

## Association of Sharing Materials with Pediculosis Capitis in Students of Pondok Pesantren Tahfidzil Qur'an Yayasan Tjarotal Lan Tabur Palembang

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### ABSTRAK

Pedikulosis kapitis merupakan penyakit pada kulit dan rambut kepala karena infestasi *Pediculus capitis*. Penularan pedikulosis kapitis terjadi secara langsung (kepala ke kepala) dan tidak langsung (menggunakan barang bersama dengan terinfestasi *P. capitis*). Tujuan dari penelitian ini untuk mengetahui hubungan penggunaan barang bersama dengan kejadian pedikulosis kapitis pada santri di Pondok Pesantren Tahfidzil Qur'an Yayasan Tjarotal Lan Tabur Palembang. Penelitian ini merupakan penelitian observasional analitik dengan desain *cross sectional* yang dilaksanakan pada bulan November 2018. Sampel penelitian berjumlah 117 orang yaitu santri yang menetap di Pondok Pesantren Tahfidzil Qur'an Yayasan Tjarotal Lan Tabur Palembang. Data didapatkan dengan menggunakan kuesioner dan melakukan observasi langsung pada seluruh rambut sampel. Hasil yang diperoleh dianalisis menggunakan uji statistik *Chi-Square*, *Fisher's Exact Test* dan *Cox Regression*. Hasil penelitian menunjukkan prevalensi pedikulosis kapitis sebesar 48,7%. Dalam penelitian ini terbukti adanya hubungan bermakna antara kejadian pedikulosis kapitis dengan penggunaan kasur ( $p=0,039$ ), sisir ( $p=0,012$ ), handuk ( $p=0,046$ ), kerudung ( $p=0,009$ ), dan peci bersama ( $p=0,021$ ). Hasil uji multivariat dengan menggunakan analisis *cox regression* menunjukkan tidak ada variabel yang paling berpengaruh terhadap kejadian pedikulosis kapitis pada santri perempuan sementara pada santri laki-laki variabel yang paling berpengaruh adalah penggunaan handuk ( $p=0,032$ ) dan peci bersama ( $p=0,043$ ) dengan variabel penggunaan peci bersama sebagai prediktor. Terdapat hubungan bermakna antara penggunaan kasur, sisir, handuk, kerudung, dan peci bersama dengan kejadian pedikulosis kapitis dan variabel penggunaan peci bersama merupakan variabel yang paling berpengaruh terhadap kejadian pedikulosis kapitis pada santri laki-laki.

**Kata kunci:** *Pediculosis capitis, penggunaan barang bersama, pondok pesantren*

### ABSTRACT

Pediculosis capitis is a disease on human's scalp and hair caused by infestation of *Pediculus capitis*. Transmission of pediculosis capitis can be through with direct contact between head-to-head and indirect contact from patient's materials. The aim of this study was to determine the association of sharing materials with pediculosis capitis. This study was an analytic-observational study using a *cross-sectional* design which was done in November 2018. This research was conducted on students who live at Pondok Pesantren Tahfidzil Qur'an Yayasan Tjarotal Lan Tabur Palembang. The sample consisted of 117 students. Data was collected through questionnaires and direct observation from hair sample. The results were analyzed using *Chi-Square*, *Fisher's Exact Test* and *Cox Regression*. The study showed that prevalence of pediculosis capitis was 48.7%. From statistical analysis there was significant relationship between shared use of beds ( $p=0.039$ ), combs ( $p=0.012$ ), towels ( $p=0.046$ ), veils ( $p=0.009$ ) and caps ( $p=0.021$ ) with the occurrence of pediculosis capitis. The multivariate test results using *cox regression* analysis showed that there was no dominant variables that influence incidence of pediculosis capitis on female students, while on the male students the most dominant variable was the shared use of towels ( $p=0.032$ ) and caps ( $p=0.043$ ) with variables shared use of caps as a predictor. There was significant association between the shared use of beds, combs, towels, veils and caps with the with pediculosis capitis, and the dominant variables on male student was shared use of caps.

**Keyword:** *Pediculosis capitis, sharing materials, boarding school*

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## 1. Introduction

Pediculosis capitis is a disorder of the scalp and hair of the head due to an infestation of *Pediculus capitis* or head louse.<sup>1</sup> This disease has been known since ancient times and still exists today.<sup>2</sup> The infection covers the entire world with varying incidence. In developed countries such as the United States, it is estimated that 10-12 million children are infected with *Pediculus capitis* every year.<sup>3</sup> While in developing countries, the incidence is 15.3%, precisely in Hulu Langat Selangor Malaysia and 44.3% in Battambang Cambodia.<sup>4,5</sup> In Indonesia, namely in the Miftahul Ulum Jember Islamic Boarding School, the prevalence of pediculosis capitis is 74.6%.<sup>6</sup> Meanwhile, in Yogyakarta the prevalence is 19.6%.<sup>7</sup> In Palembang, namely in the Aulia Cendekia Talang Jambe Sukarame Islamic Boarding School the prevalence is 29.8%.<sup>8</sup>

Head louse is a parasite that is wingless and does not have the ability to jump.<sup>9</sup> Therefore, transmission of this disease occurs through contact, both directly (head to head) and indirectly (using items infected with *P. capitis*).

This disease is rapidly expanding in a dense environment, for example in Islamic boarding schools.<sup>1</sup> Because the level shared use of materials in Islamic boarding schools is quite high, making the students vulnerable to experience pediculosis capitis. Previous studies have been conducted on materials that have a relationship with pediculosis capitis, such as research in the Semarang Rhodlotul Islamic Boarding School which has a significant relationship between shared use of bed with pediculosis capitis ( $p=0,000$ ).<sup>10</sup> But this is contrary to the research of Yunida et al (2016) who did not find a relationship between both of them ( $p=0,784$ ).<sup>11</sup>

The difference in the results of this research is the background of the researchers to carry out this research, so it is expected that later materials that have an association with the pediculosis capitis will be identified, especially in student of the Pondok Pesantren Tahfidzil Qur'an Yayasan Tijarotal Lan Tabur Palembang. By knowing these materials, it is

expected that in the future preventive effort can be directed so that the incidence of pediculosis capitis can decrease.

## 2. Methods

This study used observational analytic study with cross sectional design, conducted at the Pondok Pesantren Tahfidzil Qur'an Yayasan Tijarotal Lan Tabur Palembang. The sample from student's head examinations is checked at the Parasitology Laboratory of the Faculty of Medicine Sriwijaya University. The population was all students who lived at Pondok Pesantren Tahfidzil Qur'an Yayasan Tijarotal Lan Tabur Palembang. The research sample consisted of 117 people who were fulfilled the inclusion and exclusion criteria.

The variables be examined in this study are shared use of bed, bed sheets, blankets, pillows, combs, towels, veils, mukenah, and cap. The data obtained was done by coding, recapitulation, and tabulation, then carried out statistical analysis using Chi-Square analysis, Fisher Exact Test and Cox Regression analysis. The data is then presented in narratives and tables.

## 3. Results

### Location Description

Pondok Pesantren Tahfidzil Qur'an Yayasan Tijarotal Lan Tabur Palembang is located in Silahberanti Village, Seberang Ulu I District, Palembang. This educational institution focuses on Islamic education, especially for those who want to memorize the Qur'an. While for academic education the students study at other schools around the boarding school environment. This boarding school consists of 123 students (58 female students and 65 male students).

There are 3 main buildings that are connected to each other which consist of prayer rooms, female and male dormitories. There are 8 dormitory rooms for female students in various sizes, about 2 x 3 meters to 4x5 meters. Whereas the male dormitory consists of 3 rooms with a wider size. Each room is inhabited by 6-20 santri depending on

the size of the room. The researcher observed that the lighting in the rooms tended to be dim and some rooms were in unclean conditions. Beds, pillows and blankets used by santri are arranged together, clothes, towels, or mukenah are hung in a closet or in a window along with other santri clothes.

### Univariate Analysis

Table 1 shows the highest number of respondents is  $\leq 15$  years. More male respondents than women. Education level from junior high school was the highest. Most of the respondent's parents are an elementary school graduates and work as a farmer/laborer and housewife. The majority of parent income is at a low income level. From 117 student there are 57 students (48.7%) suffered from pediculosis capitis. Most of the student use common items especially shared use of combs.

**Table 1. Distribution of respondents based on sociodemographic factors, use of shared materials and the incidence of pediculosis capitis**

Distribution of respondents	N	%
<b>Age</b>		
≤ 15 years old	70	59,8
> 15 years old	47	40,2
<b>Sex</b>		
Female	58	49,6
Male	59	50,4
<b>Level of education</b>		
Junior High School	62	53,0
Junior High School	55	47,0
<b>Level of father's education</b>		
Illiterate	9	7,7
Elementary School	62	53,0
Junior High School	18	15,4
Junior High School	19	16,2
Academic/Bachelor	2	1,7
Unknown (Orphans)	7	6,0
<b>Level of mother's education</b>		
Illiterate	12	10,3
Elementary School	62	53,0
Junior High School	18	15,4
Junior High School	22	18,8
Academic/Bachelor	1	0,9
Unknown (Orphans)	2	1,7
<b>Father's occupation</b>		
Unemployment	2	1,7
Farmers/laborers	92	78,6
Entrepreneur	12	10,3
Civil servant	4	3,4
Unknown (Orphans)	7	6,0

<b>Mother's occupation</b>		
Housewife	84	71,8
Farmers/laborers	23	19,7
Entrepreneur	6	5,1
Civil servant	2	1,7
Unknown (Orphans)	2	1,7
<b>Family income</b>		
Low	100	85,5
Enough	17	14,5
<b>Share of beds</b>		
Yes	83	70,9
No	34	29,1
<b>Share of bed sheets</b>		
Yes	40	34,2
No	77	65,8
<b>Share of blankets</b>		
Yes	53	45,3
No	64	54,7
<b>Share of pillow</b>		
Yes	38	32,5
No	79	67,5
<b>Share of comb</b>		
Yes	100	85,5
No	17	14,5
<b>Share of towel</b>		
Yes	23	19,7
No	94	80,3
<b>Share of veil</b>		
Yes	47	81,0
No	11	19,0
<b>Share of mukenah</b>		
Yes	9	15,5
No	49	84,5
<b>Share of Cap</b>		
Yes	17	28,8
No	42	71,2
<b>Pediculosis capitis</b>		
Positif	57	48,7
Negatif	60	51,3

Table 2 shows respondents with an age of  $\leq 15$  years old, female sex and junior high school level more likely to experience pediculosis capitis. In addition, respondents with parents of elementary school graduates, fathers work as farmers/laborers, mothers work as housewives, and low income parents experience pediculosis capitis more than other groups.

**Table 2. Frequency distribution of the incidence of pediculosis capitis based on sociodemographic factors**

Distribution of respondents	Positive Pediculosis Capitis	
	N	%
<b>Age</b>		
≤ 15 years old	47	82,5
> 15 years old	10	17,5
<b>Sex</b>		
Female	52	91,2
Male	5	8,8
<b>Level of education</b>		
Junior High School	43	75,4
Junior High School	14	24,6
<b>Level of father's education</b>		
Illiterate	4	7,0
Elementary School	30	52,6
Junior High School	8	14,0
Junior High School	10	17,5
Academic/Bachelor	0	0,0
Unknown (Orphans)	5	8,8
<b>Level of mother's education</b>		
Illiterate	7	12,3
Elementary School	29	50,9
Junior High School	9	15,8
Junior High School	10	17,5
Academic/Bachelor	0	0,0
Unknown (Orphans)	2	3,5
<b>Father's occupation</b>		
Unemployment	1	1,8
Farmers/laborers	45	78,9
Entrepreneur	4	7,0
Civil servant	2	3,5
Unknown (Orphans)	5	8,8
<b>Mother's occupation</b>		
Housewife	40	70,2
Farmers/laborers	9	15,8
Entrepreneur	4	7,0
Civil servant	2	3,5
Unknown (Orphans)	2	3,5
<b>Family income</b>		
Low	49	86,0
Enough	8	14,0

### Bivariate Analysis

Table 3 is the result of a bivariate analysis between the shared use of materials with pediculosis capitis. From the table, it is known that there is a significant relationship between

shared use of beds ( $p=0.039$ ), combs ( $p=0.012$ ), towels ( $p=0.046$ ), veils ( $p=0.009$ ), and caps ( $p=0.021$ ) with the incidence of pediculosis capitis.

**Table 3. Bivariate analysis results association of sharing materials with pediculosis capitis**

Distribution of respondents	Pediculosis Capitis				p
	Positive		Negative		
	N	%	N	%	
<b>Share of beds</b>					
Yes	46	55,4	37	44,6	0,039
No	11	32,4	23	67,6	
<b>Share of bed sheets</b>					
Yes	16	40,0	24	60,0	0,244
No	41	53,2	36	46,8	
<b>Share of blankets</b>					
Yes	24	45,3	29	54,7	0,624
No	33	51,6	31	48,4	
<b>Share of pillow</b>					
Yes	20	52,6	18	47,4	0,697
No	37	46,8	42	53,2	
<b>Share of comb</b>					
Yes	54	54,0	46	46,0	0,012
No	3	17,6	14	82,4	
<b>Share of towel</b>					
Yes	16	69,6	7	30,4	0,046
No	41	43,6	53	56,4	
<b>Share of veil</b>					
Yes	45	95,7	2	4,3	0,009
No	7	63,6	4	36,4	
<b>Share of mukenah</b>					
Yes	7	77,8	2	22,2	0,231
No	45	91,8	4	8,2	
<b>Share of Cap</b>					
Yes	4	23,5	13	76,5	0,021
No	1	2,4	41	97,6	

### Multivariate Analysis

Tables 4 and 5 are the results of multivariate analysis on female students. From the results of the analysis, it is known that there are no independent variables which have a significant effect on pediculosis capitis for female student ( $p>0.05$ ). This may be due to other factors that also affect the incidence of pediculosis capitis such as personal hygiene factors, level of knowledge, and hair characteristics that were not examined by the researchers.

**Table 4. The initial model of multivariate analysis for female student**

Variables	Regression Coefficient ( $\beta$ )	df	<i>p</i>	Exp(B)
Beds	-0,228	1	0,565	0,796
Bed sheets	-0,107	1	0,770	0,899
Blankets	-0,093	1	0,783	0,911
Pillow	-0,145	1	0,645	0,865
Comb	-0,241	1	0,702	0,786
Towel	-0,320	1	0,361	0,726
Veil	-0,450	1	0,308	0,638
Mukenah	0,246	1	0,581	1,278

**Table 5. The final model of multivariate analysis for female student**

Variables	Regression Coefficient ( $\beta$ )	df	<i>P</i>	Exp(B)
Veil	-0,408	1	0,315	0,665

Tables 6 and 7 are the results of multivariate analysis on male students. From the results of the analysis, it is known that the variable shared use of towels ( $p=0.032$ ) and caps ( $p=0.043$ ) is the most influential variable on the incidence of pediculosis in male student. Both of these variables are protective variables against the incidence of pediculosis capitis (look at Exp (B) value).

**Table 6. The initial model of multivariate analysis for male student**

Variables	Regression Coefficient ( $\beta$ )	df	<i>P</i>	Exp(B)
Beds	-1,221	1	0,346	0,295
Bed sheets	11,474	1	0,965	96163,387
Blankets	-1,362	1	0,394	0,256
Pillow	0,117	1	0,939	1,124
Comb	-9,918	1	0,964	0,000
Towel	-1,804	1	0,065	0,165
Caps	-3,041	1	0,072	0,048

**Table 7. The final model of multivariate analysis for male student**

Variables	Regression Coefficient ( $\beta$ )	df	<i>p</i>	Exp(B)
Towel	-1,960	1	0,032	0,141
Caps	-2,262	1	0,043	0,104

## 4. Discussions

### Prevalance of Pediculosis Capitis

Palembang in 117 respondents consisting of 58 female students and 59 male students, the prevalence of pediculosis capitis was 48.7%. This result is not much different from the study in Cambodia which had an incidence of 44.3%.<sup>5</sup> Likewise with research in Egypt which obtained a prevalence of pediculosis capitis of 44.2%.<sup>12</sup> Other studies that also have similar incidence rates are studies in SDN Kertasari, Padalarang, West Java Regency with a prevalence of 52.1%.<sup>13</sup> But several other studies showed quite different results such as studies in Selangor, Malaysia, the incidence of pediculosis capitis there was only 15.3%.<sup>4</sup> In addition, research in schools in Yogyakarta also get a prevalence rate that is not too large, namely 19.6%.<sup>7</sup>

The difference in prevalence of pediculosis capitis in these studies can be attributed to various factors. Like sociodemographic factors, knowledge levels, personal hygiene, hair characteristics, environmental conditions and socioeconomic levels.<sup>12</sup> In addition, the characteristics of the population subject of the research also have a role in determining number of events of pediculosis capitis. In this study, the difference number of subjects between women and men is not too significant, so the incidence rate of the incidence of pediculosis capitis is high enough. This is because the occurrence of pediculosis in female is more often than in male. But of course this is not absolute, because there are still other factors that also affect the occurrence of pediculosis capitis.

### Characteristics of Respondents

Results of the study found that pediculosis capitis was more common in individuals aged  $\leq 15$  years (59.8%). This result is similar to research conducted in India.<sup>14</sup> The underlying reason is that the immune system in the age group of  $\leq 15$  years is still not fully developed so that they become susceptible to infestation. In addition, the awareness of maintaining personal hygiene from this age group still

lacks, so the tendency to experience pediculosis capitis is greater.<sup>14</sup>

In this study, the incidence of pediculosis capitis in female was more (91.2%) than male. As in other studies which also received similar results, such studies in Iran also found such things.<sup>15</sup> The incidence of louse infestation in female is more common, because female often make close contact and share material with each other (such as combs, hair accessories). In addition, most women also have long hair making it more difficult to care and creating a favorable condition for the louse to take refuge and breed.<sup>16</sup>

The majority of individuals infected with *P. capitis* were individuals with a junior high school education level (75.4%). This is in line with the results of the study obtained by Lukman et al. The level of education affects their knowledge.<sup>3</sup> So that, when knowledge about pediculosis capitis is lack, these individuals will more tend to suffer pediculosis capitis because of their ignorance about how to prevent or treat the disease.

The results showed that, the income of parents was higher in the low category at 86%. While based on father occupation, it is known that the most dominating is the farmer/laborer which is 78.9%, while most of the respondent's mothers are housewives, namely 70.2%. This is in line with the research in Hamadan, Iran that most parents are as laborers and housewives.<sup>17</sup> In terms of education, it is known that the majority of respondent's parents are elementary graduates with a percentage of fathers 52.6% and mothers 50.9%.

Education and occupation for parents can describe the economic status of a family. The incidence of pediculosis capitis is more common in low economic status. Because low economic levels tend to have a close relationship with a dense environment, poor hygiene, and insufficient knowledge, these are all factors that increase risk of developing pediculosis capitis.<sup>4</sup>

While the incidence of pediculosis in a child will be decrease if it is followed by an increase in education from both parents. Educated parents will have more information

regarding pediculosis capitis due to their knowledge gained from reading and social communication.<sup>4</sup>

### **Association of Sharing Materials with Pediculosis Capitis**

From the results of research conducted at Pondok Pesantren Tahfidzil Qur'an Yayasan Tijarotal Lan Tabur Palembang, it was found that there was a statistically significant relationship between the use of shared beds and pediculosis capitis ( $p=0.039$ ). This result is in line with the study of Lukman et al (2018) which states that there is a significant relationship between the use of beds together with the incidence of pediculosis capitis ( $p=0,000$ ). Contrary to the study conducted at SMP Darul Hijrah Putri Martapura that did not have a significant relationship between both of them ( $p=0.7884$ ).<sup>11</sup> Sharing a beds is a sign of dense environment and it facilitates transmission of louse, because during sleep there may be intense head-to-head contact especially if one of the sleepers suffers pediculosis capitis.<sup>10</sup>

From the results of this study, there was a no significant relationship between the use of bed sheets and pediculosis capitis. The results of this study are in line with the study of Yunida et al. (2016) which states that there is no significant relationship between both of them ( $p=0.268$ ).<sup>11</sup> This is probably due to the inability of *P. capitis* to move to the material. *P. capitis* nails adapt to being able to hold human hair, making it difficult to stick to smooth or slippery surfaces such as plastic, synthetic furry materials, and other soft materials.<sup>18</sup> In addition, according to Munusamy et al (2011) bed sheets are a hostile environment for head louse.<sup>7</sup>

In the study at Pondok Pesantren Tahfidzil Qur'an Yayasan Tijarotal Lan Tabur Palembang, it was found that the variable use of pillows and blankets together did not have a significant relationship to the incidence of pediculosis capitis. This is in line with the research obtained by Oktaregina (2017) who also obtained similar results.<sup>19</sup> But in other studies the opposite results were found, where there was a significant relationship between

the use of shared pillows ( $p=0.001$ ) and the use of blankets ( $p=0.029$ ) on the incidence of pediculosis capitis.<sup>20,8</sup> The difference in results obtained may be due to differences in the proportion of shared use of these materials and differences in the level of personal hygiene of the respondents in each study. In addition, transmission of pediculosis capitis is not only affected by the use of shared materials but is also influenced by the ability of the head louse to climb hair and live outside the human scalp before finding a new host.<sup>21</sup>

This study shows that there is a statistically significant relationship between the use shared of combs and pediculosis capitis. The same results were obtained by Soleimani et al (2017) in Iran which stated that there was a significant relationship between both of them ( $p=0.043$ ).<sup>22</sup> However, unlike the results of the study in Hamadan, Iran concluded that there was no relationship meaningful between the use shared of combs and pediculosis capitis ( $p=0.089$ ).<sup>17</sup> The difference in the results of this study may be due to the comb never be washed so head lice can move quickly and easily move from one host to another host.<sup>23</sup>

The use of towels together at Pondok Pesantren Tahfidzil Qur'an Yayasan Tjarotal Lan Tabur Palembang has a significant relationship with the incidence of pediculosis capitis. The results of this study are in line with the research of Kassiri and Esteghali (2016) which also obtained a significant relationship between the use of towels together with pediculosis capitis ( $p=0.001$ ).<sup>24</sup> However, different results were obtained by Zhen et al (2011) which stated that there was no significant relationship between both of them ( $p=0.453$ ).<sup>25</sup> The differences in the results of this study can be due to differences in personal hygiene such as how to use towels that are not dried under the sun or also because they do not wash towels before being used by other users.

The results of the study at Pondok Pesantren Tahfidzil Qur'an Yayasan Tjarotal Lan Tabur Palembang showed a significant correlation between the use of veils and caps and the incidence of pediculosis capitis, while there was no relationship with the use of

mukenah. This result is different from the Jordan study by AlBashtawy and Hasna (2010) which shows that these three variables have a relationship with the incidence of pediculosis capitis ( $p=0,0001$ ).<sup>26</sup> Cover the head using a veil or cap may reduce the risk of pediculosis capitis transmission, because the occurrence of head to head contact become minimal. But this can also increase the risk of pediculosis capitis, because by closing the head, the temperature of the scalp becomes increased so that it can create a moist condition favored by the head louse. Meanwhile, the absence of a mukenah relationship with pediculosis capitis is probably due to the fact that when using mukenah there is no direct contact between the head and mukenah, because it is usually limited by other cloths, for example a veil, causing the possibility of displacement of the head louse to other individuals becomes small.

## **5. Conclusion**

The proportion of pediculosis capitis in Pondok Pesantren Tahfidzil Qur'an Yayasan Tjarotal Lan Tabur is 48.7%. The incidence is highest among respondents aged  $\leq 15$  years, female sex, parents of elementary school graduates, father work as farmer/laborer, mothers as housewives and low income for parents. In this study, there was a significant relationship between the shared use of bed, combs, towels, veils and caps with pediculosis capitis. The results of multivariate analysis showed that no independent variable had the most significant effect on the incidence of pediculosis capitis in female student. While the variable use of shared towels and caps is the most influential variable on the incidence of pediculosis capitis in male student with the variable shared use of cap as a predictor.

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## References

1. Handoko, R.P. 2015. Pedikulosis. in: Menaldi, S.L. (Editor). Ilmu Penyakit Kulit dan Kelamin edisi VII (halaman 134 - 135). Badan Penerbit FKUI, Jakarta.
2. Frankowski, B.L. and Bocchini, J.A. 2010. Clinical Report—Head Lice. 126: 392–403. (<http://pediatrics.aappublications.org/>, diakses 9 Agustus 2018)
3. Burkhart, C.N. and Burkhart, C.G. 2012. Scabies, Other Mites and Pediculosis. In: Goldsmith, L.A., Katz, S.I., Gilchrest, B.A., Paller, A.S., Leffel, D.J., Wolff, K. (Eds). Fitzpatrick's Dermatology in General Medicine. 8th ed. New York; McGraw-Hill, hal. 2573–6.
4. Tohit, N. F. M., L. Rampal, and L. Mun-Sann. 2017. Prevalence and Predictors of Pediculosis Capitis among Primary School Children in Hulu Langat , Selangor. Medical Journal Malaysia. 72 (1): 12–17. (<https://www.ncbi.nlm.nih.gov/pubmed/28255134>. Diakses 24 Juli 2018).
5. Liao, C., P. Cheng, T. Chuang, K. Chiu, I. Chiang, J. Kuo, and C. Fan. 2017. ScienceDirect Prevalence of Pediculus Capitis in Schoolchildren in Battambang, Cambodia. Journal of Microbiology, Immunology and Infection. 1–7. (<https://doi.org/10.1016/j.jmii.2017.09.003>. Diakses 22 Juli 2018).
6. Lukman, N., Y. Armiyanti, and D. Agustina. 2018. Hubungan Faktor-Faktor Risiko Pediculosis Capitis Terhadap Kejadiannya Pada Santri Di Pondok Pesantren Miftahul Ulum Kabupaten Jember. Journal of Agromedicine and Medical Sciences. 4 (2): 102–9. (<https://jurnal.unej.ac.id/index.php/JAMS/article/view/6488/5536>. Diakses 15 Agustus 2018).
7. Munusamy, H., E. E. H. Murhandarwati, dan S. R. Umniyati. 2011. The Relationship Between The Prevalence of Head Lice Infestation with Hygiene and Knowledge Among The Rural School Children In Yogyakarta. TMJ. 01 (02): 102–109. (<http://jurnal.ugm.ac.id>. Diakses 7 Agustus 2018).
8. Khoirunnisa, Zakiah. 2015. Hubungan Penggunaan Barang Bersama dengan Pediculosis Capitis pada Santri di Pondok Pesantren Aulia Cendekia Talang Jambe Sukarami Palembang. Unpublished Essay from Medical Faculty of Sriwijaya University
9. Habif, T. P. 2004. Clinical Dermatology Fourth Edition a Color Guide to Diagnosis and Therapy. Mosby, Philadelphia, pp. 506 – 510.
10. Rahman, Z.A. 2014. Faktor-Faktor yang Berhubungan dengan Kejadian Pediculosis Capitis pada Santri Pesantren Rhodlotul Quran Semarang. Unpublished Essay from Medical Faculty of Diponegoro University
11. Yunida, S., K. Rachmawati, dan Musafaah. 2016. Faktor-Faktor yang Berhubungan dengan Kejadian Pediculosis Capitis Di SMP Darul Hijrah Putri Martapura : Case Control Study. Dunia Keperawatan 4(2):124–132.
12. El-Khawaga, G., F. A. Wahab, W. Mohamed. 2012. Prevalence of Pediculosis Capitis Among Primary female School Students in an Egyptian Village. The Egyptian Journal of Community Medicine. 30(4): 1-8 ([http://ejcm.asu.edu.eg/images/volume30\\_no4\\_october2012/1\\_prevalence\\_of\\_pediculosis\\_capitis.pdf](http://ejcm.asu.edu.eg/images/volume30_no4_october2012/1_prevalence_of_pediculosis_capitis.pdf). Diakses 26 Desember 2018)
13. Yulianti, E., F. Sinaga, F. Sihombing. 2016. Faktor-Faktor yang Berhubungan dengan Kejadian Pediculosis Capitis di SD Negeri Kertasari. Jurnal Kesehatan "Caring and Enthusiasm". 5(1): 18-27. (<http://ejournal.stikesborromeus.ac.id/file/5-3.pdf>. Diakses 26 Desember 2018)
14. Akhter, S., M. M. H. Mondal, M. A. Alim and M. A. Moinuddin. 2010. Prevalence of

- lice infestation in humans in different socio-economic status at Mymensingh in Bangladesh. *Int. J. BioRes.* 1(1): 13-17
15. Dehghanzadeh, R., M. A. Jafarabadi, S. Salimian, A. A. Hashemi, and S. Khayatzadeh. 2015. Impact of Family Ownerships, Individual Hygiene, and Residential Environments on The Prevalence of Pediculosis Capitis among Schoolchildren in Urban and Rural Areas of Northwest of Iran. *Parasitology Research.* 114(11): 4295–4303. doi:10.1007/s00436-015-4670-1 (<https://www.ncbi.nlm.nih.gov/pubmed/26276644>). Diakses pada 26 Desember 2018).
  16. Gutiérrez, M. M., González, J. W. González, N. Stefanazzi, G. Serralunga, L. Yañez, and A. A. Ferrero. 2012. Prevalence of *Pediculus humanus capitis* infestation among kindergarten children in Bahía Blanca city, Argentina. *Parasitology Research*, 111(3), 1309–1313. (<https://link.springer.com/article/10.1007/s00436-012-2966-y>). Diakses 26 Desember 2018).
  17. Omidi, A., M. Khodaveisi, A. Moghimbeigi, N. Mohammadi, and R. Amini. 2013. Pediculosis Capitis and Relevant Factors in Secondary School Students of Hamadan, West of Iran. *JRHS* 2013; 13(2): 176-180
  18. Center for Disease Control and Prevention (CDC). 2015a. Head Lice. ([https://www.cdc.gov/parasites/lice/head/gen\\_info/faqs.html](https://www.cdc.gov/parasites/lice/head/gen_info/faqs.html)). Diakses 3 Agustus 2018).
  19. Oktaregina, E.P., 2017. Hubungan Penggunaan Barang Bersama dengan Pedikulosis Kapitis pada Santri di Madrasah Tsanawiyah Pondok Pesantren Qodratullah Desa Langkan Kabupaten Banyuasin Sumatera Selatan. Unpublished Essay from Medical Faculty of Sriwijaya University.
  20. Meita, Y. 2016. Hubungan Penggunaan Barang Bersama dengan Pedikulosis Kapitis pada Santri di Pondok Pesantren IGM Al- Ihsaniyah Gandus Palembang. Unpublished Essay from Medical Faculty of Sriwijaya University
  21. Canyon, D.V. and Speare R. 2010. Indirect Transmission of Head Lice Via Inanimate Objects. 4: 72–6. (<http://benthamopen.com>, diakses 27 Desember 2018)
  22. Soleimani, M., S. A. Jaberhashemi, M. Zare, and A.S. Dehkordi. 2017. Prevalence of Head Lice Infestation and Pediculicidal Effect of Permethrine Shampoo in Primary School Girls in a Low-Income Area in Southeast of Iran. *BMC Dermatology.* 17(10):1–6. (<https://doi.org/10.1186/s12895-017-0062-9>). Diakses 22 Juli 2018).
  23. Zulinda A, Yolazenia, dan Zahtamal. 2010. Faktor-Faktor yang Mempengaruhi Kejadian Pedikulosis Kapitis pada Murid Kelas III, IV, V dan VI SDN 019 Tebing Tinggi Okura Kecamatan Rumbai Pesisir Pekanbaru. *JIK.* 4 (1): 66-67
  24. Kassiri, H. and E. Esteghali. 2015. Prevalence Rate and Risk Factors of *Pediculus capitis* Among Primary School Children in Iran. *Arch Pediatr Infect Dis.* 2016 January; 4(1): e26390. doi: 10.5812/pedinfect.26390
  25. Zhen, A. J. L. Y., E. E. H. Murhandarwati, dan S. R. Umniyati. 2011. Head Lice Infestation and Its Relationship with Hygiene and Knowledge among Urban School Children in Yogyakarta. *TMJ.* 01(01):35–41.
  26. Albashtawy, M., and F. Hasna. 2012. Pediculosis Capitis among Primary-School Children in Mafraq Governorate, Jordan. *Eastern Mediterranean Health Journal.* 18 (1): 43–48. (<https://http://applications.emro.who.int/>). Diakses 29 Juli 2018).