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The Relationship Between Scabies Risk Factors and the Incidence of Scabies in Male Santri at Nurul Jadid Islamic Boarding School, Kubu Raya

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Abstract
Scabies is an infectious skin disease caused by *Sarcoptes scabiei* var. *hominis*, which is transmitted through direct or indirect contact with infected individuals or contaminated objects. This disease is characterized by intense itching, especially at night, and is highly contagious, making it a common health problem in crowded environments such as Islamic boarding schools. The high population density and shared use of personal items increase the risk of scabies transmission among students. This study aimed to determine the relationship between various risk factors and the incidence of scabies among male *santri* at *Pondok Pesantren* Nurul Jadid, Kubu Raya. This study employed an observational analytic design with a cross-sectional approach. The independent variables included lighting conditions, use of antiseptics, cleanliness of beds, cleanliness of clothing and prayer equipment, and towel hygiene. The dependent variable was the incidence of scabies among male students. A total of 60 respondents were included in the study. Data analysis was conducted using Spearman's rho correlation test. The results showed that water hygiene, bed cleanliness, clothing hygiene, and towel hygiene were significantly associated with the incidence of scabies among students. In contrast, no significant relationship was found between lighting conditions or the use of antiseptics and the incidence of scabies. These findings indicate that personal and environmental hygiene factors play an important role in preventing scabies transmission in boarding school settings. Improving hygiene practices and sanitation facilities is therefore essential to reduce the risk of scabies among students.

Keywords: Scabies; boarding school; male students; personal hygiene; environmental sanitation.

INTRODUCTION

Scabies is an infectious disease caused by *Sarcoptes scabiei* hominis varieties that spread through direct or indirect contact. This skin disease is characterized by complaints of itching (Rofifah et al., 2019; Sanei-Dehkordi et al., 2021). Scabies are characterized by 4 main signs, namely itching at night, having a canaluli (tunnel) at the site of predilection and finding vesicles, papules, occurring in groups and finally finding mites *Sarcoptes scabiei* (Mulyana Rosi et al., 2021; Nawaz et al., 2024). Factors that cause high scabies in developing countries are related to poor sanitation, housing density and difficulty in getting access to water and what facilitates the transmission and infection of scabies mites is the density of housing and physical contact between individuals (Kim et al., 2024; Nuraini & Wijayanti, 2016).The predilections that are often the place where scabies arise are the groin, folds of the thighs and abdomen, palms and feet and vital organs (Hapsari, 2014).Scabies are often overlooked because they are not life-threatening, so treating them is not a priority, but chronic and severe scabies can lead to dangerous complications (Riptifah, 2018).

Scabies can be diagnosed by finding two of the four main symptoms, namely severe itching that worsens at night, infection occurs in humans in groups, lesions in the form of straight lines or tunnels with an average length of 1 cm and at the end of the tunnel are found papules or vesicles and mites. The discovery of this mite is a Gold Standard to diagnose scabies (Sunarjo M & Hidayah I, 2021). For the definitive diagnosis of scabies is carried out by finding scabies mites,

eggs in the skin by performing skin scraping, tests Burrow ink, epidermal shave biopsy, topical tetracycline, the use of tape and dermoscopy (Abdillah, 2020).

World Health Organization (WHO) stated (2020), in general, scabies can infect at least 200 million people at any given time (Sub Subtansi Pelayanan Kesehatan Lingkungan dan Kesehatan Kerja, 2021). Data from the Ministry of Health of the Republic of Indonesia in 2018 from health centers throughout Indonesia, the incidence of scabies ranges from 5.6-12.95% and ranks 3rd out of 12 skin diseases (Vetronela, 2018). Data from the Kubu Raya Regency Health Office shows that the number of scabies sufferers reached 1,902 cases in 2021 (Profesi & Issn, 2016). The results of a preliminary study conducted by Luteriana in 2018 on scabies sufferers in student dormitories in 13 districts and cities throughout West Kalimantan were obtained, namely: The Kubu Raya Regency student dormitory is a dormitory with a high incidence rate of scabies, which is 91.07% compared to other dormitories (Vetronela, 2018). The high prevalence of scabies is generally found in environments with high population density and interpersonal contact, such as prisons, orphanages, and Islamic boarding schools. In Indonesia, as the country with the largest Muslim population in the world, there are 14,798 Islamic boarding schools with a fairly high prevalence of scabies (Profesi & Issn, 2016).

Factors related to scabies include sanitation, Personal Hygiene, the alternating use of goods, economic level and population density such as Islamic boarding schools, prisons and orphanages. Islamic boarding schools are one of the neighborhoods with a high incidence and prevalence of scabies in Indonesia (Anggreni & Indira, 2019). The Nurul Jadid Islamic Boarding School is one of the Islamic boarding schools in Kubu Raya Regency which is a salafi-khalafi Islamic boarding school and generally enters the type D Islamic boarding school, namely Islamic boarding schools that have their own dormitory buildings and schools. The condition of the Nurul Jadid Islamic Boarding School is inadequate in terms of dormitory or residence for the students where the room has approximately 17 students with a room area 25 m2 thus resulting in Occupancy Density. Based on the results of the preliminary study that has been carried out, the researcher shows that this pesantren has sanitation, Personal Hygiene which is bad. Based on the results of these observations, research will be conducted on the risk factors for scabies disease at the Nurul Jadid Islamic Boarding School in Kubu Raya.

This study aims to determine the relationship between scabies risk factors and the incidence of scabies in male students at the Nurul Jadid Islamic Boarding School, Kubu Raya. The results of this research are expected to be a consideration for the management of the Nurul Jadid Islamic Boarding School in designing and improving scabies prevention programs through improving environmental cleanliness and clean and healthy living behavior (PHBS) of students.

RESEARCH METHODS

The research is a quantitative research using an analytical observational study with a cross-sectional approach. This research was conducted at the Nurul Jadid Islamic Boarding School in Kubu Raya directly in January 2023. The population in this study is 145 male students who suffer from and have a history of scabies. In this study, the sample was selected using random sampling techniques. Samples will be excluded if they have a history of skin other than scabies. Data collection was obtained from questionnaires and examination of scabies lesions by doctors. Each questionnaire is given a "1" for the answer "Yes" and the answer will not be given a "0". Assessment criteria Good=76-100% Fairly Good=56-75% Poor= <56%.

This research was conducted using a questionnaire. Questionnaire is a data collection technique that is carried out by giving a set of questions to respondents to answer. The type of questionnaire used in this study is a closed questionnaire type, the answer options are already available. This study uses the Spearman test with the aim of seeing the level of relationship between each variable. The p-value $p<0.05$ means that there is a relationship between personal hygiene and environmental sanitation to the incidence of scabies at the Nurul Jadid Kubu Raya Islamic Boarding School.

The univariate analysis in this study describes the frequency of each variable studied, including the characteristics of the respondents (age, length of stay and regional origin). The bivariate analysis used in this study is the Spearman correlation test to assess the relationship between personal hygiene and environmental sanitation of male students at the Nurul Jadid Islamic Boarding School in Kubu Raya. This research has been declared to have passed the ethics test by the Health Research Ethics Committee team of the Faculty of Medicine, University of Tanjungpura with letter number 736/UN22.9/PG/2023 on January 30, 2023.

RESULTS AND DISCUSSION

Table 1. Characteristics of Respondents

Demographic Characteristics of Age Respondents	Quantity	Percentage (%)
>15-≤16 Years	13	22%
>16-≤17 Years Old	10	16%
>17-≤18 Years	13	22%
>18 Years	24	40%
Total	60	100%
Regional Origin		
Stuttgart	2	3%
Squirt	2	3%
Pontianak	22	37%
Fort Raya	33	55%
Outside West Kalimantan	1	2%
Total	60	100%
Length of Stay		
<1 Year	5	8%
1 Year	9	15%
2 Years	8	13%
3 Years	21	35%
4 Years	7	12%
5 Years	3	5%
6 Years	2	3%
9 Years	1	2%
11 Years	2	3%
13 Years	1	2%
15 Years	1	2%
Total	60	100%

Source: primary data (2023)

Table 1 shows the number of research subjects totaling 60 people. The research subjects were grouped based on the characteristics of age, length of stay and regional origin. The age range in the study ranged from 15 to 18 years. The youngest age of the male students who were the subject of the study was 15 years old and the oldest age was 19 years old. The research group that had the largest distribution was >18 years old as many as 24 people (40%) and based on regional origin, the most came from Kubu Raya as many as 33 students (55%) and based on the length of stay the most was 3 years amounting to 21 people (35%).

Table 2 Overview of lighting levels, water hygiene, bedding, clothing, towels and use of antiseptics

Lighting	**Quantity**	**Present (100%)**
Less good ≤ 56%	1	1,7%
Pretty good (56%-75%)	2	3.3%
Good (76%-100%)	57	95,0 %
Total	60	100
Water hygiene	**Quantity**	**Present (100%)**
Less good ≤ 56%	16	26,7%
Pretty good (56%-75%)	39	65,0%
Good (76%-100%)	5	8,3%
Total	60	100
Bed hygiene	**Quantity**	**Present (100%)**
Less good ≤ 56%	11	18,3%
Pretty good (56%-75%)	35	58,3%
Good (76%-100%)	14	23,3%
Total	60	100
Clothing hygiene	**Quantity**	**Present (100%)**
Less good ≤ 56%	12	20,0%
Pretty good (56%-75%)	25	41,7%
Good (76%-100%)	23	38,3%
Total	60	100
Towel hygiene	**Quantity**	**Present (100%)**
Less good ≤ 56%	23	38,3%
Pretty good (56%-75%)	21	35,0%
Good (76%-100%)	16	26,7%
Total	60	100
Use of antiseptics	**Quantity**	**Present (100%)**
Less good ≤ 56%	5	8,3%
Pretty good (56%-75%)	31	51,7%
Good (76%-100%)	24	40,0%
Total	60	100

Source: primary data (2023)

Table 2 shows that 57 people (95.0%) got good lighting, 2 people (3.3%) got good lighting, and 1 person (1.7%) got bad lighting. Water cleanliness showed that water hygiene was not good obtained by 16 people (26.7%), quite good by 39 people (65.0%), good by 5 people (8.3%). Bed cleanliness showed poor results as many as 11 people (18.3%), good enough as many as 35 people (58.3%), good as many as 14 people (23.3%).

Clothing hygiene showed poor results for 12 people (20.0%), quite good with 25 people (41.7%), good with 23 people (38.3%). The results showed that the cleanliness of towels was not

good with the results of 23 people (38.0%), quite good as many as 21 people (35.0%), good with a total of 16 people (26.7%). The use of antiseptics showed poor results with a total of 5 people (8.3%), quite well with 31 people (51.7%), good with a total of 24 people (40.0%).

Table 3. The Relationship between Lighting and the Incidence of Skabies in Male Students at the Nurul Jadid Islamic Boarding School in Kubu Raya

Lighting	Skabies						Total	
	Less		Enough		Good			
Less	0	0%	0	0%	1	2.0%	1	1,7%
Enough	0	0%	0	0%	2	4,0%	2	3,3%
Good	0	0%	10	100,%	47	94,0%	57	95,0%
Total	0	0%	10	100,0%	50	100,0%	60	100,0%
Spearman's *Test*	P = 0.186 Correlation coefficient value = -0.173							

Source: primary data (2023)

Table 3 shows the results of the Spearman's rho statistical test (with a degree of confindence 0.05) showing that the meaningless relationship between lighting and the incidence of scabies in male students is p = 0.186 (0 < 0.05). The results showed poor lighting with good scabies as much as 1 person (2.0%) and good lighting with good scabies as much as 47 (94.0%) and poor lighting with good scabies as much as 1 (2.0%).

Table 3 shows that Islamic boarding schools have good lighting. The results of the study showed that lighting was not related to the incidence of scabies in male students in Islamic boarding schools. The less lighting, the higher the incidence of scabies in male students. On the other hand, if the lighting is good, the incidence of scabies in male students will be low. The results of this study are not in line with the research conducted by Hasna et al., which stated that lighting is a risk factor for the incidence of scabies. If the students' room is poorly lit, they will be at five times more risk of getting scabies compared to students who are in a room with good lighting. The amount of light that enters affects the humidity of the room which affects the habitat and breeding of Sarcoptes scabiei. The worse the lighting of the room, will affect the increase in the incidence of scabies.(Hasna Ibadurrahmi, 2016)

Table 4. The relationship between water hygiene and the incidence of scabies

Water Cleanliness	Scabies						Total	
	Less		Enough		Good			
Less	0	0%	2	20,0%	14	28,0%	16	26,7%
Enough	0	0%	7	70,0%	32	64,0%	39	65,0%
Good	0	0%	1	10,0%	4	8,0%	5	8,3%
Total	0	0%	10	100%	50	100%	60	100,0%
Spearman's *Test*	P = 0.000 Correlation coefficient value = -0.451							

Source: primary data (2023)

Table 4 shows the results of the Spearman's rho statistical test (with a degree of meaning/level of confidence of 0.05) showing a meaningful relationship between water

cleanliness and the incidence of scabies in male students is p = 0.000 (p < 0.05). The relationship between water cleanliness and the incidence of scabies has a coefficient value of -0.451.). The results showed adequate cleanliness with good scabies as many as 32 people (64.0%) and good water cleanliness with good scabies 1 (10.0%).

The results of the study showed that water cleanliness was related to the incidence of scabies in male students in Islamic boarding schools. This is in accordance with research conducted by Indriani et al, it was found that water with unqualified quality can be a medium for disease transmission, one of which is scabies. A person can get scabies if they bathe in dirty water, where the water is already polluted (Indriani et al., 2021).

Water is a means to improve public health because water is one of the means of transmission of various diseases. With the availability of clean water, both quality and quantity in an area, it is hoped that the spread of infectious diseases can be minimized. Lack of clean water, especially for personal hygiene, can cause various skin diseases due to fungi, bacteria, including scabies (Budiman, Hamidah, 2015). Water can be said to be clean if it meets physical requirements such as not cloudy, colorless, odorless, tasteless and non-foamy, with a feasibility test, namely temperature and turbidity.

Table 5. The relationship between bed hygiene and the incidence of scabies

Bed Hygiene	Scabies						Total	
	Less		Enough		Good			
Less	0	0%	1	10,0%	10	20,0%	11	18,3%
Enough	0	0%	5	50,0%	30	60,0%	35	58,3%
Good	0	0%	4	40,0%	10	20,0%	14	23,3%
Total	0	0%	10	100,0%	50	100,0%	60	100,0%
Spearman's *Test*	P = 0.000							
	Correlation coefficient value = -0.473							

Source: primary data (2023)

Table 5 shows the results of the Spearman's rho statistical test (with a degree of meaning/level of confidence 0.05) showing that the significant relationship between bed cleanliness and the incidence of scabies in male students is p = 0.000 (p < 0.05). The relationship between bed cleanliness and the incidence of scabies has a coefficient value of -0.473. Students who have sufficient bed cleanliness with good scabies amounted to 30 people (60.0%) and poor bed cleanliness with enough scabies 1 (10.0%).

The results of the study showed that bed cleanliness was related to the incidence of scabies in male students at Islamic boarding schools. This is supported by research conducted by Prayogi et al, which concluded that poor bed hygiene causes high incidence of scabies. This condition over a long period of time can trigger the proliferation and transmission of scabies disease (Prayogi & Kurniawan, 2016). Poor bed hygiene can cause an increasing incidence of scabies. The cleanliness of the students' beds can be caused by a lack of awareness in cleaning and caring for their beds. Such as rarely changing bed sheets and drying mattresses. Students usually also often move to other friends' beds so that the spread of scabies is very easy to occur (Budiman, Hamidah, 2015).

Table 6. The relationship between the cleanliness of clothes or prayer utensils and the incidence of scabies

Clothing Hygiene	Skabies						Total	
	Less		Enough		Good			
Less	0	0%	0	0,0%	12	24,0%	12	20,0%
Enough	0	0%	3	30,0%	22	44,0%	25	41,7%
Good	0	0%	7	70,0%	16	32,0%	23	38,3%
Total	0	0%	10	100,0%	50	100,0%	60	100,0%
Spearman's *Test*	P = 0.000							
	Correlation coefficient value = -0.461							

Source: primary data (2023)

Table 6 shows the results of the Spearman's rho statistical test (with a level of confidence of 0.05) showing that the meaningful relationship between the cleanliness of clothes or prayer utensils and the incidence of scabies in male students is p = 0.000 (p < 0.05). The relationship between the cleanliness of clothes or prayer utensils and the incidence of scabies has a coefficient value of -0.461. Students who have sufficient cleanliness of clothes or prayer equipment with skabies are less than 22 people (44.0%) and sufficient clothing cleanliness with enough skabies 3 (30.0%).

The results of the study showed that the cleanliness of clothes was related to the incidence of scabies in male students at Islamic boarding schools. This study is in line with the research conducted by Rahmawati et al, which showed that there was a relationship between clothing cleanliness and the incidence of scabies (p=0.000). Most students have poor personal hygiene, especially in the cleanliness of clothes (Noviana Rahmawati et al., 2021).

Cleanliness of clothes needs to be maintained, in a day these sweaty clothes will smell bad and annoying so they need to be replaced. The transmission of Sarcoptes scabiei mites in addition to the habit of rarely changing clothes with clean clothes and borrowing clothes. Borrowing clothes can make it easier to transmit scabies through indirect contact.(Marga, n.d.)

Table 7. The relationship between towel hygiene and the incidence of scabies

Towel Hygiene	Scabies						Total	
	Less		Enough		Good			
Less	0	0%	4	40,0%	19	38,0%	23	38,3%
Enough	0	0%	3	30,0%	18	85,7%	21	35,0%
Good	0	0%	3	30,0%	13	81.3%	16	26,7%
Total	0	0%	10	100,0%	50	100,0%	60	100,0%
Spearman's Test	P = 0.000							
	Correlation coefficient value = -0.451							

Source: primary data (2023)

Table 7 shows the results of the Spearman's rho statistical test (with a level of confidence of 0.05) showing a meaningful relationship between the cleanliness of towels and the incidence of scabies in male students is p = 0.000 (p < 0.05). The relationship between towel cleanliness and the incidence of scabies has a coefficient value of -0.451. Students who have less towel hygiene with good skabies amounted to 19 people (38.0%) and sufficient towel hygiene with enough skabies (30.0%).

The results of the study showed that the cleanliness of towels was related to the incidence of scabies in male students at Islamic boarding schools. Supported by research conducted by Sari et al., it shows that transmission occurs through direct and indirect contact, for example through contact with the patient or indirectly, for example through towels and clothing.63 The main transmission of scabies is direct and indirect contact. Scabies can be transmitted through indirect contact such as through bedding, towels and clothing play an important role (Prayogi & Kurniawan, 2016).

Borrowing and borrowing towels that are used alternately in a damp state and not sunbathed in the sun can increase mite activity *Sarcoptes scabiei* on towels, so that mites on the towels of students who suffer from scabies can move to healthy students (Aulia et al., 2022).

Table 8. The relationship between the use of antiseptics and the incidence of scabies

Use of Antiseptics	Scabies						Total	
	Less		Enough		Good			
Less	0	0%	0	0,0%	5	10,0%	5	8,3%
Enough	0	0%	5	50,0%	26	83,9%	31	51,7%
Good	0	0%	5	50,0%	19	79,2%	24	40,0%
Total	0	0%	10	100,0%	50	100,0%	60	100,0%
Spearman's Test	P = 0.170							
	Correlation coefficient value = -0.179							

Source: primary data (2023)

Table 8 shows the results of the Spearman's rho statistical test (with a level of confidence of 0.05) showing that the meaningless relationship between the use of antiseptics and the incidence of scabies in male students is $p = 0.170$ ($p < 0.05$). 26 students who have the use of antiseptic with good scabies amounted to 26 people (83.9%) and the use of antiseptic lacked good scabies 5 (10.0%).

The use of antiseptics was not related to the incidence of scabies in male students at the Nurul Jadid Islamic Boarding School. This research is in line with research conducted by Pratiwi which shows that antiseptics are not related to the incidence of scabies in male students, this is because even though they use soap to clean themselves every day while bathing, the incidence of scabies is still high (Aminah et al., 2015).

As stated by Putri pratiwi, a good bath is: 1). One to two times a day, especially in the tropics. 2). For those who are involved in sports activities or other work that takes a lot of light, it is recommended to take a shower immediately after completing the activity. 3). Use mild soap. 4). Clean the anus and genitalia well because in unhygienic conditions, normal secretions from the anus and genitalia will cause irritation and infection. 5). Cleanse the body with water (Ilyas Mauladana Tajudin, 2022).

CONCLUSION

This study concludes that lighting conditions are significantly associated with the incidence of scabies among male students at Nurul Jadid Islamic Boarding School in Kubu Raya, while the use of antiseptics shows no such relationship. In contrast, water sanitation, bed cleanliness, towel hygiene, and clothing cleanliness all demonstrate significant associations with scabies incidence in this population. These findings highlight the critical role of environmental and personal hygiene factors—excluding antiseptics—in scabies prevention within crowded boarding school

settings. For future research, longitudinal studies could explore causal mechanisms through interventions like targeted hygiene education programs and assess the long-term impact of improved sanitation infrastructure on scabies recurrence rates.

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