



## Association Between Personal Hygiene Practices and Scabies-Like Symptoms Among Students Living in a Sports School Dormitory in Kupang, Indonesia: A Cross-Sectional Study

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### ABSTRACT

**Background:** Scabies is a contagious skin disease with a high prevalence in communal living environments such as dormitories. Although personal hygiene is commonly regarded as a key preventive factor, growing evidence suggests that environmental conditions, crowding, and close physical contact may play a more substantial role in scabies transmission. Students living in sports school dormitories represent a population at increased risk due to shared facilities and intensive daily interactions.

**Objective:** To determine the association between personal hygiene practices and scabies-like symptoms among students residing in the dormitory of a Sports Talent School in Kupang City, Indonesia.

**Methods:** This analytical observational study employed a cross-sectional design. A total of 59 students aged 14–17 years were selected using simple random sampling. Personal hygiene was assessed using a structured questionnaire, while scabies-like symptoms were identified based on three clinical cardinal signs: nocturnal pruritus, history of close contact with an affected individual, and the presence of lesions at predilection sites. Microscopic confirmation was not performed. Data were analyzed using the Chi-square test with a significance level of  $p < 0.05$ .

**Results:** Most respondents demonstrated good personal hygiene practices (80.8%). Scabies-like symptoms were identified in 25.4% of participants. Statistical analysis showed no significant association between personal hygiene status and scabies-like symptoms ( $p = 0.282$ ). Descriptively, the proportion of scabies-like symptoms was higher among students with poor personal hygiene (41.7%) compared to those with good hygiene (21.3%); however, this difference was not statistically significant.

**Conclusion:** No significant association was found between personal hygiene practices and scabies-like symptoms among students living in the Sports Talent School dormitory in Kupang City. These findings suggest that factors beyond individual hygiene, such as dormitory crowding, shared facilities, and close interpersonal contact, may play a more prominent role in scabies transmission in communal living settings.

**KEYWORDS:** Scabies, personal hygiene, dormitory, adolescents, cross-sectional study

### INTRODUCTION

Scabies is a highly contagious ectoparasitic skin disease caused by *Sarcoptes scabiei* var. *hominis* and remains a significant public health problem worldwide. The World Health Organization recognizes scabies as a neglected tropical disease, with an estimated hundreds of millions of people affected at any given time, particularly in tropical and subtropical regions with limited resources<sup>1</sup>. The burden of scabies extends beyond cutaneous manifestations, contributing to sleep disturbance, reduced quality of life, social stigma, and secondary bacterial infections that may lead to severe complications such as post-streptococcal glomerulonephritis and rheumatic heart disease<sup>2</sup>.



Scabies transmission occurs primarily through prolonged skin-to-skin contact and is facilitated in settings characterized by crowding and frequent close interaction. Consequently, communal living environments—such as dormitories, boarding schools, correctional facilities, and refugee shelters—represent high-risk settings for sustained transmission<sup>3</sup>. Adolescents living in school dormitories are particularly vulnerable due to shared sleeping arrangements, common use of personal items, and limited control over environmental hygiene standards<sup>4</sup>.

Personal hygiene has traditionally been emphasized as an important preventive measure against scabies transmission. Practices such as regular bathing, proper laundering of clothes and bedding, and avoidance of sharing personal items are commonly recommended as part of control strategies<sup>5</sup>. However, recent evidence suggests that the role of personal hygiene alone may be limited, especially in overcrowded environments where repeated exposure and close physical contact persist regardless of individual hygiene behavior<sup>6</sup>. Several epidemiological studies have demonstrated inconsistent associations between personal hygiene practices and scabies occurrence, highlighting the potential dominance of structural and environmental determinants over individual behavior<sup>7</sup>.

In Indonesia, scabies remains one of the most frequently encountered infectious skin diseases in primary healthcare settings, particularly among children and adolescents living in communal environments<sup>8</sup>. Despite multiple studies conducted in boarding schools and religious dormitories, data focusing on sports-based school dormitories are scarce. Students in sports talent schools typically experience intensive daily physical interaction, shared facilities, and prolonged dormitory residence, creating a unique epidemiological context that warrants focused investigation.

Understanding whether personal hygiene practices are independently associated with scabies-like symptoms in this population is essential for designing effective prevention strategies. If individual hygiene is not a dominant determinant, institutional interventions addressing crowding, environmental sanitation, and dormitory management may be more impactful. Therefore, this study aimed to assess the association between personal hygiene practices and scabies-like symptoms among students residing in a Sports Talent School dormitory in Kupang City, Indonesia.

## METHODS

This study employed an analytical observational design with a cross-sectional approach. The research was conducted in the dormitory of a Sports Talent School (Sekolah Keberbakatan Olahraga, SKO) in Kupang City, East Nusa Tenggara, Indonesia, in July 2025.

The study population consisted of students residing in the dormitory during the study period. Participants aged 14–17 years who actively lived in the dormitory and agreed to participate were included. Students who were absent during data collection, had incomplete data, or had a history of other severe dermatological conditions that could interfere with clinical assessment were excluded. A total of 59 students were selected using simple random sampling.

Personal hygiene was assessed using a structured questionnaire covering daily hygiene practices, including bathing habits, hand and nail hygiene, clothing cleanliness, use of personal items, and bedding hygiene. Each correct response was scored as one point, and incorrect responses were scored as zero. Personal hygiene was categorized as good when more than 50% of the total score was achieved and poor when 50% or less was achieved.

Scabies-like symptoms were identified based on clinical assessment using three cardinal signs: nocturnal pruritus, a history of close contact with individuals experiencing similar symptoms, and the presence of skin lesions at predilection sites. Microscopic examination for *Sarcoptes scabiei* was not performed. Participants were classified as having scabies-like symptoms when at least two of the three cardinal signs were present.

Data collection was carried out through face-to-face interviews using the questionnaire, followed by direct skin examination. Data were analyzed descriptively and analytically. Univariate analysis was used to describe respondent characteristics and variable distributions, while bivariate analysis was conducted using the Chi-square test to assess the association between personal hygiene and scabies-like symptoms. A p-value of less than 0.05 was considered statistically significant.



Ethical clearance was obtained from the Ethics Committee of the Faculty of Medicine and Veterinary Medicine, Universitas Nusa Cendana. The study was declared ethically eligible (ethical exemption) with approval number LB.02.03/1/0346/2025, valid from 10 July 2025 to 10 October 2025. Written informed consent was obtained from all participants prior to data collection, and confidentiality of participant information was strictly maintained.

## RESULTS

A total of 59 students residing in the Sports Talent School dormitory were included in the final analysis. Most respondents were male (64.4%), and the largest age group was 15 years (45.8%). Participants originated from various districts in East Nusa Tenggara, with Kupang City representing the most common place of origin (23.7%). Skin lesions compatible with scabies-like symptoms were most frequently observed on the extremities.

**Table 1. Characteristics of Respondents (n = 59)**

Characteristic	Frequency	Percentage (%)
<b>Sex</b>		
Male	38	64.4
Female	21	35.6
<b>Age (years)</b>		
14	13	22.0
15	27	45.8
16	13	22.0
17	6	10.2
<b>Origin</b>		
Kupang City	14	23.7
Kupang District	9	15.3
Sabu	13	22.0
Lembata	7	11.9
Sikka	6	10.2
East Flores	5	8.5
Ngada	5	8.5
<b>Lesion Location</b>		
Extremities	10	16.9
Other body areas	5	8.5
No lesion	44	74.6

Scabies-like symptoms were identified in 25.4% of respondents. Most participants demonstrated good personal hygiene practices (80.8%), while 19.2% were categorized as having poor personal hygiene.

Bivariate analysis using the Chi-square test showed no statistically significant association between personal hygiene and scabies-like symptoms ( $p = 0.282$ ). Descriptively, the proportion of scabies-like symptoms was higher among students with poor personal hygiene (41.7%) compared to those with good personal hygiene (21.3%); however, this difference did not reach statistical significance.

**Table 2. Association Between Personal Hygiene and Scabies-Like Symptoms**

Personal Hygiene	Scabies-Like Symptoms (+) n (%)	Scabies-Like Symptoms (-) n (%)	Total	<i>p</i> -value
Good	10 (21.3)	37 (78.7)	47	
Poor	5 (41.7)	7 (58.3)	12	<b>0.282</b>
<b>Total</b>	<b>15 (25.4)</b>	<b>44 (74.6)</b>	<b>59</b>	

**DISCUSSION**

This cross-sectional study found no statistically significant association between personal hygiene practices and scabies-like symptoms among students residing in a sports school dormitory ( $p = 0.282$ ). Although the proportion of scabies-like symptoms was descriptively higher among students with poor personal hygiene, this finding indicates that, within a communal dormitory environment, scabies transmission may be more strongly influenced by factors beyond individual hygiene behavior.

Scabies is predominantly transmitted through prolonged skin-to-skin contact and is strongly facilitated by overcrowded living conditions, rendering communal environments such as dormitories particularly susceptible to sustained transmission.<sup>1-3</sup> In such settings, frequent close contact, shared sleeping arrangements, and communal facilities can maintain transmission even when individual hygiene practices are generally adequate. This transmission pattern provides a biologically plausible explanation for the absence of a statistically significant protective effect of personal hygiene observed in the present study.

Previous epidemiological studies conducted in institutional and residential settings have consistently demonstrated the dominant role of environmental and contact-related factors in scabies transmission.<sup>7,8</sup> These studies emphasize that crowding, sharing of bedding or clothing, and close interpersonal interaction may outweigh the contribution of routine personal hygiene, particularly in high-density living environments. Consequently, personal hygiene alone may be insufficient to interrupt transmission when exposure intensity remains high.

Methodological considerations should also be taken into account. In this study, most participants were classified as having good personal hygiene, resulting in limited variability of the exposure variable and reduced statistical power to detect an association. Furthermore, hygiene practices were assessed using a questionnaire-based scoring system, which may not fully capture behaviors most directly associated with scabies transmission, such as bed-sharing practices or the frequency and adequacy of laundering bedding and clothing.<sup>9</sup>

Another important factor is the outcome definition used in this study. Scabies-like symptoms were identified based on cardinal clinical signs rather than parasitological confirmation. While this approach is commonly employed in community-based and resource-limited settings, it may lead to misclassification, as other pruritic skin conditions can present with similar symptoms.<sup>10</sup> Such non-differential misclassification is likely to bias the association toward the null, potentially obscuring a true relationship between personal hygiene and scabies occurrence.

Comparative findings from Indonesian studies further illustrate the context-dependent nature of scabies transmission. Research conducted in an Islamic boarding school in Jambi reported an association between poor personal hygiene and scabies incidence alongside factors such as contact history and room density.<sup>11</sup> In contrast, a study from a boarding school in Medan identified environmental and behavioral contact factors—particularly sharing beds and clothing—as stronger determinants of scabies than hygiene status alone.<sup>12</sup> These contrasting findings suggest that the relative contribution of personal hygiene varies according to dormitory structure, population density, and patterns of daily interaction.

From a public health perspective, the findings of this study imply that scabies prevention strategies in dormitory-based populations should extend beyond individual hygiene education. Institutional-level interventions, including reducing overcrowding, improving dormitory sanitation, strengthening bedding and laundry management, minimizing the sharing of personal items, and implementing routine screening for early detection, are likely to be more effective in reducing transmission.<sup>1,2</sup> Such approaches are consistent with broader scabies control strategies that emphasize environmental management and coordinated interventions in high-risk communal settings.



This study has several limitations. The cross-sectional design precludes causal inference and assessment of temporality. The absence of microscopic confirmation may have introduced outcome misclassification. In addition, potential confounding variables related to dormitory conditions were not quantitatively analyzed. Nevertheless, this study provides valuable evidence from a sports school dormitory population and reinforces the importance of environmental and contextual determinants in scabies transmission.

## CONCLUSION

This study found no statistically significant association between personal hygiene practices and scabies-like symptoms among students residing in a sports school dormitory in Kupang City. Although scabies-like symptoms were descriptively more frequent among students with poorer hygiene, the findings suggest that individual hygiene alone may not be sufficient to prevent scabies transmission in communal living environments. Environmental and institutional factors, including crowding, shared facilities, and close interpersonal contact, are likely to play a more prominent role. Therefore, scabies prevention strategies in dormitory settings should prioritize institutional-level interventions alongside individual hygiene promotion.

## REFERENCES

1. World Health Organization. *Ending the neglect to attain the Sustainable Development Goals: A road map for neglected tropical diseases 2021–2030*. Geneva: World Health Organization; 2020.
2. Schneider S, Wu J, Tizek L, Ziehfrend S, Zink A. Prevalence of scabies worldwide: an updated systematic literature review in 2022. *J Eur Acad Dermatol Venereol*. 2023;37(9):1749–1757. doi:10.1111/jdv.19167
3. Despommier DD, Griffin DO, Gwadz RW, Hotez PJ, Knirsch CA. *Parasitic diseases*. 7th ed. New York: Parasites Without Borders; 2019.
4. Arlian LG, Morgan MS. A review of *Sarcoptes scabiei*: past, present and future. *Parasites Vectors*. 2017;10(1):297. doi:10.1186/s13071-017-2234-1
5. Bernigaud C, Fischer K, Chosidow O. The management of scabies in the 21st century: past, advances and potentials. *Acta Derm Venereol*. 2020;100:225–234. doi:10.2340/00015555-3521
6. Welch E, Romani L, Whitfield MJ. Recent advances in understanding and treating scabies. *Fac Rev*. 2021;10:28. doi:10.12703/r/10-28
7. Fauziah R, Suparmi. Analysis of the scabies incidence at As'ad Islamic Boarding School, Jambi City. *Arch Razi Inst*. 2023;78(6):1719–1727.
8. Yulfi H, Zulkhair M, Yosi A. Scabies infection among boarding school students in Medan: epidemiology, risk factors, and recommended prevention. *Trop Parasitol*. 2022;12(1):34–40.
9. Rosa ND, Fitriangga A. Hubungan antara tingkat pengetahuan skabies dan personal hygiene dengan kejadian skabies di Puskesmas Selatan I Kecamatan Singkawang Selatan. *Cermin Dunia Kedokteran*. 2020;47(2):97–103.
10. Engelman D, Yoshizumi J, Hay RJ, et al. The 2020 International Alliance for the Control of Scabies consensus criteria for the diagnosis of scabies. *Br J Dermatol*. 2020;183(5):808–820.
11. Shifera N, Jata T, Kaba M, et al. Burden and determinants of scabies in a pastoralist community in Ethiopia: a case–control study. *BMJ Open*. 2024;14(11):e087097. doi:10.1136/bmjopen-2024-087097
12. Lee PATT, Wong SSY, Ng KHL. Scabies in 604 patients: disease burden and associated outcomes in Hong Kong. *Trop Med Infect Dis*. 2024;9(10):245.

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