The Relationship Between The Prevalence of Head Lice Infestation with Hygiene and Knowledge Among The Rural School Children In Yogyakarta

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ABSTRACT

Introduction: Pediculosis capitis causes considerable social distress. Rural children are in great risk because they live in conditions where poor knowledge and hygiene are related to this matter. However, the prevalence of pediculosis capitis among school age children in rural area in Yogyakarta have not known yet

Objectives: The objective of this study is to find the prevalence of head lice infestation among the rural school children and associating it with hygiene and knowledge.

Methods: This was a cross sectional study done in February 2011 in 2 primary public schools in the rural areas of Yogyakarta with 158 subjects age ranging from 8 to 16 years old. Questionnaires inclusive of hygiene and knowledge aspect were given prior to the gross visual head lice examination by trained personnel.

Results: The prevalence of head lice infestation among the rural school children is 19.6%. There is no significant relationship between this with knowledge and hygiene.

Conclusion: The prevalence of head lice infestation in rural school areas in Yogyakarta is 19.6%. There is no significant relationship between the prevalence of head lice infestation with hygiene and knowledge among the rural school children in Yogyakarta.

Key words: Pediculosis capitis, head lice infestation, hygiene, knowledge

INTISARI

Pendahuluan: Pedikulosis capitis atau kutu kepala/rambut banyak menyebabkan penderitaan sosial yang mengganggu. Anak-anak pedesaan mempunyai risiko yang besar karena kurangnya pengetahuan dan kebersihan terkait dengan hal tersebut. Namun, prevalensi kutu kepala pada anak usia sekolah di pedesaan di Yogyakarta belum diketahui.

Tujuan: Tujuan penelitian ini adalah untuk menentukan prevalensi infestasi kutu kepala di antara anak-anak sekolah pedesaan dan melihat hubungannya dengan kebersihan dan pengetahuan.

Metode: Penelitian ini merupakan studi cross sectional dilakukan pada bulan Februari 2011 di 2 sekolah dasar di luar kota Yogyakarta. Subyek sebanyak 158 orang merupakan siswa Sekolah Dasar , dengan rentang usia 8 sampai 16 tahun. Pemeriksaan kutu kepala dilakukan oleh petugas terlatih, dan kuesioner meliputi pertanyaan tentang aspek pengetahuan dan kebersihan siswa .

Hasil: Prevalensi kutu kutu di antara anak-anak sekolah di daerah rural adalah 19,6%. Tidak ada hubungan yang bermakna antara pengetahuan dengan dan kebersihan.

Simpulan: Prevalensi kutu kutu di daerah sekolah pedesaan di Yogyakarta adalah 19,6%. Tidak ada hubungan yang signifikan antara prevalensi infestasi kutu dengan kebersihan dan pengetahuan di kalangan anak-anak sekolah pedesaan di Yogyakarta.

Kata kunci: Pediculosis capitis, infestasi kutu kepala, kebersihan, pengetahuan

INTRODUCTION

Pediculus humanus capitis, or more commonly known as head lice is the cause of pediculosis capitis[1]. There are a few types of louse infestation which can be differentiated by the causing agent and also the location of the infestation, i.e. *Pthirus pubis* (crab louse) which infests mostly the hairy pubic area, Pediculus humanus capitis (head louse) which infests the head and also *Pediculus humanus humanus* (body or clothing louse) which infests the body[2]. The life cycle of louse consists of 3 main parts which are the nits, nymph and adult. The nits are white eggs which stick to the hair[3]. The nymph or instar looks like a miniature adult louse[4].

Head lice infestation occurs primarily in children and the cardinal symptom is intense pruritus where the affected hair becoms lustreless and dry[5].There are complications of these cases, when it is not recognized, diagnosed and treated properly. Head lice infestations are transmitted by direct head to head contact or by contact with other "lousy" individuals[2]. Head lice infestations are more common among the school aged children ages 5 to 11 years[6]. This might be because the children are exposed to the head lice infestation in the school itself. People in rural areas generally live in the conditions where they lack the facility of space, clean water and are economically challenged. Thus, they are forced to live in crowded areas with poor personal hygiene and shared personal items[2].These serve as a very important risk factor for the infestation of head lice. Pediculosis capitis is also found to be rising in number, even in neighboring countries like Malaysia. A study that was done in Malaysia shows a result of 10.7% of prevalence of pediculosis among school children[7]. However, there are no published epidemiological studies of head lice infestation in Indonesia especially in the region of Yogyakarta. Thus, people have the perception that head lice infestation is uncommon and this makes them unaware of the extent of the infestation. This study will bring out the relationship between prevalence of head lice infestation with hygiene and knowledge among the rural school students in Yogyakarta.

MATERIALS AND METHODS

This research is a case control study done in February 2011. The population scope was from two schools in rural area, about 20 km from central of Yogyakarta. Subjects were students from grade 4 to 6, agreed to participate in the research and has no shaved head. The dependent variable, prevalence of head lice infestation was detected through the gross direct visual examination of respondent's head by finding the knits or adult stage of *P. capitis* and the independent variable, hygiene, knowledge, and socioeconomic status were assessed through a questionnaire. Questionnaire of hygiene covered co-sleeping habits, frequency of hair washing, sharing of combs, caps, towels, unwashed clothes and the frequency of bed linen change. Whereas questionnaires of knowledge included 10 questions regarding the transmission of head lice infestation, the associated risk factors, prevention and also treatment of it. Socioeconomic status was assessed by the same questionnaire and later grouping them into low and high socioeconomic status. The data obtained was expressed as percentage and analyzed using Pearson Chi Square statistical method. The p value is considered significant if <0.05.

RESULTS AND DISCUSSIONS

Research subjects contain a total of 158

students, 65 females and 91 males. Out of this, 19.6% was positive for the infestation. In another research done in Yogyakarta as well, the prevalence of head lice infestation in the urban school children was 12.3%[20]. By comparison of these two areas, it is clear that the head lice infestation is more prevalent in rural areas, however, further analysis of influencing or confounding factor need to be conducted.

The baseline characteristics of the subjects were grouped accordingly as per item of the questionnaire. There were more male subjects; 57.59% than females; 41.14%. Besides that most of them were in the age group of 8-10 years old; 57.59%. Analyzing the socioeconomic status of the subjects, according to mother's and father's education the highest percentage would be parents who went to high school; 36.70% and 45.60%, respectively. Whereas the highest percentage for mother's occupation will be in the category of housewives; 67.20% and father's occupation would be in the category of entrepreneur; 46.80%. Their baseline characteristics of gender, age and socioeconomic status of all categories are as the table below (Table 1).

For the knowledge of the students it was classified into 5 groups according to the percentage of the correct answers in the questionnaire. It was grouped into excellent (80-100%), good (60-79%), average (40-59%), fair (20-39%) and lastly poor (0-19%). The knowledge of the students were analyzed against prevalence of head lice infestation and there were no significant relationship (Table 2).

There was no significant relationship between hygiene and prevalence of head lice infestation as well (Table 3). As for the factor of co-sleeping habit, prevalence of the infestation was higher among the subjects with 1-2 people sharing whereas for frequency of hair washing, the percentage is the highest for subjects with hair washing habits more than twice a week (20.4%). Head lice infestations are higher among those who do not share combs (18.4%) or caps (20.1%) with prevalence that is in very close proximity to those who have these sharing habits. Where as for sharing of towels (21.2%) or unwashed clothes (20.5%), the prevalence of head lice infestation is clearly higher among those who do not share. Lastly, head lice infestation is most prevalent among those who change their linen every month (50. 0%)

As for the socioeconomic status, parent's occupation level was divided based on income into low and high levels. The low occupation level includes low or no income jobs such as housewife or those who are working at home, and not working. The high occupation level category consists of farmers, entrepreneurs, civil servants, military or police. Parent's education was also categorized into 2 to make the analysis easier. Those who never went to school, only went to primary school or junior high school were classified into low education level whereas those who went to high school or university were classified as high education level. However, socioeconomic status also showed no significant relationship when analyzed with prevalence of head lice infestation. Head lice infestation is shown to be higher among those with high mother's education level (21.3%) and low father's education level (20.3%). It is also higher among subjects with high mother's (21.1%) and father's (22.9%) occupation level.

There were no significant results of both the knowledge and hygiene variable against prevalence of head lice infestation.

There was limited study done on the relationship of knowledge and the prevalence of head lice infestation. There only have been studies that show the knowledge of the students in different areas of the subject[8,9]. Eight components of hygiene were analyzed against

head lice infestation. In a study done in Egypt, and another in Nigeria, co sleeping, a habit with a close relation to the family size was found to be of great influence on the infestation ratios[10,11]. As for the second component, frequency of hair washing, a study in Northern Thailand found a positive correlation whereas a study done in Egypt found a negative correlation of this component

Table 1. Baseline characteristics of students

Variables	Number	Percentage
Gender		
Male	91	57.59
Female	65	41.14
Age (Year)		
8 – 10	91	57.59
9.00	67	42.41
Socioeconomic Status		
i. Mother's education		
Never went to school	4	2.50
Primary school	32	20.30
Junior High School	44	27.80
High School	58	36.70
University	17	10.80
ii. Mother's occupation		
Farmer	5	3.20
Entrepreneur	27	17.10
Civil servants/military/police	6	3.80
Housewife	103	65.20
Not working	5	3.20
Others	12	7.60
iii. Father's education		
Never went to school	4	2.50
Primary school	27	17.10
Junior High School	33	20.90
High School	72	45.60
University	21	13.30
iv. Father's occupation		
Farmer	13	8.20
Entrepreneur	74	46.80
Civil servants/military/police	20	12.70
Working at home	8	5.10
Not working	40	25.30

Table 2: Statistical analysis result using Pearson Chi Square method of the relationship between knowledge and prevalence of head lice infestation among the rural school children in Yogyakarta

Independent variables	No	%	Prevalence of head lice infestation No	%	P value
KNOWLEDGE					0.811
Excellent (80-100%)	0	0	0	0	
Good (60-79%)	32	20.4	7	21.9	
Average (40-59%)	124	79.0	23	18.5	
Fair (20-39%)	1	0.6	0	0	
Poor (0-19%)	0	0	0	0	

Table 3: Statistical analysis result using Pearson Chi Square method of the relationship between hygiene and prevalence of head lice infestation among the rural school children in Yogyakarta

Independent variables	No	%	Prevalence of head lice infestation No	%	P value
HYGIENE					
Co sleeping habits					0.470
1-2 people	117	75.0	25	21.4	
3-4 people	34	21.8	6	17.6	
> 4 people	5	32.0	0	0	
Frequency of hair washing					0.888
More than twice a week	103	64.6	21	20.4	
Two times a week	51	32.5	9	17.6	
Every week	3	1.9	0	0	
Sharing of combs					0.700
Yes	14	9.0	2	14.3	
No	141	91.0	26	18.4	
Sharing of caps					0.992
Yes	10	6.5	2	20	
No	144	93.5	29	20.1	
Sharing of towels	0.172				
Yes	7	4.6	0	0	
No	146	95.4	31	21.2	
Sharing of unwashed clothes					0.475
Yes	2	1.3	0	0	
No	152	98.7	31	20.5	
Frequency of bed linen change					0.224
Two times a week	133	87.5	25	18.8	
Every week	12	7.9	4	33.3	
Every month	4	2.6	2	50	
Never	3	2.0	0	0	

Table 4. Statistical analysis result using Pearson Chi Square method of the relationship between socio economic status and prevalence of head lice infestation among the rural school children in Yogyakarta

Independent variables	No	%	Prevalence of head lice infestation		P value
			No	%	
SOCIOECONOMIC STATUS					
Mother's education level					0.688
High	75	48.4	16	21.3	
Low	80	50.6	15	18.8	
Father's education level					0.882
High	93	59.2	18	19.4	
Low	64	40.5	13	20.3	
Mother's occupation level					0.799
High	38	24.1	8	21.1	
Low	120	75.9	23	19.2	
Father's occupation level					0.993
High	48	31.0	11	22.9	
Low	107	67.7	20	18.7	

with head lice infestation[12,10]. Sharing of combs was mentioned having a significant relationship with the infestation in a study done in Delhi and Accra[8,13]. However, in a study done in Canada, no head lice were found in brushes of 10 children with active pediculous infestation[14]. Therefore, this may be considered as a mode of transmission but of little consequence compared to that of others[15]. The next component, sharing of caps, no head lice were found in hats although 5500 head lice were captured from heads of surveyed students who were wearing the same hat in a study done in Australia16. For the component sharing of towels, a study done in Ghana reveals that regarding the use of towels, $\chi 2$ analysis does not give significant differences between single and communal users although the percentage of infestation was higher among those who shared these facilities[13]. There are no studies done correlating sharing of unwashed clothes with the infestation. The last hygiene component is frequency of bed linen change where it is stated that changing and washing pillow cases (bedding) in a situation where multiple infected and uninfected people are cohabiting will have minimal impact on transmission since such a small proportion of head lice population transfers to bedding, and bedding is a hostile environment for head lice[15].

The insignificance may be caused by factors influencing of inanimate object transmission itself. Transmission of head lice through objects such as combs, caps, towels, unwashed clothes, and beddings are subject to capacity of louse to survive off-host long enough to come in contact with a new host and still have the strength to climb on board to infest the new host[15]. Besides that, there might be a great influence of confounding factors such as age, sex, socioeconomic status and hair length which has been proven as a

significant risk factor in some researches[17,10,4,18].

Socioeconomic status may have influenced the pattern of head lice infestation significantly. Few studies done in Ghent, Nigeria, Accra and Kerman supports this by concluding that socioeconomic status is significantly related to the prevalence of head lice[4,11,13,19]. However, in this research there was no statistic significance of socioeconomic status to the prevalence of head lice infestation, and this might be because the socioeconomic status was established in a subjective manner and not according to the income of the family. Besides that a study also mentioned that the reason for a higher prevalence among those in low social economic status may be because of sharing of inanimate objects and sharing of bed is most likely to be encountered in this group of people for they cannot afford better facilities[13].

CONCLUSION

The prevalence of head lice infestation among the rural school children in Yogyakarta is 19.6%. There is no significant relationship between the prevalence of head lice infestation with hygiene and knowledge among the rural school children in Yogyakarta.

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