Vol. 37 / No. 01 / April 2025
Sinta 2 (Decree No: 200/M/KPT/2020)
Online ISSN : 2549-4082 ; Print ISSN : 1978-4279
Available online at https://e-journal.unair.ac.id/BIKK

Berkala Ilmu Kesehatan Kulit dan Kelamin

Original Article
Periodical of Dermatology and Venereology

The Relationship between Clean and Healthy Living Behavior and the Incidence of Pityriasis Versicolor in Ambon City Orphanages

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ABSTRACT
Background: Pityriasis versicolor is a cosmopolitan fungal infection in tropical areas. The prevalence is 50%, and it ranks second among Indonesia's most common skin diseases. Pityriasis versicolor was one of the ten worst skin diseases in Maluku Province. It was caused by environmental, behavioral, and public awareness issues, like people who don't follow clean and healthy living habits (CHLB). **Purpose:** This study aims to determine the relationship between clean and healthy living behaviors and pityriasis versicolor incidence in Ambon City orphanage children in 2024. **Methods:** This study is conducted by using quantitative research with observational analytical studies through a *cross-sectional* approach. The sample was taken using total sampling criteria, where population members who met the criteria would be used as a sample. Subsequently, sample of 32 respondents was obtained in this study (84%). **Result:** The analysis showed that the CHLB level was poor in 22 people (57.9%), and the proportion of pityriasis versicolor incidence was 32 (84.2%). Bivariate analysis showed the significance of the relationship between CHLB and the incidence of pityriasis versicolor with *p-value* = 0.003**. Conclusion:** It can be concluded that there is a significant relationship between clean and healthy living behavior and the incidence of pityriasis versicolor in orphanage children in Ambon City. Therefore, it is important to raise awareness about clean and healthy living practices to reduce the incidence of pityriasis versicolor.

Keywords*:* pityriasis versicolor, healthy living behavior, orphanage.

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| Article info |
Submited: 18-10-2024, Accepted: 08-01-2025, Published: 31-13-2025

BACKGROUND

Pityriasis versicolor is a superficial mycosis disease characterized by changes in skin pigmentation due to thickening of the stratum corneum. It is caused by dimorphic lipophilic mycosis from normal skin flora, specifically, *Malassezia furfur*.[1] Pityriasis versicolor is cosmopolitan in nature, especially in tropical areas with hot and humid climates, making it easier for fungi to grow, such as Indonesia, with a prevalence of 50%, and ranked second as the most common skin diseases in Indonesia.[2] Based on data from the Maluku Provincial Health Office, skin diseases are among Maluku's ten biggest health problems.[3]

Research on pityriasis versicolor cases revealed that 17.8% of cases occurred on the skin of children aged 0-15. Other studies' results also described that 23.3% of 107 children were contaminated with pityriasis versicular at 0-18 months, while 26.7% of cases are at the age of 11-5 years.[1] Pityriasis versicolor is often found in people below the poverty standard and with habits supported by the tropical climate, high humidity levels, hyperhidrosis, and residential density.[4] This shows how important the implementation of clean and healthy living behaviors (CHLB) is.[5]

DOI : 10.20473/bikk.V37.1.2025.53-58

The Ministry of Health of the Republic of Indonesia defines CHLB as a behavior rooted in an individual's awareness aimed at fostering a clean and healthy lifestyle for both personal well-being and environmental health, thereby contributing to the health sector. This initiative seeks to enhance the quality of CHLB in daily life to address health problems.[6] Therefore, attention to CHLB is important in preventing and minimizing the incidence of skin diseases, in this case, the focus is on the pityriasis versicolor.

Considering the risk factors for pityriasis versicolor, orphanages represent a particularly vulnerable setting due to the high population density and the lack of attention to CHLB, which elevates the risk of this disease occurring. In accordance with the goal of the orphanage, which is to improve the welfare of children from neglect, awareness related to CHLB in the orphanage environment is needed.[6,7]

Sudiadnyani's previous study on the link between bedroom humidity and personal hygiene and pityriasis versicolor found that 54 of the 76 people who answered the survey had Pityriasis Versicolor (71.1%). The data was tested statistically with chi-square, and the relationship between the humidity of the bedroom and the incidence rate of pityriasis versicolor was found to be significant with p=0.004 (p<0.05). This shows that the causes of the increased risk of pityriasis are rarely changing clothes, piling up towels in a damp state, and seldom changing sheets.[8] Based on the above problems, this study was conducted to determine the relationship between clean and healthy living behavior and pityriasis versicolor incidence in Ambon City orphanages.

METHODS

This study uses quantitative observational methods and analytical surveys with *a cross-sectional* approach. Three orphanages in Ambon City, Maluku Province, namely Maria Mediatrix Orphanage, Caleb House Orphanage, and YAPI Mutiara Orphanage, hosted the study in May 2024.

The study population comprises children aged 5–15 who fulfill the research criteria and reside in one of the orphanages located in each sub-district of Ambon City, namely the one with the highest child enrollment. Ambon City comprises five sub-districts, of which three host orphanages: Sirimau District, home to the largest population of children at Caleb House orphanage; Teluk Ambon District, which accommodates the most children at YAPI Mutiara orphanage; and Nusaniwe District, housing the highest number of children at Maria Mediatrix orphanage. This study used total sampling based on certain criteria, including all population members who satisfy the research requirements, resulting in a sample of 38 youngsters.

The data used in this study came from primary data collected from respondents after getting an explanation about the research and signing *informed consent*; then respondents filled out a CHLB questionnaire. If the respondent answers correctly with a score of 6, the CHLB is considered good. After that, the respondent was given a medical history and a skin exam to see if they had any of the symptoms of pityriasis versicolor, such as itchy patches on their skin. An experiment was done in a dark room using a Wood lamp and showed a positive result in the form of a golden yellow fluorescence image. Next, an experiment was performed by sampling infected skin scraping material and placing it on a flat glass slide. The slide was then dripped with a 10% KOH solution and looked at under a microscope that showed a positive result. Spore colonies and short hyphae were seen.

Data from respondents was processed manually using MS Excel software before being processed using the SPSS (*Statistical Package for Social Science*) software program with *the Fisher exact test*. This study employs bivariate data analysis to investigate the relationship between the dependent variable, the number of children in orphanages with Pityriasis Versicolor, and the independent variable, CHLB practice. The link is considered significant when p<0.05. The Ethics Commission of Fakultas Kedokteran Universitas Pattimura issued the research ethics recommendations provided with the letter NO.025/FK-KOM. ETIK/VIII/2024.

RESULT

Table 1 shows the description of CHLB from all research subjects divided into two categories: positive and negative. Based on the results, the CHLB of the research subjects from 38 people was obtained; 16 (42.1%) were declared positive, and 22 (57.9%) were negative. Based on the proportion of the examination results, it is known that each orphanage has a poor CHLB rate of 12 out of 19 people in the Maria Mediatrix orphanage, 5 out of 7 people in the Caleb House orphanage, and 5 out of 12 people in the YAPI Mutiara orphanage.

Table 2 presents the results of three assessments: the dermatological examination of the research subjects, the examination using a Wood lamp, and the

skin scraping analysis with 10% KOH. For pityriasis versicolor, 32 of 38 individuals (84.2%) exhibited positive results, whereas 6 individuals (15.8%) showed negative results. Based on the proportion of the results of the examination, it is known that each orphanage has a positive rate of pityriasis versicolor, as many as 16 out of 19 people in the Maria Mediatrix orphanage, 5 out of 12 people in the Caleb House orphanage, and 11 out of 12 people in the YAPI Mutiara orphanage.

Table 1. Incidence of pityriasis versicolor in orphanages in Ambon city

Pityriasis versicolor	Maria Mediatrix	Caleb House	YAPI Mutiara	Total PV N(%)
Positive	16	5	11	32(84.2%)
Negative	3	2	1	6 (15.8%)

*PV= Pityriasis Versicolor
*CHLB = Clean and Healthy Living Behavior

Table 2. CHLB results for orphanages in Ambon city

CHLB	Maria Mediatrix	Caleb House	YAPI Mutiara	Total CHLB N(%)
Positive	7	2	7	16 (42.1%)
Negative	12	5	5	22 (57.9%)

*PV= Pityriasis Versicolor
*CHLB = Clean and Healthy Living Behavior

Table 3. Effect of CHLB on the incidence of Pityriasis Versicolor in orphanage children

VARIABLE		PV incidence rate		P value
		Positive	Negative	
CHLB	Good	10	6	0.003
	Bad	22	0	
Total		32	6	

*PV= Pityriasis Versicolor
*CHLB = Clean and Healthy Living Behavior

Table 3 indicates that the results of the Fisher test analysis yield a significance value of p=0.003. Thus, the incidence of pityriasis versicolor in children residing in orphanages in Ambon City is statistically significantly correlated with the practice of CHLB.

DISCUSSION

Based on the results of a study conducted atan orphanage in Ambon City, 22 out of 38 respondents (57.9%) were found to have poor clean and healthy living behavior (CHLB). This is due to the low number of driving factors that affect the sustainability of CHLB such as predisposition, enabling, and reinforcing factors. This is in line with a study conducted by Putri[9] in 2017, which stated that CHLB action on children in Al-Akbar orphanage In Pekanbaru had as many as 20 respondents (76.9%) with a low level of CHLB action.

Age and level of knowledge are important components of predisposition factors. Based on previous research conducted by Tucunan[10] in 2020, one of the factors that also affects the implementation of CHLB is age and knowledge. In this case, respondents in orphanages in Ambon City aged 5-15 years are at the elementary to junior high school education levels who still do not have stable rational maturity so that they do not have their own understanding of the importance of maintaining health and behaving cleanly and healthily, as well as a lack of knowledge related to CHLB, which causes the individual to experience difficulties in responding to problems related to CHLB. This is in line with the research of Salmon *et al.*[11] in 2019, which stated that knowledge has a significant role in influencing CHLB practice, because adequate knowledge can improve the quality of CHLB. The exact same result also included in the study of Salsabila *et al.* in 2019.[12]

Facilities and tools are enabling factors that play a role in the implementation of CHLB because a thorough understanding of the importance of CHLB will be in line with the availability of adequate facilities and tools. This is often the cause of bad CHLB in an environment such as what happened to orphanage children in Ambon City. Limited facilities and tools, such as an inadequate number of clothes and clean towels, causing children to use one outfit for a day and often sharing towels between them. This kind of behavior can cause low CHLB implementation due to limitations in facilities and tools, even though they have a good level of knowledge about CHLB. This is supported by the results of a study by Defi in 2022, which stated that the children of the Griya Bahtera Kasih orphanage have poor CHLB problems, especially in the use of clothes and towels.[13]

Health workers and community leaders play a crucial role in the implementation of CHLB, serving as reinforcing factors that drive effective execution.

Their involvement is essential for enhancing the quality of CHLB initiatives. This is in agreement with the results of a study conducted by Candra *et al.*[14] in 2023, which explained that there was a relationship between officer support and CHLB in the work area of the Tanjung Agung Health Center, West Baturaja District, Oku Regency, in 2022. Health workers are required to provide examples and information to all levels of society regarding the significance of implementing CHLB. However, this is inversely proportional to the reality in the field, demonstrating the lack of intervention by health workers in the community, particularly for those residing in orphanages. The importance of CHLB is exacerbated by the absence of socialization, which leads to a lack of knowledge and a low level of implementation of CHLB in orphanages in Ambon City.

Based on the results of a study conducted at an orphanage in Ambon City, out of 38 respondents, 32 people (84.2%) were found to be positive for pityriasis versicolor. This can occur due to the increase in sebum production and physical activity that children often engage in during their adolescence, such as playing soccer together or engaging in other physical activities. Additionally, hot air temperatures can cause high humidity levels, leading to habits such as taking a daily shower, wearing one outfit per day, and frequently sharing towels with friends in humid conditions. It causes a high moisture level on the skin and can be a suitable place for mold to grow. This is in line with the theory put forward by Menaldi *et al.*[13,15] in their 2013 book Superficial Dermatomycosis. It was stated that when the *Malassezia furfur* in the patient's body is activated, it is changed from a normal flora to a pathogenic condition that leads to a high infection of pityriasis versicolor. *Malasezia furfur* can increase when the production of sebaceous glands and sweat increases, so the role of skin temperature and humidity is a factor that also affects fungal growth. The imbalance between the host and the normal flora causes changes in the normal flora that change *Malassezia furfur* from a yeast form to a mycelium, so it has a more pathogenic nature.

Poor personal hygiene can contribute to an individual's susceptibility to skin diseases caused by the nature of the fungus that causes pityriasis versicolor. *Malassezia* produces virulence factors and toxins against the skin, which are important factors in the course of the disease.[16] There can be massive growth of lipophilic organisms or lipid-dependent yeast--like fungus *Malassezia*,[16] and the influence of increased sebum secretion by the sebaceous glands causes the stratum corneum to alter its consistency in wet conditions, and the nature of poor personal hygiene and moisture is a good place for fungi and other organisms to live and grow until they eventually cause skin diseases, in this case, pityriasis versicolor infection.[17]

The results of this study indicated that children in orphanages with a low level of knowledge about Clean and Healthy Living Behaviors (CHLB) also tested positive for pityriasis versicolor infection. This proves that there is a relationship between CHLB and the incidence of pityriasis versicolor, which shows that CHLB in respondents affects the occurrence of pityriasis versicolor. Additionally, this is in line with studies conducted by Yusanda[18] in 2020 at the Puteri Aisyiyah orphanage in Medan City and by Nazaria[19] in Mempawah Hilir, which found a significant relationship (p-value=0.0001) between CHLB and the incidence of pityriasis versicolor.

These results align with the findings from Rukaiyah's 2020 on factors affecting CHLB.[20] It is known that these factors are closely related to the level of personal hygiene and the environment which, if not paid attention to, will be one of the risk factors for the occurrence of viral pityriasis, such as the limitations of facilities and tools so that individuals normalize these limitations in a way that taking a bath once a day, using one underwear a day, often sharing towels with friends, and supported by increased sebum production and physical activities that are often carried out by fairly active orphanage children, such as playing soccer together or other physical activities, as well as hot air temperatures causing high level of skin humidity and can be a suitable place as a place for mold to grow. This is supported by the theory put forward by Menaldi *et al* starting that pityriasis versicolor infection occurs due to the transformation *of Malassezia furfur* into a pathogen that is affected by increased sebum production and sweat due to skin temperature and humidity, which promotes the growth of *Malassezia furfur*, it is proved by the study of Tilaye *et al* (2023), and a study by Shatri *et al* (2022) stated that respondents who sweat excessively more tend to be diagnosed with pityriasis versicolor. The 2017 study by Yahya et al. also supports this result.[13,21,22]

Disruption of normal flora balance in individuals increases the pathogenicity *of Malassezia furfur*, which causes changes in the stratum corneum, especially in humid conditions, making individuals with high humidity susceptible to infection with

pityriasis versicolor. In summary, there is a significant relationship between CHLB and the incidence of pityriasis versicolor in orphanage children in Ambon City, with a p-value=0.003. The limitation of this study is that many orphanages did not comply with regulations, making them unsuitable for use as samples in the research.

This study shows a significant relationship between CHLB and the incidence of pityriasis versicolor in children in Ambon City orphanages, indicating the need for special attention from local health centers and related healthcare workers. They should emphasize health promotion, particularly through education on clean and healthy living practices, in facilities with a high risk of disease transmission, such as orphanages, boarding schools, dormitory-based schools, and public housing, to raise awareness about the importance of CHLB.

REFERENCES

1. Dewi PRV, Made ML, IGAA P. Prevalensi pitiriasis versikolor pada murid kelas IX di SMPN 4 Denpasar Tahun 2017. J Med udayana. 2020;9(1):75–81.
2. Tan Tansil RG. Uji provokasi skuama pada pitiriasis versikolor. Cermin Dunia Kedokteran -229/ vol 42 no 6, th 2015. 2015;42(6):471–4.
3. Dinkes Prov Maluku. Sepuluh penyakit terbesar di Maluku tahun 2018, 2019, 2020. Dinas Kesehatan Provinsi Maluku. 2021.
4. Tran Cam V, Van TN, Hau KT, Huu D Le, Thi Minh PP, Huu SN, et al. Distribution of Malassezia species from scales of patient with pityriasis versicolor by culture in Vietnam. Open Access Maced J Med Sci. 2019;7(2):184–6.
5. Natalia D, Rahmayanti S, Nazaria R, Parasitologi D. Hubungan antara pengetahuan mengenai pityriasis versicolor dan PHBS dengan kejadian pityriasis versicolor pada santri madrasah tsanawiyah pondok pesantren X Kecamatan Mempawah Hilir. J CDK-260. 2018;45(1):7–11.
6. Kementrian kesehatan RI. Peraturan menteri kesehatan republik Indonesia. Peratur Menteri Kesehat No 2269 TAHUN 2011 tentang pedoman perilaku hidup bersih dan sehat. 2011;7–32.
7. Sudiadnyani NP. Hubungan kelembaban ruangan kamar tidur dan kebersihan diri terhadap penyakit pityriasis versicolor di Pesantren Al-Hijrotul Munawwaroh Bandar Lampung. J Med Malahayati. 2016;3(2):88–94.
8. Yulyani V, Aryastuti N, Nuryani DD, Sary L. Perilaku hidup bersih dan sehat di panti asuhan al-husna bandar lampung : pengabdian masyarakat kerjasama dengan university putera Malaysia. J Kreat Pengabdi Kpd Masy. 2019;2(1):95–100.
9. Putri MA. Perilaku hidup bersih dan sehat (PHBS) anak di panti asuhan Al-Akbar Pekanbaru. JOM FISIP. 2017;4(2):1–14.
10. Tucunan A. Hubungan Antara Faktor Predisposing, Enabling Dan Reinforcing Dengan Perilaku Hidup Bersih Dan Sehat Tatanan Rumah Tangga Di Kecamatan Siau Tengah Kabupaten Sitaro Provinsi Sulawesi Utara. Kesmas. 2018;7(1):62–8.
11. Salmon Y. ., Rumayar A. ., Tucunan A. A. Hubungan antara pengetahuan dan sikap dengan perilaku hidup bersih dan sehat (PHBS) Tatanan Rumah Tangga Di kelurahan kima atas Kota Manado. Kesmas. 2019;8(6):455–64.
12. Salsabila SC, Seta DM, Bagaskara A, Peristiowati Y. Profil Pityriasis Versicolor di Poliklinik Kulit dan Kelamin RSUD Haji Provinsi Jawa Timur Tahun 2019-2021. J Community Engagem Heal. 2023;6(1):35–42.
13. Defi RS. Pengaruh edukasi terhadap peningkatan pengetahuan dan pemahaman mengenai kebersihan diri (personal hygiene) di panti asuhan Griya Bahtera Kasih Semarang. J Pranata Biomedika. 2022;1(2):95–109.
14. Candra E, Suryani L, Suryanti D. Analisis perilaku hidup bersih dan sehat tatanan rumah tangga di wilayah kerja Puskesmas Tanjung. J Kesehat Saelmakers PERDANA. 2023;6(1):172–8.
15. Djuanda A D. Penyakit kulit. In: Menaldi SL, Bramono K, Indriatmi W, editors. Ilmu penyakit kulit dan kelamin. 7th ed. Fakultas Kedokteran Universitas Indonesia; 2016. p. 103–5.
16. Łabędź N, Navarrete-Dechent C, Kubisiak-Rzepczyk H, Bowszyc-Dmochowska M, Pogorzelska-Antkowiak A, Pietkiewicz P. Pityriasis Versicolor—A Narrative Review on the Diagnosis and Management. Life. 2023;13(10).
17. Tumilaar J, Suling PL, Niode NJ. Hubungan Higiene Personal terhadap Kejadian Pitiriasis Versikolor pada Mahasiswa Laki-laki Fakultas

Kedokteran Unsrat. e-CliniC. 2019;7(1):40–5.
18. Putri TY, Hervina. Hubungan personal hygiene terhadap kejadian pityriasis versicolor di panti asuhan Puteri Aisyiyah Kota Medan. J Ilm KOHESI. 2020;4(4):97–101.
19. Nazaria R, Natalia D, Rahmayanti S. Hubungan Pengetahuan mengenai Pityriasis Versicolor dan PHBS dan Kejadian Pityriasis Versicolor pada Santri Madrasah Tsanawiyah di Pondok Pesantren. J Cerebellum. 2017;3(4):7–12.
20. Sri Rukaiyah. Faktor-faktor yang mempengaruhi perilaku hidup bersih dan sehat di tatanan rumah tangga Kabupaten Muaro Jambi. J Inov Penelit. 2022;2(8.5.2017):2893–7.
21. Tilaye M, Sinknew A, Mekuriaw A, Tsehay AK. Magnitude and associated factors of Pityriasis Versicolor among patients attending Dermatovenereology Outpatient Department at the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia. J Curr Heal Sci. 2023;3(1):31–8.
22. Kshatri JS, Satpathy P, Sharma S, Bhoi T, Mishra SP, Sahoo SS. Health research in the state of Odisha, India: A decadal bibliometric analysis (2011-2020). J Fam Med Prim Care. 2022;6(2):169–70.