



Risk Factors Associated of Pediculosis Capitis Among Elementary School, Semarang City, Indonesia

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Abstract. Background: Pediculosis capitis is a skin and hair disease caused by infestation of *Pediculus humanus var. capitis* parasite. This disease is often found in children. The limited research on Pediculosis capitis in Indonesia causes researchers conduct a risk factor associated of Pediculosis capitis among Elementary School students.

Aim: to explore the risk factors associated of pediculosis capitis among elementary school.

Methods: This study is a descriptive analytic study with a cross sectional approach, the sampling method used is total sampling. This research was conducted in one of the SDN Tlogosari Kulon, Semarang City. Samples are students of class IV, V, VI. The research data came from questionnaires which were confirmed by microscopic laboratory examination.

Results: The risk factors studied included age, hair length, hair shape, frequency of washing hair, hair accessories/combs shared, bedding shared and frequency of changing bed linen. Analysis using Fisher's Exact test. From the results of the analysis, it was found that factor bedding shared showed a significant associated of Pediculosis capitis, ($p = 0.014$; CI = 1.84–367.70).

Conclusion: It was concluded that bedding shared associated of Pediculosis capitis.

Keywords: Pediculosis capitis · risk factors · bedding shared · Elementary School

1 Introduction

Pediculosis capitis is a disease of the skin and scalp caused by infestation of *Pediculus humanus var. Capitis*. The prevalence of this disease is still relatively high, especially in school children aged 3–12 years [1]. Several data on the prevalence of pediculosis in children have been reported in Hamadan, West Iran was 1.05% [2], in Pave City, Kermanshah Province, West Iran 7.2% [3], and in Woreta City, Northwest Ethiopia 65.7% [4].

Several studies on the prevalence of pediculosis capitis in Indonesia have been conducted in several locations such as Islamic boarding schools with the results prevalence of pediculosis capitis of 64.54% [5], 74.6% [6], and 59.3% [7]; in orphanages by .69.8% in Palembang [8] and 58% in West Sumatra [9]; as well as in some schools with results of 59.7% [10] and 78.57% [11].

Factors related to occurrence of pediculosis capitis include: age [12, 13], gender, female are more often affected by pediculosis capitis [1, 13, 14], bedding/pillows shared [13–15], use combs/hair accessories together [16], hair length, hair shape [12], hair washing frequency as an indicator of head hygiene [14]. Other factors related to pediculosis capitis are economy [12], knowledge [17], and environmental density [7].

The high prevalence of pediculosis in several areas and the limited data regarding Pediculosis capitis in Indonesia have caused researchers want to conduct a risk factor associated of Pediculosis capitis among Elementary School students, Semarang City.

2 Methods

This study is a descriptive analytic study with a cross sectional approach, the sampling method used total sampling. This research was conducted in one of SDN Tlogosari Kulon, Semarang City, Central Java Province, Indonesia. Samples are female students of class IV, V, VI. Exclusion criteria included female students who were undergoing treatment for Pediculosis capitis for less than 1 week, either self-medication, general practitioner treatment, or dermatologist treatment.

Data collection uses primary data in the form of a questionnaire that has been tested for validity through interviews and microscopic examination to diagnosis of Pediculosis capitis. Sampling of lice from the hair was done using a mite comb. *Pediculus humanus var. capitis* examination was carried out using a binocular microscope with an objective lens magnification of 40x. The examination was carried out in Biomedical Laboratory, Faculty of Medicine, Universitas Muhamamdiyah Semarang.

The risk factors studied included age, hair length, hair shape, frequency of washing hair, hair accessories/combs shared, bedding shared, and frequency of changing bed linen. Analysis using Fisher's Exact test. This research was conducted after obtaining approval from the local Health Research Ethics Committee with the issuance of ethical approval No.014/EC/FK/2021.

3 Results

Of the 20 samples included in the study, most of the samples aged 5–11 years were 16 samples (80%), 12 samples had long hair (60%), 13 students had straight hair (65%),

Table 1. Characteristics of Elementary School Student

Characteristics	N (%)
Aged (th)	
5–11	16 (80)
12–16	4 (20)
Hair Length	
Short	8 (40)
Long	12 (60)
Hair Shape	
Straight	13 (65)
Wave	6 (30)
Curly	1 (5)
Frequency of Washing Hair	
$\geq 2x/\text{week}$	19 (95)
$< 2x/\text{week}$	1 (5)
Hair Accessories/Combs Shared	
Shared	2 (10)
No	18 (90)
Bedding Shared	
Shared	6 (30)
No	14 (70)
Frequency of Changing Bed Linen	
$\geq 1/\text{week}$	14 (70)
$< 1/\text{week}$	6 (30)
Pediculosis capitis	
Positive	5 (25)
Negative	15 (75)

19 samples washed their hair $\geq 2x/\text{week}$ (95%) 18 samples (90%), did not use accessories/Combined Hair Comb as many as 14 samples (70%), changed bed linen 1x/week as many as 14 samples (70%). Of the 20 samples, 5 samples (25%) suffered from pediculosis capitis (Tables 1).

Can be seen in Table 2 that only bedding shared was associated with pediculosis capitis ($p = 0.014$; $CI = 1.84\text{--}367.70$). Factor of hair length, frequency of washing hair, and hair accessories/combs shared cannot be analyzed.

Table 2. Risk Factor Associated of Pediculosis Capitis Among Elementary School Students

Characteristics	Pediculosis capitis		RP (CI 95%)	p-value
	Yes N (%)	No N (%)		
Aged (yo)				
5–11	3 (18,75)	13 (81,5)	0,23 (0,02–2,36)	0,249
12–16	2 (50)	2 (50)		
Hair Length				
Short	0 (0)	8 (100)	-	-
Long	5 (41,6)	7 (58,3)		
Hair Shape				
Straight	3 (23,1)	10 (76,9)	0,75 (0,09–6,043)	1,000
Wave/curly	2 (28,6)	5 (71,4)		
Frequency of Washing Hair				
≥2x/week	1 (100)	0 (0)	-	-
<2x/week	4 (21,1)	15 (78,9)		
Hair Accessories/Combs Shared				
Shared	0 (0)	2 (100)	-	-
No	5 (27,7)	13 (72,2)		
Bedding Shared				
Shared	4 (66,6)	2 (33,3)	26,00 (1,84 -367,70)	0,014
No	1 (7,1)	13 (92,8)		
Frequency of Changing Bed Linen				
≥ 1/week	4 (26,6)	11 (73,3)	2,00 (0,17–22,9)	1,000
<1/week	1 (20)	4 (80)		

- : data cannot be analyzed

4 Discussion

Analysis showed prevalence of pediculosis capitis 25%. This prevalence is lower than previous studies of 59.7% in Abiansemal District, Badung Regency, Bali [10] and 78.57% in East Langowan District, Minahasa Regency, North Sulawesi [11]. Location may also determine differences in the prevalence of pediculosis. This research was conducted on the island of Java, where the level of awareness of cleanliness is higher than in areas outside the island of Java. This difference in results could also be due to the time of data collection. The data was taken during the COVID-19 pandemic where

most people tried to improve the standards of personal and family hygiene, including the cleanliness of children.

The habit of sharing bedding is associated with pediculosis capitis. This result is contrary to previous studies which stated that the habit of sleeping together was not associated with pediculosis capitis infestations [10].

5 Conclusion

Bedding shared associated of Pediculosis capitis among Elementary School students, Semarang City, Central Java Province, Indonesia. It is necessary to do similar research in a wider area.

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