



Analysis of Environmental Sanitation Risk Factors Scabies in Adolescents

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<p>Track Record Article</p> <p>Accepted: 21 April 2023 Revised: 31 May 2023 Published: 22 June 2023</p> <p>How to cite: Gustina, M., & Yorita, E. (2023). Analysis of Environmental Sanitation Risk Factors Scabies in Adolescents. <i>Contagion: Scientific Periodical Journal of Public Health and Coastal Health</i>, 5(2), 664-672.</p>	<p style="text-align: center;">Abstract</p> <p><i>Scabies is an infectious disease that affects all races and groups worldwide but is more common in children and young adults. Meta-analysis found that occupancy density, temperature, light, clean water, ventilation, gender, personal hygiene, knowledge, and contact with sufferers were risk factors for scabies in adolescents living in Islamic boarding schools. Research is needed by identifying close contact cases in the community, especially in high-risk groups such as students who live in dormitories. This study aims to analyze the factors associated with the incidence of scabies in young women at the Makrifatul Ilmi Islamic Boarding School, South Bengkulu Regency. The research design was cross-sectional, with the dependent variable being knowledge, age, personal hygiene, and environmental sanitation, while the dependent variable was the incidence of scabies. A sample of 50 teenagers was taken by accidental sampling technique. Data collection was carried out using a questionnaire and an observation sheet. Data were analyzed univariately with frequency distribution tables, bivariate with chi-square, and multivariate logistic regression. The study's results found a relationship between gender and scabies, $p=0.00$, and there was a relationship between knowledge and scabies, $p=0.00$. There is a relationship between personal hygiene and scabies $p=0.00$. There is a relationship between environmental sanitation and scabies $p=0.00$. Environmental sanitation is the most dominant risk factor associated with scabies. Health service providers must work with non-health workers, including pesantren supervisors, parents, health workers, and health cadres, in conducting education, prevention, and treatment to ensure mite elimination and break the transmission.</i></p> <p>Keyword: Sanitation, Personal hygiene, Scabies knowledge</p>
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INTRODUCTION

Disease caused by *Sarcoptes scabiei var hominis* scabies is an infectious disease due to direct or indirect contact affecting all races and groups worldwide. However, it is more common in children and young adults (Rofifah et al., 2019) Scabies causes impetigo, skin and soft tissue infections, glomerulonephritis, and rheumatic heart disease risk. The World Health Organization (WHO) defines a prevalence of $\geq 10\%$ as a consensus threshold for conducting mapping and sampling strategies to identify public health measures through survey research to obtain detailed descriptions (WHO, 2020).

It is necessary to control cases with treatment and identification of close contacts in the community. Research has found that students living in dormitories have the highest prevalence of scabies. Therefore research is needed to break the transmission as a case management strategy (Anggreni et al., 2019). Scabies is considered a hereditary disease in Islamic boarding schools, and this myth makes management more difficult (Juliansyah et al., 2017).

Meta-analysis of Cahyanti et al., (2020), found that occupancy density, temperature, light, clean water, ventilation, gender, personal hygiene, knowledge, and contact with sufferers were risk factors for scabies in adolescents living in Islamic boarding schools. Similar studies on the scabies factor have also been conducted (Husna et al., 2021; Juliansyah & Minartami, 2017), However, Bengkulu Province, a province with a Muslim majority with many Islamic boarding schools, has not done much fundamental research on scabies. Hence, it is necessary to identify risk factors for scabies in adolescents in different populations. This study aims to analyze the factors associated with the incidence of scabies in young girls at the Makrifatul Ilmi Islamic Boarding School, South Bengkulu Regency, Bengkulu Province.

METHODS

The research design was cross-sectional, with the independent variable of knowledge, age, personal hygiene, and environmental sanitation, while the dependent variable was the incidence of scabies. The population of this study were all teenagers who lived in the Makrifatul Ilmi Islamic Boarding School in South Bengkulu Regency, totaling 322 people. Samples were taken using the accidental sampling technique, a total of 50 with inclusion criteria had lived for > one year, grade 8, were not transfer students and were willing to take part in the study.

Determination of length of stay inclusion criteria to measure possible risk factors originating from the Islamic boarding school environment. In this study, grade 9 did not get permission because they were preparing to take the final exam . Data was collected in March-April 2022 using a questionnaire to measure knowledge, age, and personal hygiene. Environmental sanitation data includes room/room lighting, bathrooms, and waste management measured through observation sheets and questionnaires (Sanei-Dehkordi et al., 2021).

The incidence of scabies was measured through a questionnaire about the signs and symptoms of scabies (Puspita et al., 2021) Data were analyzed univariately using frequency distribution tables, bivariate using chi-square with 95% CI, and multivariate using logistic regression with software SPSS version 20.

RESULTS

Table 1. Frequency distribution of the respondents' characteristics of gender, knowledge, personal hygiene, environmental sanitation, and the incidence of scabies

Variable	Total	
	f	%
Scabies Disease		
Positive	31	62
Negative	19	38
Gender		
Male	32	64
Female	18	36
Knowledge		
Lack	28	56
Adequate	10	20
Good	12	24
Personal Hygiene		
Lack	29	58
Good	21	42
Environmental sanitation		
Not eligible	30	60
Eligible	20	40

Table 1 shows the results of the univariate analysis. It can be seen that 31 (62%) of the respondents suffered from scabies. Respondents with male sex more than women 32 (64%). Some respondents, 28 (56%), needed more knowledge and a level of personal hygiene that needed to be improved 29 (58%). Most respondents, 30 (60%), have environmental sanitation that does not meet health requirements.

Table 2. Relationship between gender, knowledge, personal hygiene, environmental sanitation, and the incidence of scabies in adolescents

Variable	Scabies diseases				Total		p
	Positive		Negative		f	%	
	f	%	f	%			
Gender							
Male	27	84.4	5	15.6	32	64	0.00
Female	4	22.2	14	77.8	18	36	
Knowledge							
Lack	26	92.9	2	7.1	28	56	0.00
Adequate	5	50	5	50	10	20	
Good	0	0	12	100	12	24	
Personal Hygiene							
Lack	24	82.4	5	17.2	29	58	0.00
Good	7	33.3	14	66.7	21	42	
Environmental Health							
Not Eligible	26	86.7	4	13.3	30	60	0.00
Eligible	5	25	15	75	20	40	

Table 2 shows that 84% of scabies sufferers are male. The statistical test results show a relationship between gender and scabies with a value of $p = 0.00$. The table above also shows that 92% of scabies sufferers have a low level of knowledge. Statistical test results found a relationship between knowledge and scabies with a value of $p = 0.00$. Most of the scabies sufferers (82.4%) had poor personal hygiene. There was a relationship between personal hygiene and scabies with a value of $p=0.00$. The table above also shows that 86.7 respondents with environmental sanitation who did not meet health requirements suffered from scabies. There is a relationship between environmental sanitation and the incidence of scabies with a value of $p=0.00$.

Table 3. Analysis of the dominant factors that most influence the incidence of scabies in adolescents

Variable	P Value	
	Early models	logistic regression test
Gender	0.00	1
Knowledge	0.00	2
Personal Hygiene	0.00	4
Environmental Sanitation	0.00	5

The table above shows that in Model 3, environmental sanitation is the most dominant factor in the incidence of scabies in adolescents.

DISCUSSION

This study found a relationship between gender and the incidence of adolescent scabies. These results are in accordance with previous research on the relationship between gender and scabies. Similar research results were also obtained by (Naftassa & Putri, 2018) that male adolescents are more at risk of contracting scabies than female adolescents. Based on the results of observations obtained in this study, it can be seen that male adolescents are less independent in terms of personal hygiene than female adolescents. Boys' rooms are more messy, damp, and smelly than girls. This shows that boys' hygiene level is lower than girls so they are more at risk of scabies. These results also support (Anggreni & Indira, 2019) that the prevalence in boys is more significant than in girls (69.0% and 31.0%). This also happens because boys tend to move more than girls, doing activities playing in groups or together without paying attention to personal hygiene.

Then, the results of this study also found that knowledge about personal hygiene was related to the incidence of scabies in adolescents. Adolescents with low knowledge are more likely to contract scabies than adolescents with high knowledge. In this study, adolescents did not know much about scabies and did not know how to transmit and prevent it. Education is

needed to prevent the spread of infectious diseases, especially due to direct and indirect contact (Ubaidillah, 2022). Research by (Sutarti et al., 2018) found that young people's knowledge about scabies transmission was low. This is related to early adolescence, which is a transitional stage from childhood to adulthood. At this stage, adolescents adapt and look for close friends. Interaction often starts with feeling the same, using personal items such as toiletries, towels, and other tools without knowing the risk of transmitting scabies. In this study, living in a boarding school is a new experience. All adolescents are new residents at this boarding school, so they do not know how to maintain personal hygiene. Teenagers enter Islamic boarding schools very young, so it is difficult to understand information about the transmission of scabies. Besides having less ability to understand scabies, adolescents who live in Islamic boarding schools may also have never heard of or been infected with scabies before.

Research conducted by (Misganaw et al., 2022) found that the knowledge factor significantly affected the incidence of scabies. The habit of sleeping on the floor, rarely changing clothes, washing hands only when going to eat, sharing beds, and rarely washing clothes is related to the incidence of scabies, so education about scabies transmission must cover this area. Parents or caregivers should also receive health education on how to wash clothes, change into clean clothes and avoid direct contact with positive scabies sufferers. He says good knowledge will encourage positive attitudes and behavior in preventing scabies (Qomariyah et al., 2022). Various educational methods can be used to increase students' understanding of Clean and Healthy Lifestyle (CHL), including using leaflet media and giving hand sanitizers for personal use to students, especially when handwashing water is difficult to reach so that the CHL pattern can be applied by students independently (Ulya & Halid, 2023).

Moreover, this study found that personal hygiene is a factor that also influences the incidence of scabies in adolescents. In this study, teenagers did not maintain personal hygiene because the facilities were shared, so teenagers were lazy to queue. In addition, the lack of water availability in these Islamic boarding schools causes adolescents to be unable to clean themselves properly. This situation increases the prevalence of adolescents infected with scabies in this study.

Personal hygiene behaviors that are at risk for the incidence of scabies in this study include drying towels and using towels, soaking clothes together with friends, not washing hands, using bed linen together, sleeping together, and not drying the bed once a week. This research aligns with (Marga, 2020), that 62.9% of scabies cases were related to alternating bathing equipment, alternating clothing, and sleeping habits. Risk factors statistically

significant for the incidence of scabies included education level, living habits, physical environment, biological environment, social environment, knowledge, action, and sanitation factors. The risk of scabies increases 41.03 times greater in individuals with a bad social environment.

This study also found that environmental sanitation was the most influential factor for scabies. In this study, sanitation needs to meet health requirements, including lighting, toilets, and bathroom waste management. Based on the results of observations of lighting in the boarding school dormitories, most of them do not meet health requirements. This is because natural light does not enter the room. After all, the medium of light is covered with cupboards, hanging clothes, adjacent buildings, and plants outside the dormitory, blocking light from entering the room; as a result, it becomes dark, and the temperature becomes humid as well as the bathroom floor is slippery, and there is puddles water. Garbage looks scattered with containers without a cover. This situation allows the habitat and breeding of *Sarcoptes scabiei* because the poorer the room lighting, the higher the breeding of this mite. This is in accordance with previous research that the risk of scabies increased by 20.72 times greater in individuals living in environments with sanitation that did not meet health requirements. The risk of a dense physical environment increases the likelihood of 15.28 times greater than that of a non-dense physical environment.

The spread of scabies can be prevented by creating good environmental sanitation, such as the availability of clean water facilities for bathing and washing, keeping the house clean: carpets, beds, mattresses, and pillows from dust, mites, and dirt, drying clothes while maintaining personal hygiene to prevent infection and transmission of scabies (Purwanto & Hastuti, 2020).

Room humidity has a significant relationship with the incidence of scabies, $p = 0.002$ OR = 5.527. Room humidity that is not in accordance with health has a 5.527 times chance of getting scabies compared to those who meet health requirements. In this case, 78.2% of the students' rooms had bad humidity (Tri Handari, 2018). The results of this study support the meta-analysis conducted by (Puji et al., 2020) that the risk of scabies is associated with poor environmental sanitation, such as the unavailability of clean water, sewage, and garbage that does not meet health requirements. This situation allows the breeding and spread of scabies mites (Tajudin et al., 2023).

Scabies, *Sarcoptes scabiei*, goes through four stages in its life cycle: egg, larva, nymph, and adult. After the eggs hatch, the larvae migrate to the skin's surface and burrow into the

intact stratum corneum building short, almost invisible burrows. Adult females prowl on the skin surface until they find a suitable place for a permanent burrow. Transmission occurs primarily through skin-to-skin contact or transmission via bedding and clothing. In humans, mites are often found between the fingers and wrists (Arlan & Morgan, 2017).

Management of scabies must be carried out holistically and comprehensively using a family approach in the form of education about the causes, transmission, treatment, and prevention of the disease. Further disclosed in (Rahmatia & Ernawati, 2020) research study confirmed that. Scabies is difficult to overcome without changes in a clean and healthy lifestyle. This is in line with previous findings. Even though drugs for scabies are available, they cannot replace socio-economic-based countermeasures such as personal hygiene and environmental sanitation (Rinaldi & Porter, 2021). Islamic boarding school managers must improve dormitory facilities, supervise adolescents who have contracted scabies, and carry out isolation and radical treatment by increasing a clean and healthy lifestyle among students (Sahara, 2022).

Scabies management must be carried out for all affected household members. The environment is sterilized correctly to eliminate mites and prevent further transmission. The role of teachers, hostel supervisors, cadres, and families must play an active role in conducting scabies screening and surveillance in communities with low-density levels will help eradicate scabies (Widaty et al., 2022). Education must be carried out continuously, accompanied by examples of behaviors that support health through community service together, cleaning the environment, bathrooms, and drying mattresses continuously measured at least once a week. Education about personal hygiene can be carried out through hygiene contests among adolescents, increasing motivation to maintain healthy behavior. Health status checks must be carried out periodically every month and separate sick adolescents to break the transmission.

CONCLUSIONS

The results of this study found that age, knowledge, personal hygiene and environmental sanitation had a significant impact on scabies in adolescents. Environmental sanitation is the most dominant risk factor for the incidence of scabies in adolescents. Comprehensive management is needed including education, prevention and treatment by involving all elements including Islamic boarding school supervisors, parents, health workers and health cadres to ensure mite elimination and break the chain of transmission.

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