



Monitoring Pediculosis Capitis in Students At Al-Muhajirin Islamic Boarding School, Cikarang Pusat, West Java, Indonesia

Reza Anindita^{1*}, Ega Nuraini Wahyu², Melania Perwitasari¹, Dede Dwi Nathalia¹, Maya Uzia Beandrade¹, Intan Kurnia Putri¹, Nofria Rizki Amalia Harahap¹

¹ Department of Pharmacy, STIKes Mitra Keluarga, Bekasi City, West Java, Indonesia

² Department of Medical Laboratory Technology, STIKes Mitra Keluarga, Bekasi City, West Java, Indonesia

*Corresponding Author: rezaanindita@stikesmitrakeluarga.ac.id

DOI: 10.33086/iimj.v5i2.5783

ARTICLE INFO	ABSTRACT
Keywords: Pediculosis; capitis; lice; boarding school; Cikarang Submitted: March 30 th 2024 Reviewed: April 16 th 2024 Accepted: May 9 th 2024	Introduction : Pediculosis capitis is a scalp hair disorder caused by an infestation of the lice of <i>Pediculus humanus capitis</i> . The spread of this disease is dominant in Islamic boarding school students. This disease besides causing itching and lesions on the scalp also causes loss of concentration and enjoyment of learning in children. The objective of this study was to determine the percentage of female students infested with <i>P. humanus capitis</i> . Methods : The design of this research is cross-sectional. The sample for this study was 41 female students of grade 7 at AL-Muhajirin Islamic Boarding School, Central Cikarang, West Java. Examination of <i>P. humanus capitis</i> on all female students was carried out using the serit method. The <i>P. humanus capitis</i> lice found were then collected and preserved preparations were made for microscopic morphological identification. Results : The results of this study showed that from 41 samples, 36 (87.8%) students were found to be positive for <i>P. humanus capitis</i> . Conclusions : The conclusion from this study is that the percentage of pediculosis capitis in female students is high, so it is necessary to take countermeasures in the form of head lice medication and education about personal hygiene for class 7 female students at Al-Muhajirin Islamic Boarding School, Central Cikarang, West Java

Introduction

Pediculosis capitis is a scalp disorder caused by an infestation of the lice (lice) of *Pediculus humanus capitis* commonly called head lice. This disease generally attacks school children in poor countries and develops by spreading (transmission) through hair, clothes, combs, hats, towels, and personal items from one person to

another. Meanwhile, in Indonesia, pediculosis capitis is still classified as a neglected disease with the highest prevalence rate in girls living in Islamic boarding schools. Therefore, the prevalence of pediculosis capitis in Indonesia is still dominant in Islamic boarding schools (Octavia *et al.*, 2020).

According to Massie *et al.* (2020) the prevalence rate of pediculosis capitis is generally influenced by climate, geographical environment, health conditions, income, and family density. Some data on the percentage prevalence of pediculosis capitis mentions that the Asian continent is $15.1\% \pm 12.8\%$, Europe is $13.3\% \pm 17.0\%$, South America is $44.1\% \pm 28.0\%$. At the country level, the prevalence of pediculosis capitis in Turkey is 9.4%, Iran is 4%, Saudi Arabia is 12%, Jordan is 13.4%, Egypt is 21.6%, Philistines is 32.4%, Malaysia is 35%, Pakistan is 87%, Bangkok 23.32%, and Argentina 42.7%. Meanwhile, based on the literature review Octavia *et al.* (2020) the prevalence rate of pediculosis capitis in Indonesia at Islamic boarding schools is above 50% with more female than male sufferers.

The high prevalence rate of pediculosis capitis creates a public health problem, especially in children aged 5-11 years. This is because *P.humanus capitis* will enter its saliva and feces when it sucks blood on the human head.

According to Adham *et al.* (2020) *Pediculus humanus capitis* bites can cause pruritus (itching on the head) causing skin disorders in the form of erythema, macules and papules. If when scratched it produces a wound (abrasions) then it has the potential to cause a secondary infection in the form

of impetigo and furunculosis. Considering that the activity of *P. humanus capitis* bites increase at night, it will trigger itching and head-scratching responses, causing children to experience sleep disturbances at night. In cases of chronic infestation of pediculosis capitis can cause anemia, lethargy, drowsiness thereby affecting learning performance, children's cognitive function.

Sulistiyani and Khikmah (2019) *Pediculus humanus capitis* bites can cause pruritus (itching on the head) causing skin disorders in the form of erythema, macules and papules. If when it is scratched it produces a wound (abrasion) then it has the potential to cause a secondary infection in the form of impetigo and furunculosis. Considering that the activity of *P. humanus capitis* bites increas at night, it will trigger itching and head-scratching responses, causing children to experience sleep disturbances at night. In cases of chronic infestation of pediculosis capitis can cause anemia, lethargy, drowsiness which affects learning performance, children's cognitive function.

Kartashova *et al.* (2019) adding that pediculosis capitis also causes psychological impacts, namely children feel embarrassed and ostracized from the social environment because other children are worried about being infected by children who are infested with pediculosis capitis.

Referring to the problems and impacts caused by pediculosis capitis, it is necessary to carry out surveys and research on pediculosis capitis in Indonesia, especially in Islamic boarding schools in the Bekasi area. As for several previous studies regarding pediculosis capitis in Islamic boarding schools in several cities in the Greater Jakarta area (Jakarta, Bogor, Depok, Tangerang, Bekasi) have been carried out by Gumsah and Apriani (2021) reported the percentage of pediculosis capitis in children aged 3-12 years in the Babakan Asem, Teluknaga, Tangerang area of 68%. Khamaruddin *et al.* (2020) stated that the percentage of pediculosis in students of Al Hamid Islamic Boarding School, East Jakarta was 69%. Nurdiani (2020) added that the percentage of children aged 6-12 years at the Sirojan Mustaqim Islamic Boarding School and the residents of RW 03 Pondok Ranggon Village, Cipayung District, East Jakarta was each 71 (64.54%) with the distribution as follows: 41 (57.7%) in dormitories and 30 (42.3%) in residential areas.

The results of other studies reported by Sisirawaty & Siahaan (2016) found the egg stage of on conventional motorcycle taxi

helmets in Bekasi City at 16.7%. Research Suhesti & Pramitaningrum (2020) revealed that the percentage of pediculosis capitis in children aged 3-12 years in one of the Cibitung housing areas, Bekasi Regency was 73%. Based on the results of previous studies, not much data has been published regarding the percentage of pediculosis in Islamic boarding schools in Bekasi City. In fact, information regarding the incidence of pediculosis capitis in Bekasi City is needed for the Health Service which is integrated.

Methods

Research design

This type of research is descriptive quantitative with cross sectional design. The research location is the Al-Muhajirin Islamic Boarding School, Central Cikarang, Bekasi Regency, West Java. Research tools and materials include serit combs, plastic clips. chambers, object glass, cover glass, pipettes, microscopes, 10%, 15% Potassium Hydroxide (KOH), aquadest, 30%, 50%, 96% alcohol, absolute alcohol, and xylol. The sample of this research were 41 female students of class 7 at Al-Muhajirin Islamic Boarding School

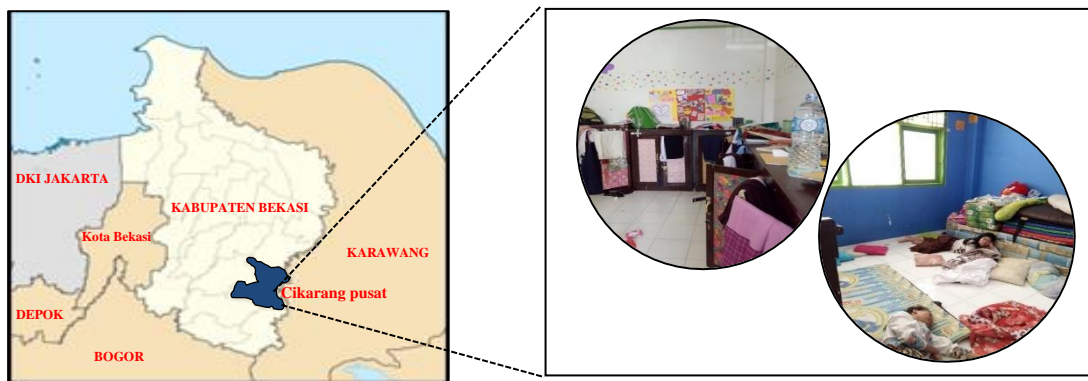


Figure 1. Map of the location and condition of the Al-Muhajirin boarding school's rooms

Examination of P. humanus capitis

Examination of *P. humanus capitis* was carried out by combing female students' hair using a fine-toothed/serit comb. The female students' hair is wetted first, then a piece of plain paper is placed under the head. Hair is combed from top to bottom, left side and

right side of the head. The presence of *P. humanus capitis* that fell on the paper was then observed, recorded, and preserved preparations were made for morphological examination of *P. humanus capitis* microscopically.



Figure 2. Examination of *P. humanus capitis* using serit comb

Sequentially the preparation of preserved preparations was carried out by soaking *P. humanus capitis* in 10% KOH, 15% (24 hours), distilled water (rinsing), 30% alcohol (15 minutes with 3x change of

solution). The body of *P. humanus capitis* was then pressed with 2 glass objects to remove the fluid from the body. The samples were then immersed in 50%, 96%, and absolute alcohol (15 minutes). Then the

samples were immersed in Xylol 2x each with a duration of 5 minutes, 15 minutes, 25 minutes and 60 minutes. The sample is then placed on a glass object, given an entelan, covered with a cover glass, and observed under a microscope to examine the

morphological identification of *P. humanus capitis*. The morphological identification of *P. humanus capitis* refers to the book ATLAS of Medical Parasitology (Wijaya *et al.* 2016).



Figure 3. slide of *P. humanus capitis*

Data analysis

Data analysis in this study used descriptive statistics which were carried out by processing data in the form of tables and figures. All data were systematically arranged and then described to see the description of pediculosis in the research subjects. As for the image data, it is described to see the morphological characteristics of *P. humanus capitis* as a cause of pediculosis.

Results

Pediculosis examinations at the Al-Muhajirin Islamic Boarding School are conducted separately between female students in grades 7-1 and 7-2. The number of respondents who participated in this research was 49 female students from

classes 7-1 and 7-2, but at the time of the research, three female students were not present in class 7-1, and 5 female students in class 7-2 so that the final number of respondents who participated in In this study, there were 41. The results of the *P. humanus capitis* examination on 41 female students at the Al-Muhajirin Islamic Boarding School can be seen in the table below:

Table 1. Results of examination of *P. humanus capitis* on the hair of female students in grades 7-1 and 7-2

Results	Number Respondents	of Percentage (%)
Positive	36	87,8 %
Negative	5	12,1 %
Total	41	100 %

Discussion

Based on the table above, it can be seen from the examination of 41 female student respondents that as many as 36 female student students (87.8%) tested positive for *P. humanus capitis*, and five female student students (12.1%) tested negative for *P. humanus capitis*. The positive presence of *P. humanus capitis*, as much as 87.8%, proves that the incidence of pediculosis in grade 7 female students at the Al-Muhajirin Islamic Boarding School, Central Cikarang, West Java, is still relatively high. The results of this research complement the results Nurdiani's (2020), which reported that as many as 6-12 years old children at the Sirojan Mustaqim Islamic Boarding School and the residents of RW 03 in Pondok Ranggon Village, Cipayung District, East Jakarta obtained results of 60 (77.93 %) women and 11 (33.33%) men tested positive for *P. humanus capitis*; The selection of research samples that focused more on girls refers to the results of research by Gumsah & Apriani (2021) which reported that examinations of children 3-12 years old resulted in 31 (76%) positive girls and 3 (33%) negative boys for pediculosis in Babakan Asem Village, Teluknaga District, Tangerang and research by Suhesti and Pramitaningrum (2020) which revealed that the percentage of children aged 3-12 years in one of the Cibitung housing

complexes, Bekasi Regency was 28 (85%) women who tested positive for pediculosis capitis.

Another study that selected the location of Islamic boarding schools and female students was also carried out by Setyoasih and Suryani (2006), who stated that out of 84 female students at Muhammadiyah Boarding School Prambanan Sleman Yogyakarta, 43 (51.2%) female students were positive for pediculosis captis infestation. The findings of the incidence of pediculosis in Islamic boarding school children were also shown in the research of Ary *et al.* (2019), who reported that out of 193 students, 93 (48.2%) were infested with pediculosis with age and most being 13 years old and class VIII respectively amounting to 45 (48.4%) and 35 (37.6%) students at Madrasah Tsanawiyah. (MTs) at Islamic Boarding School X, East Mempawah District, West Kalimantan. The high incidence of pediculosis was also shown in Hapsari (2021), which showed that of the 48 female students living in Islamic boarding school dormitories, 31 (64.6%) were found to have *P. humanus capitis* at the PPAI An Nahdliyah Islamic Boarding School, Malang Regency.

According to Gumsah and Apriani (2021), the incidence of pediculosis capitis is influenced by personal hygiene and the environment. *Islamic boarding*

schools generally have a dominant environment for the spread of pediculosis capitis. This is because Islamic boarding schools have bedrooms with a high residential density, making it easier to spread pediculosis capitis from one female student to another. Several risk factors for supporting pediculosis capitis in Islamic boarding schools include sharing towels, not washing your hair twice a week, not changing bed sheets once a week, and using shared bedding, combs, and accessories.

Azim and Andrini (2018) explained that pediculosis capitis in Islamic boarding schools is more dominant in girls than boys. This is because girls tend to have longer hair than boys. Women with long hair are easier to serve as reservoirs for the survival and reproduction of *P. humanus capitis*. However, there is no relationship between gender and the incidence of pediculosis capitis, considering that many other factors can potentially cause pediculosis capitis. The research results of Mitriani *et al.* (2017) in boarding students for classes VII, VIII, and IX This is because class VII students still have poor knowledge about preventing pediculosis, the behavior of exchanging headscarves and sleeping equipment between students is not good.

Regarding the relationship between risk factors for pediculosis in students at Islamic boarding schools, Lukman *et al.* (2015)

proved that gender, frequency of washing hair, use of shared combs or hair accessories, use of shared mats or beds, hair length and hair type were correlated with the incidence of pediculosis at the Miftahul Ulum Islamic boarding school, Jember with gender being the biggest risk factor in influencing the incidence of pediculosis capitis. This proves that although pediculosis can attack all genders, women are twice as susceptible to pediculosis capitis infestation compared to men because the majority of women have long, straight, or curly and loose hair, making it more difficult to clean and beneficial for *P. humanus capitis* to grow shelter and metamorphosis. Apart from that, female students more often exchange hair accessories and gather with other students, thus facilitating the transmission of *P. humanus capitis* easily and quickly.

Other evidence was presented by Sari *et al.* (2022), who reported that the use of combs and headscarves together was the risk factor that had the most influence on the incidence of pediculosis in junior high school students aged ≤ 15 years at the Subullussalam Islamic Boarding School, Palembang. Indirectly, using combs together causes eggs and adult tuma from students suffering from pediculosis capitis to stick to the comb and be transferred to other students. The use of the headscarf can

indeed reduce the risk of transmission of pediculosis because it avoids direct contact. However, using the headscarf by students suffering from pediculosis can increase the scalp's moisture, especially when the headscarf is worn when the hair is still wet, thus becoming an optimal habitat for the reproduction of *P. humanus capitis*. If another student wears the headscarf without cleaning it, the tuma attached to it can be transferred to other students. Therefore. After using the hijab, wash it immediately and dry it in the sun so that it can kill *P. humanus capitis*.

Another risk factor that influences pediculosis capitis is shown in research by Rohmaniah and Prajayanti (2022), which states that personal hygiene knowledge and attitudes have a significant correlation with the incidence of pediculosis capitis in female students at the Al-Manshur Popongan Islamic Boarding School, Klaten. Female students with good personal hygiene knowledge and attitudes, such as clean skin, hair, and clothing, tend not to be infected with pediculosis capitis. In contrast, female students with low personal hygiene knowledge and attitudes tend to be more easily infested with pediculosis capitis. As for students with good personal hygiene knowledge but with poor personal hygiene attitudes, such as still having the habit of exchanging personal items with

other female students and not applying personal hygiene knowledge to their personal lives, the prevalence of pediculosis capitis tends to remain high. This attitude is supported by inadequate dormitory facilities between female students with good and poor knowledge of personal hygiene, which remains a risk factor that continues to trigger an increase in pediculosis capitis even though female students of more mature age have good personal hygiene knowledge and attitudes.

Setiyani *et al.* (2021); Nurcahyati and Rangkuti (2020) female students with poor personal hygiene knowledge of 61.9% and 63.6% tend to increase the percentage of pediculosis capitis incidents in Islamic boarding school environments in children aged 5-16 years by 74.5% and 69.8%. The same results were also reported in the research of Pringgayuda *et al.* (2021), who stated that the percentage of personal hygiene knowledge in children aged 12-18 years at the Miftahul Falah Islamic boarding school Banyumas Pringsewu, Lampung caused an increase in the incidence of pediculosis capitis by 67.5%.

A different case occurred in the research of Analdi and Santoso (2021), which reported an infestation of female students at the Anshor Al-Sunnah Islamic Boarding School, Riau, in Classes VIII, IX, and X who had good personal hygiene behavior of

88.2%. In this case, transmission of pediculosis capitis occurs through direct contact between female students, so prevention efforts are no longer carried out. However, effective treatment is needed to break the chain of pediculosis capitis transmission. Treatment and mitigation efforts were demonstrated in the research of Khamaruddin *et al.* (2020) who reported that before treatment and control efforts were carried out, the percentage of cases of pediculosis capitis in 60 students of Al-Hamid Islamic Boarding School, East Jakarta was 69%, but after treatment and control efforts were carried out in the form of a policy of shaving hair, cleaning hair 3x a week, and administering medication for head lice was able to reduce the incidence of pediculus capitis by 33% or a decrease of 36%.

The environmental conditions at the Al-Muhajirin Islamic Boarding School are inadequate, with the number of female students in one bedroom reaching 15 to 25 children. The facilities in the room only have one fan, which causes the female students' rooms to become damp and hot during the day. How mattresses, blankets, and headscarves are placed in a pile and mess, and the habit of female students exchanging headscarves is thought to be the

cause of the high incidence of pediculosis capitis in this study.

The examination for pediculosis capitis in the study was carried out using a single-use comb (disposal comb), which aims to prevent the migration of lice from one child to another, in addition to preventing false positives from occurring in children who are not infected with pediculosis capitis. Pediculosis capitis examination is carried out in a room that has good lighting. The student's hair is first combed to avoid tangles, making it easier to examine *P. humanus capitis*. Female students who have long, tangled hair are combed using a comb with a sparse density so that it does not cause pain when combing. The entire head and hair are examined carefully, especially the temples, nape, and behind the ears. Students are declared positive for *P. humanus capitis* infection if one *P. humanus capitis* egg/nymph/adult is found in the scalp area. The spread of head lice is limited to the skin or hair area of the head, especially at the back of the head and near the ears in children. The results of *P. humanus capitis* found in the head area of the female students at the Al-Muhajirin Islamic boarding school can be seen in the image below.



Figure 4. A. *P. Humanus capitis* adult (female). B. *P. humanus capitis* adult (male).
C. *P. humanus capitis* nymph phase

Figure 4 shows that adult *P. humanus capitis* has short antennae that are long and thin (filiform) with five segments and has three pairs of legs consisting of coxa, femur, tibia, and tarsus. The length of the front, middle, and hind legs is almost the same. The tip of the tarsus is shaped like claws, which grasp the hair shaft.

The difference between male and female *P. humanus capitis* can be seen in the shape of the abdomen, where the abdomen of the male *P. humanus capitis* is slimmer with a rounded tip of the abdomen. In comparison, the abdomen of the female *P. humanus capitis* is larger, with the tip forming the shape of the letter V.

The male *P. humanus capitis* has his genitals. Namely, the aedagus (penis), while the female *P. humanus capitis* has a terminal portion called the gonopod and uterine gland which functions to secrete a cement fluid like glue (called nit) which functions to place the eggs in the hair so that they do not come off easily.

According to Wijaya *et al.* (2016), adult pediculus has a size of 1-3 mm. The size of the nymph is smaller than the adult pedicle. The difference is visible in the size of the abdomen due to the increase in abdominal

segments. Pediculus is incapable of flying because it does not have wings, but its movement is fast, up to 23 cm/minute.

The advantage of this research is that the selection of Islamic boarding schools as endemic locations and female students as sample objects for pediculosis capitis examinations is precisely able to provide information about the incidence of pediculosis capitis in Bekasi Islamic boarding schools. The limitations of this study are that the number of Islamic boarding school locations does not cover a large area, the use of a cross-sectional design, and an analysis of the risk factors that cause pediculosis in the research locations has not been carried out.

Conclusion

The conclusion from this study is that the percentage of pediculosis capitis in female students is high, so it is necessary to take countermeasures in the form of head lice medication and education about personal hygiene for class 7 female students at Al-Muhajirin Islamic Boarding School, Central Cikarang, West Java.

References

- Adham, D., Moradi-Asl, E., Abazari, M., Saghafipour, A., & Alizadeh, P. (2020). Forecasting head lice (Pediculidae: *Pediculus humanus capitis*) infestation incidence hotspots based on spatial correlation analysis in Northwest Iran. *Veterinary World*, *13*(1), 40–46. <https://doi.org/10.14202/vetworld.2020.40-46>
- Analdi, V., & Santoso, I. D. (2021). Gambaran perilaku kebersihan diri terkait infestasi kutu kepala (*Pediculus humanus capitis*) pada santriwati di Pondok Pesantren Anshor Al-Sunnah Riau. *Tarumanagara Medical Journal*, *3*(1), 175–181. <https://doi.org/10.1016/j.fander.2021.04.004>
- Ary, W. B., Natalia, D., & Fitriangga, A. (2019). Gambaran dan Hubungan Karakteristik Individu dan Frekuensi Cuci Rambut dengan Kejadian *Pediculosis capitis*. *Jurnal Cerebellum*, *5*(2), 1296–1306. <https://jurnal.untan.ac.id/index.php/jfk/article/view/32926>
- Azim, F., & Andrini, N. (2018). Perbandingan Angka Kejadian Pedikulosis Kapitis antara Anak Laki-Laki dengan Anak Perempuan di Pondok Pesantren Al-Kautsar Al-Akbar Medan. *Ibnu Sina Biomedika*, *1*(1), 72–79. <http://www.tjyybjb.ac.cn/CN/article/downloadArticleFile.do?attachType=PDF&id=9987>
- Gumsah, A. S., & Apriani. (2021). Pedikulosis Pada Anak Di Wilayah Desa Babakan Asem Kecamatan Teluknaga. *Jurnal Sehat Indonesia (JUSINDO)*, *3*(02), 74–83. <https://doi.org/Doi :10.36418/jsi.v3i2.3074>
- Hapsari, R. R. (2021). *Pediculosis Capitis* in Female Students' Life At Pondok Pesantren PPAI An-Nahdliyah Kabupaten Malang. *Media Gizi Kemas*, *10*(1), 24. <https://doi.org/10.20473/mgk.v10i1.2021.24-31>
- Kartashova, O. V, Lobuteva, L. A., Zakharova, O. V, Lobuteva, A. V, & Goykhman, A. A. (2019). Medical and Social Factors of *Pediculosis*. *Journal of Medical Sciences*, *7*(19), 3240–3244. <https://doi.org/https://doi.org/10.3889/oamjms>
- Khamaruddin, S., Daulay, W., Sukanti, S., & Suparni. (2020). Effect of Education on Behavior About Head Lice on Students In East Jakarta. *Asian Journal of Applied Sciences*, *8*(2), 105–109. <https://doi.org/10.24203/ajas.v8i2.6101>
- Lukman, N., Armiyanti, Y., & Agustina, D. (2015). *Hubungan Faktor-Faktor Risiko Pediculosis Capitis Terhadap Kejadiannya Pada Santri di Pondok*

- Pesantren Miftahul Ulum Kabupaten Jember.* 27.
<http://repository.unej.ac.id/bitstream/handle/123456789/65672/AinulLatifah101810401034.pdf?sequence=1>
- Massie, M. A., Wahongan, G. J. P., & Pijoh, V. (2020). Prevalensi Infestasi *Pediculus humanus capitis* pada Anak Sekolah Dasar di Kecamatan Langowan Timur. *Jurnal Biomedik*, 12(1), 24–30. <https://doi.org/https://doi.org/10.35790/jbm.12.1.2020.26934>
- Mitriani, S., Rizona, F., & Ridwan, M. (2017). Hubungan Pengetahuan dan Sikap Tentang *Pediculosis Capitis* Dengan Perilaku Pencegahan *Pediculosis Capitis* pada Santri Asrama Pondok Pesantren Darussalam Muara Bungo. *Jurnal Keperawatan Sriwijaya*, 4(2), 26–36.
- Nurchayati, F. I., & Rangkuti, A. F. (2020). Analisis Tingkat Pengetahuan dan Personal Hygiene Dengan Kejadian *Pediculosis Capitis* di Pesantren Binaul Ummah Kabupaten Bantul. *Dunia Keperawatan: Jurnal Keperawatan Dan Kesehatan*, 8(3), 479. <https://doi.org/10.20527/dk.v8i3.8088>
- Nurdiani, U. C. (2020). Faktor-Faktor Yang Mempengaruhi *Pediculosis Capitis* Pada Anak-Anak Umur 6-12 tahun Di Pondok Pesantren Sirojan Mustaqim Dan Penduduk RW 03 Kelurahan Pondok Ranggon Kecamatan Cipayung Jakarta Timur. *Jurnal Ilmiah Analis Kesehatan*, 6(1), 39–48. <https://doi.org/http://journal.thamrin.ac.id/index.php/anakes/issue/view/3539>
- Octavia, N. S., Wiryosoendjojo, K., & Nugroho, R. B. (2020). Hubungan Personal Hygiene Terhadap Kejadian *Pediculosis capitis* pada Santriwati Pondok Pesantren. *Prosiding Setiabudi-CIHAMS*, 15(4), 225–231. <https://cihams.setiabudi.ac.id/index.php/proceeding>
- Pringgayuda, F., Putri, G. A., & Yulianto, A. (2021). Personal Hygiene Yang Buruk Meningkatkan Kejadian *Pediculosis Capitis* Pada Santri Santriwati Di Pondok Pesantren. *Jurnal Keperawatan Muhammadiyah*, 6(1), 54–59. <https://doi.org/10.30651/jkm.v6i1.7235>
- Rohmaniah, S., & Prajayanti, D. E. (2022). Hubungan Pengetahuan dan Sikap Tentang Personal Hygiene pada Santriwati dengan Kejadian *Pediculosis Capitis* di Pondok Pesantren Al-Manshur Popongan. *SEHATMAS: Jurnal Ilmiah Kesehatan Masyarakat*, 1(4), 561–568. <https://doi.org/10.55123/sehmatmas.v1i4.915>
- Sari, R. P., Handayani, D., Prasasty, G. D., Anwar, C., & Fatmawati. (2022). Hubungan Penggunaan Barang Bersama

dengan Pedikulosis Kapitis pada Santri di Pondok Pesantren Subulussalam Palembang. *Journal of Agromedicine and Medical Sciences*, 8(2), 78–84.

Setiyani, E., Mulyowati, T., & Binugraheni, R. (2021). Hubungan Personal Higiene Dengan Kejadian Pediculosis Capitis Pada Santriwati Di Pondok Pesantren Rohmatul Qur ' an Mejobo Kudus.

Jurnal Labora Medika, 5, 35–38.

Setyoasih, A., & Suryani, D. (2006). Hubungan Antara Pengetahuan, Personal Hygiene, dan Infestasi *Pediculus humanus var. capitis* Pada Santriwati Muhammadiyah Boarding School Prambanan Sleman Yogyakarta. *Jurnal Kedokteran Dan Kesehatan*