

Perception and action of teachers and head lice in school

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Abstract: Pediculosis represents a problem for students, teachers, school staff and the community. The present study examines the vision of teaching in relation to head lice. Respondents comprised 108 teachers from nine public schools working in the first years of primary school. Analyses were accomplished in relation to training and time of experience of teachers. The majority of teachers thought it important to speak about lice in the classroom, and can contribute to diminishing the infestation and bring benefits to the school. Occurrences of pediculosis causes stress to the teacher Education on pediculosis permits persons to increase their control over the different variables that may favor its incidence and can lead to an environment that promotes well-being.

Keywords: Head lice, *Pediculus humanus capitis*, health prevention, empowerment, health education.

Introduction

Infestation by head lice is a problem that affects populations of different social classes throughout the world (Falagas, 2008), and is one of the more common skin infections in children (Sladden & Johnston, 2005). Students, principally those less than 12 years old constitute most of the documented sufferers worldwide (Gratz, 1997), with the school presenting the principal risk factor in its acquisition (Speare & Buettner, 1999; Willens et al., 2005). Infestation is a cause for concern in the community (Hine, 2012) and is capable of disturbing the educational process and causing bad publicity for the school in relation to public opinion (Adams, 2000). The child bears most of the burden, including taking the blame for being a carrier of the parasite (De Berker & Sinclair, 2000), thereby provoking fear, anxiety and guilt (Mumcuoglu, 1991). When the pediculosis is chronic, several treatments are utilized without a cure, thus leading to a feeling of alienation from the school environment that can be much more intense outside of school (Gordon, 2007). Some who are afflicted with parasites are treated with highly toxic substances such as home insecticides, gasoline and alcohol like (Silva et al, 2008; Doulgeraki & Valari, 2011), or medicated unnecessarily and prevented from attending school (Pollack et al, 2000; Mumcuoglu et al, 2006). Pediculosis

overburdens the child, given that adults consider it to be due to poor hygiene, poverty and negligence on the part of the parents. Another disappointment arises from stigmatization by classmates (Silva et al, 2008), which can lead to self-esteem problems and disrupt academic performance (Goldschmidt and Loreto, 2012).

For the teacher the presence of infested students in the classroom can be a cause of stress. Furthermore, it has been observed that the population in general believes that a louse can fly, jump and transmit diseases (Silva et al., 2008). Given that preparation programs for elementary school teachers in some countries have been shown to be deficient in health-related disciplines (Leonell & L'Abbate, 2006), the student-teachers do not know how they live and what their habits are (Sidoti et al., 2009), so that the information they receive is not only characterized by fear and preconceptions but also is widespread in the population. The reasons for the persistence of pediculosis stem from human factors such as ignorance, which necessitates an association between pedagogical and therapeutic information (Combescot, 1990). Health education is one of the forms recommended for solving problems such as obesity and the use of tobacco, alcohol and other substances; the question of pediculosis in schools can be viewed in the same manner. Teachers can be an agent of change in relation to infestation and its resultant problems; it was observed that in schools where the teachers did not provide information on the prevention and control of pediculosis, its prevalence was higher than in places where such facts were provided (Paredes et al., 1997). Intervention in schools was capable of increasing the knowledge of students although mere education, in isolation without treatment of students, was not effective, despite its importance in the prevention of pediculosis. Many countries have no person who is responsible for healthcare in a school (Piquero-Casals et al., 2004), in contrast to countries in Europe and North America that have principally nurses in schools; but even for this profession, the control of pediculosis becomes an undervalued and arduous task (Price et al., 1999). Data obtained in Brazil show that its occurrence commences in preschool with 25.3% of individuals infested (Marchiori et al., 2006) then grows to 35% in day care centers and public schools (Borges & Mendes, 2002) in the general population where the prevalence rate in the poor community was 43.3% (Heukelbach et al., 2005).

Rationale theoretical

The question of pediculosis shows several interconnections between the medium and the individual; these interconnections suggest that the problem is not only individual and that to understanding it requires considering intervention not only with the student, but also to take into account the school system and the interconnections made by them as a manner of generating solutions. Among these interconnections, the teachers constitute one of the strongest links, since they are in direct contact with the children and the school staff; for this reason identifying these relations can be important to understand how to deal with pediculosis, including for influencing the policy adopted by educational agencies on this topic. Due to these various interconnections, the

present study shows consistency with the ecological theory of Bronfenbrenner (1997), a model whose concept is that pediculosis exerts multiple level of influence, a combination of social and individual surroundings, whereas the existent connections influence the teachers and identify most relevant aspects at each level. To the best of our knowledge, there is no publication employing this theory in pediculosis, although this approach is widespread (Elias & Dilworth, 2003; Betancourt et al., 2012).

The degree of the teacher's scientific knowledge on lice determines what is taught to the students, which would influence the scientifically coherent action to be taken in the prevention or during an infestation. The works realized are generally focused on the medical paradigm in treating lice, although the problem is not limited only to diagnosis and treatment, given that parents, students and teachers present a vision that in many cases is not helpful, since misconceptions about biology of head lice leads to the adoption of non-scientific measures that have repercussions in the community. Attempting to understand a policy that leads to determinate practices, comprehending the causes and their consequences can help explain the effects and permit the interventions in the environment to be better directed and more productive. The purpose of the present study was to ascertain what teachers think and know about pediculosis related to biology, prevention, control and to enable the proposal of training activities that include the aspirations of teachers on this subject, which can lead to greater engagement and thus the obtainment of better results. This is the unusual study accomplished in South America on pediculosis perception by teachers and is one of the few studies globally on this theme. Furthermore, there are also a small number of studies on how the knowledge obtained by the scientific study of pediculosis reaches the teacher community.

Context and methodology

The data obtained found that teachers needed more knowledge regarding head lice in USA (Kirchofer et al., 2001) and knowledge of the biology of the louse was virtually absent in Italy (Sidoti et al., 2009). In Brazil some studies performed with elementary school teachers indicate similar results (Cunha et al. 2008, Goldschmidt and Loreto, 2012) as to control and prevention measures but without utilizing comparisons between the knowledge of teachers about formation and time practicing the profession and which themes from the findings obtained can be utilized in instruction. The present study seeks to view the problem by means of a dynamic approach between the teachers and the interconnections that influence the attitudes and practices related to lice, education degree and years of experience. At the same time, the possibility is raised of using an infestation as a manner of teaching the sciences.

Questionnaire

The development of the questionnaire was based on a previous survey (Silva et al., 2008), on reviews of the literature and on evidence obtained from educators. Health professionals (doctors and nurses) contacted by researchers were invited to validate the questionnaire. A total of seven persons judged the

questionnaire, the gaps and doubts presented by the reviewers were considered and the adjustments defined to confirm the suitability of the instrument in order to assure the good quality of the data obtained. Based on this process, corrections and suggestions were added.

The instrument was applied only after this validation was completed. The questionnaire was composed of 30 questions, including 18 with agree/disagree responses, six with multiple choice format and six questions to obtain the following demographic data: years of experience, level of education, school name, etc. The multiple choice questions dealt with school policy on pediculosis while the dichotomous questions addressed specific knowledge on biology, diagnosis, transmission, treatment and prevention. The multiple choice questions were converted into a binary variable for statistical purpose, the responses "don't know" and "no answer" were recoded as missing.

Survey

This was an applied cross-sectional study, in which data were collected during school visits by means of questionnaires that were self-completed by the teachers privately. The study was conducted with 108 teachers working in the first years of primary school from nine state public schools (41% of the total) who had been approached to participate in the survey. The schools in the sample were selected randomly, and were located in regions of different socioeconomic strata in the urban area of the city of Botucatu, São Paulo State, Brazil. The director of each school was consulted to obtain permission for the research; eligible participants were the teachers present in each school at the time of the weekly faculty meeting, no personal identification of participants was solicited and their adhesion to the study procedure was totally voluntary.

Sample size calculation

A sample size of 102 was calculated by using Raosofth (2004), the acceptable margin of error was determined to be 7% and the confidence level was 95%. The response distribution was assumed to be 50% in a population size of 210 teachers of public school in urban zone of Botucatu city.

Statistical Analysis

The numbers in each category were compared using cross-tabulation with the Chi-square test to study the bivariate relationships between the dependent variable (level of education and time of experience) and independent variables relative to knowledge, practice and opinions on pediculosis; the Pearson's Chi-square test analyzed tables. For statistically significant relations, the odds ratios (OR) and confidence intervals (CI) were computed to assess the association of various characteristics of the respondents at a significance level of < 0.05 . The reliability of the questionnaire was assessed by the Kuder & Richardson (1937) formula 20 (KR- 20) for dichotomous items.

Results

One hundred and eight teachers were interviewed; the mean number of teachers together with the standard error, by school, was 5.46 ± 0.26 . The internal reliability result, as determined by KR - 20 was 0.79 indicate good measurement precision. All the teacher respondents were giving classes in public schools, with the majority having a higher education degree, Pedagogical course, and more than 11 years of experience (Table 1).

	(%)	N
<u>Training</u>		
Certification Only	13.90	15
Superior	86.10	93
<u>Years of Experience</u>		
1 to 10	29.63	32
>11	70.37	76

Table 1 -Training level and length of career experience of participating teachers.

Table 2 shows pediculosis as a cause of problems for the school, given that it afflicts almost all of the teaching staff (97.2%). Although the school is a source of infestation (92.6%), in most cases there is no one there who is responsible for providing orientation and treatment (95.2%) whereas the parents complain about the school on account of the infestation of their children (84.3%). The responses opposed to keeping an infested child in school ran slightly higher than average (57.4%) while most of the teachers affirmed that an infested student suffers discrimination (84.3%). Despite the fact that a large majority of respondents (84.3%) stated that pediculosis is a parental responsibility, the teachers not refused to attempt to resolve the problem. Overwhelming majorities believe that pediculosis training has become necessary to provide (92.6%), diminishes the infestation (92.7%) and benefits the school (97.2%). Given that the schools have no staff to train and treat the infested student, 48.1% of teachers affirmed that they themselves had made the diagnosis of students. As to questionnaire results on biological knowledge of lice a high percentage (82.4%) agree that head lice can transmit disease, fly and jump (73.1%), and be acquired from animals (34.3%), these items were answered incorrectly by teachers. The affirmation about the capacity to fly and jump did not differed statistically in relation to time of experience, but the teachers who had fewest years of experience were less prone to affirm that it can be acquired from animals (18.8%) than those with a higher years of experience level (40.8%) (odds ratio = 0.34, 95% confidence interval = 0.12 - 0.91).

In the questions related to epidemiology, the factor of poor hygiene habits weighed highly in favor of pediculosis, where 75.9% of those interviewed considered it important. Other variables viewed as less important were the girls being more parasitized (37.0%) and itching of the head as a sign of lice

(30.6%). None of these affirmations was influenced by time of experience or level of education.

The results obtained herein evidence a high level of homogeneity in the responses, indicating that these opinions must be amply disseminated among the teachers in the sampled region.

Questions	Nº. subjects	Affirmative responses (%)	Years of Experience χ^2 (p)	Education Level χ^2 (p)
Problems caused to the school				
Do head lice occur in adults?	108	97.2	0.20 (0,89)	0.49 (0,48)
Does the school have no one responsible for training and treating?	105	95.2	2.3 (0,13)	0.14 (0,71)
Is the school a source of infestation?	108	92.6	1.22 (0,27)	1.39 (0,24)
Do parents complain about lice infestation?	108	84.3	1.30 (0,26)	0.24 (0,63)
Should an infested student withdraw from school?	108	57.4	1.02 (0,31)	2.16 (0,14)
Is a child with lice viewed poorly?	108	32.4	4.35 (2,04)	1.62 (0,20)
How the school resolves it				
Is pediculosis the responsibility only of parents?	108	84.3	1.94 (0,16)	0.18 (0,67)
Have make diagnosis?	106	48.1	0.79 (0,37)	0.46 (0,50)
Have speaking and instructing about lice diminished infestation?	107	97.2	1.30 (0,25)	0.98 (0,32)
Has the school benefited from training?	108	97.2	1.30 (0,25)	0.50 (0,48)
Is it important to teach about pediculosis?	108	92.6	3.64 (0,06)	0.01 (0,91)
What they think				
Do bad hygiene habits promotes parasitism?	108	75.9	0.76 (0,69)	0.16 (0,69)
Can head lice fly and jump?	108	73.1	0.04 (0,85)	0.42 (0,52)
Do head lice transmit diseases?	108	82.4	0.07 (0,79)	3.72 (0,06)
Are lice more frequent in children with lesser financial resources?	108	38.0	0.14 (0,71)	3.60 (0,06)
Can lice be acquired from animals?	108	34.3	4.86.(0,03)*	0.45 (0,50)
Are girls more infested than boys?	108	37.0	1.98 (0,16)	0.69 (0,41)
Can itching indicate infestation?	108	30.6	0.01 (0,92)	0.12 (0,73)

Table2.- Data on reported assessment of pediculosis on public schools for teachers, data analyzed by years of experience and education level * Indicates responses that differ as to years of experience by the χ^2 test (p < 0.05).

Discussion

The results reveal a deficiency in information and that they are not associated with the type or time of teacher training, given that the statistical test utilized did not show a difference. The great majority of respondents reported that pediculosis is a cause of problems, and that the instruction would be a welcome benefit to the school. As the school staff does not have a professional to handle the issue, the responsibility falls to the parents; but even so, slightly less than half of the teachers perform a diagnosis on the students. Given that the pediculosis in the school environment can result from discrimination, as reported by 84.3% of the teacher respondents, a number close to that obtained among parents and guardians (92.0%) in the same region (Silva et al., 2008). The present study found the belief that lice jump and fly and are capable of transmitting diseases can cause stress for the teacher, principally when faced with infested students. The teaching staff reports cases of discord among students on account of infestation, with the infested ones becoming objects of ridicule and jokes that damage their self-esteem. Children, even as early as kindergarten, associate lice with sadness, fear and anxiety (Mumcuoglu, 1991), such an environment is unsuitable for teaching and learning, thus indicating that pediculosis can be a factor that impedes good development of learning. Results presented in this work assert that pediculosis also occurred in adults was more than double among the teaching staff (97.2%) in relation to responses from the general population (41%), indicating that they may be more vulnerable to infestation on account of dealing directly with infested persons in classrooms (Silva et al., 2008). Results presented in this work indicate that the principal cause of pediculosis was reported by teachers as bad hygiene habits rather than economic status, while in a study in the USA (Kirchofer et al., 2001) these two variables were highly implicated as being responsible for infestation of students. In the Brazilian society there is a concept that poverty is not an excuse for an individual to not practice good hygiene, which may explain the discrepancy observed between the two studies.

These findings indicate that the ecological theory corroborates what was observed in relation to teachers and the combination of environmental, biological and social aspects; indicating a link between them as to this question. The present finding expands the problem of lice infestation to indicate the existence of an interdependence between the school and society in which it exists. For children, pediculosis is a two-fold problem, first on account of the louse itself and second due to persons who hold preconceptions on the subject. The head louse is not a vector of pathogenic organisms, as the majority of respondents affirmed, despite the increased number of publications on the observation of pathogenic microorganisms in this insect, such as those that cause epidemic typhus (Fournier et al., 2002; Robinson et al., 2003; Bonilla et al., 2009;) and trench fever (Sasaki et al., 2006; Angelakis et al., 2011) in persons that also harbored body lice or when only head lice were present (Bonilla et al., 2009). Only the body louse has been proven to be a vector species of these diseases and these findings constitute

an alarm to conduct more studies to better evaluate these observations (Previte et al., 2014).

The educational system varies among countries and within each country, although the problem of pediculosis affects the some groups and genders in each of them, perhaps with few exceptions. The results presented in this work show that there is interest among teachers in the topic, specifically in affirming that implementation of instruction is important to diminishing infestation, similar results were observed by Kirchofer et al., (2001). The teaching staff is prone to participate in controlling pediculosis, a tendency that appears to have been an aspiration since their undergraduate years since a study conducted with students of Pedagogy in university, the course responsible for qualifications of elementary school teachers, found that 85% declared performance of teachers as not only important, but indispensable to health education in school (Leonell & L'Abbate, 2006). Given that the teaching staffs are in constant contact with the students, they are able to adapt the instruction according to the age and knowledge level, thus enabling instruction to be conducted at different levels of complexity (Madeira et al., 2002).

Conclusions

The results obtained in this study show that pediculosis is commonly found by teachers in the classroom; the knowledge, perception and how they act in attempting to resolve the problem do not differ statistically between education degree and years of experience of participating teachers. Many of these concepts are incorrect and do not help in the resolution of pediculosis cases. The present study was developed in a region of Brazil where the more serious parasitic afflictions were controlled (malaria, Chagas's disease, schistosomiasis, etc.) while others presented low incidence (verminoses); pediculosis was revealed to be a problem in schools that may not be representative of other regions of the country or globe, where serious problems caused by parasites are still priorities and possibly those surveyed may not assign such importance to pediculosis as those in the present study; but the control of head lice is a factor that would diminish non-attendance in the programme to eliminate lymphatic filariasis in India (Munirathinam et al., 2009). Also, instruction for families on controlling lice was an economically viable form of social inclusion in three European countries (Ibarra et al., 2007).

Implications

The data show that although a substantial part of the biology of lice has been understood since the first half of the twentieth century, this parasite remains little known to most of the population, including those most vulnerable to it, namely, schoolchildren. Part of this lack of knowledge is attributable to a deficiency in training of the teachers on this subject, similarly to what was observed in Italy (Sidoti et al.2009), ignorance leads to visions and adoption of measures that generally do not contribute to a good educational environment. There is a vast array of themes that can be utilized for science classes with respect to insects, ranging from morphology, ecology and behavior to

connecting insects to human health concepts (Matthews, et al., 1997). Given that insects constitute more than half of the known species (Mayhew, 2007), the training of teachers on biological topics that are experienced daily can serve as a great opportunity to teach sciences. The utilization of an insect that poses a problem can arouse curiosity to learn. At the same time the instruction can be expanded to several interconnections that the school makes with the surrounding environment. The adoption of lice in the instructional curriculum is a manner by which the study has a relation to what is close to the students, enabling the instruction to be dynamic, practical and at the same time scientific (Mellado, 1998). A didactic approach to health within a program adopted by the school that serves both promotion of knowledge and its application in problem resolution is one of the goals to be reached. For this to occur, it would be necessary that the specific topic of pediculosis be addressed in the course curriculum of teacher training as a manner of teaching about the insects and not only on the concept of health.

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