HBM in 2016. For gathering data, the questionnaire consisting of demographic variables and the HBM, which was implemented to both groups before, immediately after, and two months after the education. SPSS19 software and t-test, Freedman, MannWittny, Chi-square and Pierson's correlation tests were used to analyze the data.

Findings: Before the intervention, there was a significant difference between the two groups in terms of all the structures (p>0/05), but after the intervention, a significant difference was observed only in terms of knowledge, perceived susceptibility and severity, perceived benefits and obstacles, efficacy and behavior (p<0/05). The correlation coefficient between the preventive behaviors of pediculosis and obstacles was found to be significant (p<0/001, r=0/499).

Conclusion: Health education program based on HBM can prevent pediculosis and be effective in female students.

Keywords: Pediculosi, Health belief model, Students, Mashhad

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Introduction

Head lice infestation is a very common and serious infection and is regarded as a global health problem in human societies. While this disease can be found in both genders, it is more common in females [1].

Lice are bloodsucking insects, infection of which dates back to the prehistoric era. However, the role of lice as a vector of a number of diseases (e. g., epidemic typhus, relapsing fever, and trench fever) has been known since the beginning of the current century [2, 3]. According to the statistics published by the World Health Organization (WHO), Iran is one of the most polluted areas in the world in this regard [4].

Pediculosis is not associated with a particular community or social class, and affects all society members [3]. In addition, head lice are the most common type of lice, especially prevalent in the age group of 3-11 years. Head lice can occur through direct contact with infected individuals, and indirect contact with personal items of infected individuals, including brush or comb, hat, scarf, the sleeping accessories, and towel [2, 5].

In a study by Matlabi et al., a significant relationship was found between infection and use of common items [6]. Head lice bite the scalp and sucks blood, which leads to pruritus and other complications, including impetigo [3]. Infection is associated with increased body temperature, headache, heavy feelings in the limbs, muscles stiffness, insomnia, ill-temperedness, mental problems, and lack of concentration during class, especially in children [7].

Moreover, Ramezani Aval et al. conducted a clinical trial on pediculosis (lice infestation) in South of Khorasan Razavi Province, where it has turned into a common health problem among elementary students [8]. In another study by Shayeghi et al., prevalence of head lice infestation was reported to be 4.8% (6.66% in females and 2% in males) [9]. In other studies, the rate of lice infection was six times higher in females, compared to males [5, 10]. This rate was reported to be 13.7% and 4.7% in female and male subjects, respectively, as evaluated by Rafieinezhad et al. in Guilan Province [11]. In an investigation by Norouzi et al. in Qom, the prevalence of head lice infestation was 13.5% [12]. In a study by Hosseini et al. in Maneh and Samalqan County, Iran, the prevalence of lice infestation was estimated at 10% [13].

Given the lack of attention of students to personal hygiene and their presence in crowded places, such as school, louse is one of the most common health problems in elementary students [14]. Therefore, increasing the knowledge of society members and improving their health behaviors, as well as epidemiological diagnosis and treatment of the infected patients are some of the techniques to fight against lice infestation [3].

It is worth mentioning that head lice can be prevented through healthcare education [2]. Selection of a model for health education is the first step towards the training process. In this regard, Health Belief Model (HBM) is one of the primary models, in which behavioral science theories are applied to solve health-related problems. Different aspects of this model include perceived sensitivity, severity, barriers, and benefits and guidance for action and self-efficiency [2]. With this background in mind, the present study was conducted to determine the effect of pediculosis education based on HBM on behaviors that predict the outbreak of this disease in female elementary students of Mashhad, Iran.

Materials and Methods

This interventional study was conducted on 60 seventh-grade female elementary students (first grade of junior high school) in the academic year of 2016. After determining the sample size, female subjects were selected from two elementary schools in Tabadkan district of Mashhad using cluster sampling. In other words, sampling was carried out through randomized selection of a class from one school as the intervention group and a class from another school (homogenous with the intervention group) as the control group.

The data collection tool was designed by Meshki et al., in which the total Cronbach's alpha coefficients were estimated at 0.77, 0.86, 0.82, 0.78, 0.85, 0.74, 0.76, and 0.78 for consciousness construct, perceived sensitivity, perceived severity, perceived barriers, perceived benefits, self-efficiency, and behavior domains, respectively [2]. This questionnaire contains 54 items, including 13, 10, 26, and 5 items on demographic characteristics, knowledge, constructs of HBM, and behaviors, respectively.

Educational program was designed according to the constructs of HBM before the intervention. This program was implemented in the form of two 30-minute sessions over two weeks. On the first session, the importance of pediculosis and its high prevalence in girls' schools, types of lice, and disease symptoms, as well as diagnosis and detection methods were explained to the participants. The second session was designed to cover the topics of disease transmission prevention, complications, and treatment procedures.

Educational program was performed through lectures, question and answer, group discussion, role-play, and use of educational images and slides according to the constructs of the model and the target group (students) to maximize the effectiveness of education.

Similar to the pretest, a posttest was performed immediately and two months after the educational sessions using the same questionnaire for final evaluation of the educational contents and determining the behavioral and cognitive changes due to training.

Data analysis

To analyze the data, parametric test of repeated measures ANOVA was used for intra-group comparison of all the variables, and Friedman's nonparametric test was applied only for behavior construct. In addition, independent t-test was used for all the constructs to compare the study groups, and Mann-Whitney’s U test and correlation test were applied for behavior (for behavior and knowledge constructs, Spearman's rank correlation coefficient was employed due to having abnormal distribution, while for other constructs, Pearson’s correlation coefficient was utilized). Data analysis was carried out in SPSS (ver. 19).

Results

The study groups were homogenous in terms of demographic characteristics. According to the results, mean age of the intervention and control groups was 14.23±0.72 and 14.53±0.57 years, respectively, indicating no statistically significant difference (P=0.107), and confirming homogeneity between the intervention and control groups in this regard.

Similarly, no significant differences were found between the two groups at the pretest stage regarding the mean scores of perceived knowledge, sensitivity, severity, benefits and barriers, self-efficiency, and behavior (P>0.05).

However, comparison of the study groups after the posttest revealed significant differences in terms of the mean scores of knowledge and perceived constructs, perceived benefits, self-efficiency, and behavior (P<0.05). Meanwhile, no significant differences were observed in the mean scores of perceived sensitivity and barriers at the posttest stage (P>0.05).

Two months post-intervention, there was a significant difference between the study groups regarding mean scores of knowledge, self-efficacy, behaviors, perceived sensitivity, severity, and barriers and benefits (P<0.05; Table 1).

Repeated-measures ANOVA and Friedman’s test result for intragroup comparison of all constructs reflected a significant increase during the study (P<0.05). It is noteworthy that the mean scores of knowledge and constructs of behavior, perceived sensitivity, and perceived barriers were significantly different in the control group (Table 1).

Table 1: Comparison of the mean scores of knowledge, patterns of health beliefs and behaviors in students

		Before intervention Mean±Standard deviation	Immediately after intervention Mean±Standard deviation	Two months after intervention Mean±Standard deviation	p-value
Knowledge	Azmon	13.66±2.89	15.83±2.36	17.53±2.33	**<0.001**
	Control	13.93±1.99	12.23±2.47	10.80±3.13	**<0/001**
	p-value	0.679	<0/001	<0/001	
Perceived susceptibility	Azmon	19.13±2.40	19.56±2.44	21.40±1.42	**<0/001**
	Control	19.46±2.63	18.33±3.17	18.16±2.26	**0.002**
	p-value	0.611	0.097	<0/001	
Perceived severity	Azmon	17.73±3.25	22.40±2.97	23.76±1.35	**<0.001**
	Control	18.63±3.55	18.40±3.57	18.06±3.17	**0.256**
	p-value	0.311	<0.001	<0.001	
perceived benefits	Azmon	19.60±3.33	21.40±3.54	23.43±1.77	**<0.001**
	Control	19.46±3.37	18.90±3.27	18.66±2.91	**0.126**
	p-value	0.878	0.006	<0.001	
Perceived barrier	Azmon	19.36±3.23	18.76±4.19	21.46±2.50	**0.001**
	Control	19.03±3.58	17.63±3.07	17.10±2.90	**<0.001**
	p-value	0.707	0.238	<0.001	
Self-efficacy	Azmon	15.90±2.72	16.70±2.58	18.53±1.75	**<0.001**
	Control	15.26±3.34	14.80±2.49	14.33±2.36	**0.079**
	p-value	0.424	0.005	<0.001	
Behavior	Azmon	8.43±1.52	8.73±1.46	9.56±0.62	**<0.001**
	Control	7.56±1.90	6.30±1.70	6.10±1.26	**<0.001**
	p-value	0.073	<0.001	<0.001	

According to the results, subjects of the both intervention (46.7%) and control (30%) groups believed that physicians could help the most in prevention of head lice infestation. Therefore, they gained the first priority as selected by the participants of two groups (Table 2).

Table 2: Distribution of the frequency of guidance for action based on the students' priority (first question guide for action)

	Azmon			Control		
	Number	**Percent**	**Priority**	**Number**	**Percent**	**Priority**
Doctor	14	46.7	1	9	30	1
Friends and colleagues	4	13.3	2	8	26.7	2
TV programs	4	13.3	2	4	13.3	3
Fear of infection with lice	4	13.3	2	4	13.3	3
My own information	2	6.7	3	2	6.7	5
Parents	2	6.7	3	0	0	6
Teachers	0	0	4	3	10	4
Total	30	100		30	100	

In the intervention group, the most prioritized acceptable comment about lice prevention was an opinion provided by physicians, whereas the opinions of friends and classmates were more acceptable for the subjects of the control group (Table 3).

Table 3: Distribution of the frequency of guide for action based on the students' priority (second question for action)

	Azmon			Control		
	Number	**Percent**	**Priority**	**Number**	**Percent**	**Priority**
Doctor	17	56.7	1	8	26.7	2
Friends and colleagues	6	20	2	10	33.3	1
TV programs	4	13.3	3	4	13.3	3
Fear of infection with lice	1	3.3	4	3	10	4
Teachers	1	3.3	4	3	10	4
My own information	1	3.3	4	1	3.3	5
Parents	0	0	5	1	3.3	5
Total	30	100		30	100	

On the other hand, correlation coefficient test results revealed the most significant correlation between preventive behaviors and perceived barriers (P<0.001, r=0.499). Moreover, there was a significant correlation between the structures of barriers and knowledge (P=0.002, r=0.388), and between self-efficiency and perceived barriers (P=0.024, r=0.291; Table 4).

Table 4: Correlation coefficient matrix of the health belief model and preventive behaviors against pediculosis infection

		Knowledge	**Perceived susceptibility**	**Perceived severity**	**Perceived barrier**	**Perceived benefits**	**Self- behavior efficacy**
Perceived susceptibility	**Correlation coefficient**	0.167					
	p-value	0.202					
Perceived severity	**Correlation coefficient**	0.341	-0.155				
	p-value	0.008	0.236				
Perceived barrier	**Correlation coefficient**	0.167	-0.023	-0.129			
	p-value	0.202	0.861	0.325			
Perceived benefits	**Correlation coefficient**	0.388	0.237	0.288			
	p-value	0.002	0.069	0.025	0.469		
Self-efficacy	**Correlation coefficient**	0.086	-0.046	-0.84	0.247	0.291	
	p-value	0.514	0.729	0.523	0.57	0.024	
Behavior	**Correlation coefficient**	0.058	-0.128	-0.175	0.499	-0.069	0.116
	p-value	0.661	0.328	0.181	<0.001	0.603	0.379

Discussion

Given the ever increasing prevalence of pediculosis and the concern of parents regarding their children, the present study was conducted to determine the effectiveness of education based on HBM on preventive behaviors against pediculosis in female elementary students of Mashhad, Iran, to take a step toward eradicating the mentioned disease in Iran.

The present study indicated that holding two educational sessions for prevention of pediculosis led to a significant increase in the mean scores of knowledge and performance of the intervention group two months post-intervention, compared to pre-intervention.

Intragroup comparison of the mean scores of knowledge at the three stages of before, immediately, and two months after the intervention revealed a significant increase in this regard. These results are in line with those of a study by Jedgal et al., in which the effect of health education using health belief model on preventive behaviors against unwanted pregnancy was assessed [15]. Peyman found similar results regarding the promotion of healthy lifestyle behaviors in women [16].

In the present study, the mean score of knowledge was significantly different in the control group, which is in congruence with the results obtained by Ramezankhani, revealing the effectiveness of educational intervention based on HBM on preventive behaviors against brucellosis [17]. Therefore, holding educational classes using appropriate contents and teaching aids can lead to effective results in short term.

Based on our findings, the mean scores of the constructs of perceived severity and benefits and guidance in the intervention group significantly raised after the intervention, but they slightly diminished in the control group after the intervention. Similar results were obtained by Jedgal [15], Peyman [16], Ramezankhani [17], and Sharifi on evaluation of the effect of health education based on HBM on preventive actions against smoking in students [18].

The mean score of perceived sensitivity in the intervention group significantly improved after the educational intervention and significantly decreased in the control group. Therefore, it could be concluded that sensitivity of students toward head lice infestation increased after the education, and this sensitivity can improve preventive behaviors against pediculosis. This is in line with the findings of Sanaei Nasab [19] and in contrast to those of Sharifi's study [18], where sensitivity was not significantly different after the education.

The mean score of perceived barriers, which was reversely scored, was significantly promoted in the intervention group after two months. However, the mentioned construct significantly dropped in the control group. As explained, the designed educational program could lower perceived barrier scores in the intervention group, which is indicative of the fact that passage of time led to behavioral changes in the subjects of the intervention group following their increased knowledge and sensitivity toward pediculosis, and resulted in taking measure to eliminating the barriers to behavioral change and paying further attention to benefits obtained from these changes.

Regarding the perceived barriers' construct, the results obtained by Jedgal [15] were significant after education; however, the difference between the mentioned study and the present one lies in the significant increase in the mean score of this construct in both groups of the current study, whereas it was significant only in the intervention group in the study by Jedgal. In a review conducted in the Unites Stated by Tanner-Smith and Brown to assess preventive behaviors against breast and cervical cancers, the constructs of perceived benefits and barriers were the strongest [20]. In the mentioned study, behavior significantly improved in the intervention group after educational sessions, such that the mean behavior score of students significantly enhanced after two months, whereas no apparent changes were observed in the preventive behaviors of the control group, and their scores significantly decreased. The findings of Ramezankhani [17] were in line with those of Jedgal [15], in which no significant increase was observed in the preventive behaviors of the control group, while in the current study, there was a significant reduction in the behavior scores of the control group.

As shown in Tables 3 and 4, the most effective guidelines for the subjects were provided by the physicians. Therefore, it seems appropriate to hold educational sessions for students by the healthcare personnel and physicians to maximize the effectiveness of the interventions.

The most commonly used information resources in the study by Ramezankhani [17] were Radio and TV, followed by healthcare personnel. In the study of Jedgal [15], the most important guidelines regarding preventive behaviors against unwanted pregnancy were provided by the healthcare personnel. On the other hand, friends and families were the most reliable information resources for the subjects of a study by Karimi et al. on preventive behaviors against AIDS [21].

With regard to the current research results, healthcare authorities must hold educational classes to eliminate the barriers to preventive behaviors against pediculosis and focus on the benefits of prevention, especially through regular combing of hair.

The major drawbacks of this study were limited duration of the study due to its coincidence with the final exams of the students, and that the information obtained from the questionnaire might not be reliable since they were completed by students in the form of self-report; therefore, the researcher acted toward the elimination of this problem by explaining about this issue to the students.

Conclusion

According to the results of the present study, health education programs designed based on HBM can be effective in promotion of preventive behaviors against pediculosis in female students. Given the significant correlation observed between preventive behaviors and perceived barriers, it is recommended that appropriate educational programs be conducted according to HBM with an emphasis on the mentioned constructs, so that it could have the strongest effect on preventive behaviors against pediculosis. In addition, improving the knowledge of parents, especially mothers of the students and their cooperation with teachers and school health instructors are suggested to maximize the effectiveness of these training programs.

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References

1. Motlagh ME, Aminaee T, Dashti M, Ardalan G, Alam M. Health Promotion students in the field of prevention and treatment of lice (Special teachers). Tehran: Nashre Seda, 2011; p: 7. [In Persian]
2. Moshki M, Mojadam M, Zamani Alavijeh F. Preventive Behaviors of Female Elementary Students in regard to Pediculosis Infestation based on Health Belief Model (HBM). Jhad.KMU 2014; 3(3): 269-81. [In Persian]
3. Health Department of Youth and schools. Instructions for care of lice in the country. Ministry of Health, 2013; p: 7. [in Persian] Available from: http://health.sbmu.ac.ir/uploads/pediculosis92-guideline.pdf
4. Zabihi A, Jafarian Amiri R, Rezvani M, Bijani A. Evaluation of head lice infestation in the primary school students in Babol. JBUMS 2005; 7(4): 88-93.
5. Zareban I, Abbaszadeh M, Moodi M, Mehrjoo Fard H, Ghaffari H. Evaluating a health-education program in order to reduce infection to Pediculus Humanus Capitis among female elementary students. Journal BUMS 2006; 13(1): 25-32. [In Persian]
6. Matlabi M, Miniean M. Prevalence of head lice in elementary school students in the city of Gonabad. HMS GMU 2000; 6(1): 80-9. [In Persian]
7. Ghaderi R, Izadpanah A, Miri M, Ahmadi S, Taheri N, Hoseinzadeh Chahkandak F. The Prevalence of pediculosis capitis in school students in Birjand. Modern care, BUMS 2010; 7(1,2): 1-6. [In Persian]
8. Ramezani Awal Riabi H, Atarodi A. Epidemiological and Clinical Study of Infested Cases with Pediculus capitis and P.

corporis in Khorasan-e-Razavi, Iran. Iranian J Parasitol 2012; 7(1): 85-91.

9. Shayeghi M, Paksa A, Salim Abadi Y, Sanei dehkoordi A, Ahmadi A, Eshaghi M, Bazrafkan,S. Epidemiology of Head Lice Infestation in Primary School Pupils, in Khajeh City, East Azerbaijan Province, Iran. Iranian J Arthropod-Borne Dis 2010; 4(1): 42-6.
10. Noori A, Ghorban Pour M, Adib M, Noori A, Niazi S. Head lice infestation (Pediculosis) and its associated factors in the rural school students of Kalaleh, in the academic. Hakim Jorjani J 2014; 2(1): 56-60. [In Persian]
11. Rafia-nejad J, Norololahi A, Javadian A, Kazem-najad A, Shemshad K. Epidemiology of head lice and the factors that affect elementary students in Gilan Province. IRJE TUMS 2006; 2(3,4): 51-63. [In Persian]
12. Noroozi M, Saghafipour A, Akbari A, Khajat P, Khadem-Maboodi A. The prevalence of pediculosis capitis and its associated risk factors in primary schools of girls in rural district. J Shahrekord Univ Med Sci 2013; 15(2): 43-52. [In Persian]
13. Hosseini S, Rajabzadeh R, Shoraka V, Avaznia A, Shoraka H. Prevalence of Pediculosis and its related factors among primary school students in Maneh-va Semelghan district. Journal NKUMS 2014; 6(1): 43-9. [In Persian]
14. Motevalli Haghi S, Rafinejad J, Hosseni M. Epidemiology of Pediculosis and Its Associated Risk Factors in Primary-School Children of Sari, Mazandaran Province,in 2012-2013. Health Journal Arums 2013; 4(4): 339-48. [In Persian]
15. Jadgal KM, Zareban I, Rakhshani F, Alizade Siouki H, Lotfi Mayen Boulagh B, Hajilou E. The Impact of Health Education Based on Health Belief Model on Preventive Behavior of Unwanted Pregnancy among Chabahar Women. Health Journal Arums 2014; 5(3): 191-202. [In Persian]
16. Peyman N, Mahdizadeh M, Mahdizadeh M. Evaluation of education in promoting healthy lifestyle behaviors among adolescent girls, according to the Health Belief Model. JSUMS. MEDSAB 2014; 21(1): 164-74. [In Persian]
17. Ramezankhani A, Jahani H, Hatami H, Sharifzadeh G, Hosseini S. Determining the effect of intervention on the adoption of preventive behaviours of the brucellosis based on the health belief model. Journal NKUMS 2016; 8(1): 33-45. [In Persian]
18. Sharifi-rad G, Hazavei M, Hasan-zadeh A, Danesh-amouz A. The effect of health education based on health belief model on preventive actions of smoking in grade one, middle school students. AMUJ.ARAKMU

2007; 10(1): 1-8.

19. Sanaei Nasab H, Tavakoli R, Farrokhian A, Karimi Zarchi A, Haji Amini Z. The effect of educational intervention with the health belief model on knowledge, perceptions and self-efficacy among adolescent of high school girls about osteoporosis. UMJ.UMSU 2013; 24(3): 163-9. [In Persian]
20. Tanner-Smith E, Brown TN. Evaluating the health belief model: a critical review of studies predicting mammographic and pap screening. Social Theory & Health 2010; 8(1): 95-125.
21. Karimi M, Ghofranipor F, Heidaria AR. The effect of health educathion baised on health belief model on preventive actions of aids on addict. Journal GUMS 2009; 18(70): 64-73.