RISK FACTORS, LEVEL OF KNOWLEDGE, AND SCABIES TRANSMISSION PREVENTION BEHAVIOR AMONG STUDENTS AT THE AR-RAHMAH ISLAMIC BOARDING SCHOOL, GOLOKAN, SIDAYU, GRESIK, INDONESIA

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ABSTRACT

Scabies is an infectious skin disease caused by the parasite Sarcoptes scabiei var. hominis and its products. Although the prevalence has decreased, scabies remains a public health problem in Indonesia. In the Sidayu District of Gresik, there has been an increase in scabies cases, particularly in densely populated communities such as Islamic boarding schools. Factors contributing to the high incidence of scabies are related to poverty, resulting in low levels of personal hygiene, limited access to water, and high population density. This study aims to determine the risk factors, level of knowledge, and scabies transmission prevention behavior among students at the Ar-Rahmah Islamic boarding school, Golokan Village, Sidayu District, Gresik, Indonesia in 2024. This research is a descriptive study, with data collected using a questionnaire. The sample comprises 88 respondents, selected through non-probability purposive sampling. Results showed that all respondents were male, 40.9% were 14 years old, 35.2% were in grade 8, and 34.1% had lived in an Islamic boarding school for 1-2 years. Additionally, all respondents had a level of housing density not meeting health standards, 79.5% had experienced scabies symptoms, and 56.8% had suffered from scabies. Furthermore, 55.7% of respondents demonstrated good knowledge about scabies, while 85.2% exhibited poor behavior in preventing scabies transmission, with 63.6% showing negative results when screened for scabies via questionnaire. Overall, most students exhibit high-risk factors for scabies, possess a good level of knowledge about the disease, yet demonstrate poor preventive behaviors against its transmission.

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Highlights:

1. Risk factors, level of knowledge, and scabies transmission prevention behavior among students at the Ar-Rahmah Islamic Boarding School, Golokan Village, Sidayu District, Gresik, Indonesia
2. Providing data on the incidence of scabies in islamic boarding schools

INTRODUCTION

Scabies is an infectious skin disease caused by infestation of the parasite *Sarcoptes scabiei var. hominis* and its products. *Sarcoptes scabiei* survives in the human body by making tunnels in the skin, causing itching symptoms in sufferers. Scabies transmission can occur quickly if there is direct physical contact between individuals. Apart from chronic itching, scabies causes significant social impacts. The discomfort caused by itching has direct consequences, namely disrupting the patient's sleep, disrupting concentration at work or school, and harming attendance, performance, and quality of life.

The estimated prevalence of scabies worldwide is 300 million individuals infected each year. It is a significant health problem in many developing countries and was declared a neglected skin disease by the World Health Organization in 2009[1]. Factors contributing to the high incidence of scabies in developing countries are poverty, which is related to low levels of personal hygiene, difficult access to water, and population density[2].

The incidence of scabies was found to be high in communities with dense environments and potential risk factors for scabies transmission, such as in prisons, military camps, and boarding schools[3]. Islamic boarding schools are one of the environments with a high incidence and prevalence of scabies in Indonesia. It is not surprising that students are always associated with this disease, as it is no secret that they live in one local with a makeshift and straightforward environment, making them very vulnerable to diseases, especially skin diseases like scabies[4].

Frequently exchanging or borrowing clothes, towels, sarongs, pillows, bolsters, and others, combined with a lazy attitude towards cleanliness, become some factors that accelerate the transmission of diseases. Knowledge and awareness are needed to anticipate this disease so that society does not develop it into a stereotype and that students do not underestimate it. This prompted the author to research the risk factors, level of knowledge, and scabies transmission prevention behavior among students at the Ar-Rahmah Islamic Boarding School, Golokan Village, Sidayu District, Gresik, Indonesia.

METHODS

This was quantitative descriptive research with a cross-sectional design. Data was collected using a questionnaire that previous researchers had validated. The questionnaire consists of respondent characteristics, including gender, age, class, and length of stay at the Islamic boarding school. The variables measured were occupancy density, history of scabies, history of scabies symptoms, level of knowledge regarding scabies, and behavior to prevent transmission of scabies.

The population was all students at the Ar-Rahmah Islamic Boarding School, Golokan Village, Sidayu District, Gresik, Indonesia, with a total sampling technique of 88 students. Researchers collected data by gathering all respondents in the hall, explaining the research objectives, and asking for their willingness to act as respondents. Respondents filled out the questionnaire in writing.

Data analysis was carried out descriptively using Microsoft Excel, with a frequency distribution table measuring the percentage of each variable. Conclusions are drawn based on the mode of each variable. This research received ethical permission from the health research ethics committee, Faculty of Medicine, Universitas Airlangga, with approval number 56/EC/KEPK/FKUA/2024, dated February 26, 2024, granted by Dr. Soebagjo Adi Soelistijo, dr., Sp.PD., K-EMD., FINASIM., FACP.

RESULTS

88 male students from Ar-Rahmah Islamic Boarding School, Golokan Village, Sidayu District, Gresik, Indonesia, participated in this study. The demographic characteristics, risk factors, level of knowledge, and scabies transmission prevention behavior were analyzed descriptively. The students' ages ranged from 12 to 17 years, with the majority being 14 (40.9%). Most students were in class 8 (35.2%). The length of stay in the boarding school varied, with most students (34.1%) staying for one or two years. All students (100%) lived in an environment that did not meet standard occupancy density, which may contribute to scabies transmission. 56.8% of students reported a history of scabies, while 79.5% had experienced scabies symptoms. These findings indicate a high prevalence of scabies-related issues in the boarding school environment.

Knowledge assessment showed that 55.7% of students had good knowledge about scabies, while 44.3% had bad knowledge. Despite more than half demonstrating a sufficient understanding, a significant proportion with inadequate awareness remains, which may contribute to improper prevention behaviors. Preventive behaviors among students were destructive, with only 14.8% exhibiting good scabies transmission prevention behavior, while 85.2% had bad prevention practices. This highlights the need for more effective health education and behavioral interventions. Only 36.4% of students reported undergoing scabies screening, while 63.6% had never been screened. This indicates a lack of routine monitoring, which may hinder early detection and management of scabies cases. Despite most students (55.7%) having good knowledge of scabies, this did not translate into good prevention behavior, as only 14.8% actively engaged in preventive measures. This suggests that awareness alone is insufficient, and additional efforts are required to reinforce behavioral changes.

Table 1. Frequency Distribution of Risk Factors, Level of Knowledge, and Scabies Prevention Transmission Behavior

Characteristics	Frequency (n = 88)	Percentage (%)
Gender		
Male	88	100
Female	0	0
Age		
12 y/o	5	5.7
13 y/o	17	19.3
14 y/o	36	40.9
15 y/o	20	22.7
16 y/o	7	8.0
17 y/o	3	3.4
Class		
7	24	27.3
8	31	35.2
9	23	26.1
10	10	11.4
Length of Stay in Boarding School		
1 year	30	34.1
2 year	30	34.1
3 year	21	23.9
4 year	7	8
Occupancy Density		
According to the standard	0	0
Not according to standard	88	100
History of Scabies		
Yes	50	56.8
No	38	43.2
History of Scabies Symptoms		
Yes	70	79.5
No	18	20.5
Level of Knowledge related to scabies		
Good	49	55.7
Bad	39	44.3
Scabies Transmission Prevention Behavior		
Good	13	14.8
Bad	75	85.2
Scabies Screening		
Yes	32	36.4
No	56	63.6

DISCUSSION

Length of stay in boarding school

Based on Azizah's research in 2013, it was stated that many students affected by scabies were new students who had not been able to adapt to the environment, as new students who did not know life in boarding school made them escape health. The longer you stay in the boarding school, the more likely you will contract scabies. Bathing together, exchanging clothes and towels, and so on can cause scabies.

Occupancy Density

According to the regulation of the Ministry of Health of the Republic of Indonesia No. 829/MENKES/SK/VII/ 1999[5] concerning housing health states that the area of the bedroom is at least 8 square meters and it is not recommended to use more than two people sleeping in one bedroom, except children under the age of 5 years. At Ar-Rahmah Islamic Boarding School, Sidayu District, Gresik, Indonesia in 1 room with an area of 7x8 square meters, 16-18 people are inhabiting, while based on the regulations of the Ministry of Health that have been described, 1 room with a maximum area is filled with a maximum of 14 people. This shows that the occupancy density has not met the standards according to the Ministry of Health. Occupancy density is a factor of disease transmission. The denser the occupancy, the easier and faster the transmission of diseases such as scabies. Occupancy density also affects the humidity in the room. The more humid a room is, the more it supports breeding *Sarcoptes scabiei* mites[6].

History of Scabies

This result is in line with the profile data of Puskesmas Sidayu in 2023, where

scabies is one of the 15 most common diseases 2023. This shows that scabies sufferers still exist and can still be a source of scabies transmission problems, especially in Islamic boarding schools. Based on Gumilang and Farakhin's research at the Al-Hikam Bangkalan Islamic Boarding School in 2021[7], it was found that 56 students (66.7%) were infected with scabies out of a total of 84 students observed. The history of scabies among students in Islamic boarding schools is a significant public health concern, particularly in overcrowded environments with inadequate hygiene practices. These results align with previous studies highlighting the high prevalence of scabies in boarding school settings, where close physical contact and shared living conditions facilitate transmission[8]. Additionally, studies emphasize the role of shared personal items, such as bedding, towels, and clothing, in scabies transmission[9,10]. Since Islamic boarding schools often involve communal sleeping arrangements, the likelihood of reinfestation remains elevated.

History of Scabies Symptoms

The survey results show that the majority of students have experienced symptoms of scabies while staying at the Ar-Rahmah Islamic Boarding School, it could be itching/ rash / thick wounds in the area of fingers/ nails/ armpits/ waist/ wrists/ elbows/ soles of feet/ feet/ breasts/ genitals/ buttocks/ knees/ ears. Based on Septiana's research at Surabaya Boarding School in 2023, the most common characteristics of scabies symptoms in students are itching between fingers, itching in the thigh folds, itching in the elbows, itching at night, and infectious wounds due to scratching[11,12].

There is a gap between the number of students who have experienced scabies and those who have experienced scabies symptoms. Factors associated with the spread of infection are young age, sharing clothes, sharing beds, and less hygienic rooms. If someone is infected with scabies for the first time, they will have symptoms within 4-8 weeks after infection of the patient's skin, so the parasite can still be transmitted to close contacts of the patient without the patient and those around them knowing[13].

Level of Knowledge related to scabies

Research conducted by Ramadhan et al. (2019)[14] on the understanding of students regarding scabies in Islamic boarding schools in Pekanbaru City found that the measurement results showed that the knowledge level of students was categorized as lacking, with 34 individuals (45.3%). Also, 17 individuals (22.7%) were classified as having good knowledge. Another study also indicates that the knowledge level of Manbaul Ulum Jamanis students regarding scabies is mainly classified as lacking (61.8%)[15]. Therefore, it appears that in Islamic boarding schools, especially in Ar-Rahmah Islamic Boarding School, many students are still unaware of this scabies

Scabies Transmission Prevention Behavior

This survey highlights that most students at Ar-Rahmah Islamic Boarding School have poor behaviors regarding scabies transmission prevention. Poor behaviors toward scabies prevention, such as sharing sleeping arrangements, clothing, and towels, and poor hygiene practices, are common risk factors for scabies occurrence[16,17]. The habit of not using soap during bathing increases the likelihood of scabies by 2.93 times

compared to those who use soap. Scabies transmission also increases 10 times in children who share clothing habits with their friends compared to those who do not[18]. A study conducted by Misganaw (2022)[19] revealed that personal hygiene practices such as sharing beds/ clothing, infrequent clothing changes, and not washing clothes for long periods also predict scabies transmission. This is because *Sarcoptes scabiei* can survive outside the human skin for up to 48 hours and reside in clothing, beddings, and blankets, potentially spreading to healthy individuals using them.

Another study by Yulfi et al., (2022)[20] showed that sharing beds increases scabies transmission by 17.53 times compared to those who do not share beds. The gap between the behavior and knowledge of students in Islamic boarding schools is demonstrated through Yulfi et al.'s study (2022)[20], where most students (59.5%) have good knowledge but do not practice it effectively. Students know they must avoid sharing clothing and beds to prevent scabies, yet many still engage in these behaviors. These behaviors are also found among students in previous studies conducted in other boarding schools in Indonesia.

Strengths and limitations

For strength, the sample technique used is total sampling so that it can describe the incidence of scabies at the Ar-Rahmah Islamic Boarding School. However, this study also has several limitations. For example, the sample is not varied because the respondents obtained are only male respondents, so it cannot be known exactly what factors affect scabies in women. The age of respondents obtained was only between 13 and 17 years, so it could not describe the variation in the incidence of scabies in other age ranges.

CONCLUSION

Most students at the Ar-Rahmah Islamic Boarding School in Golokan Village have high risk factors of scabies transmission. These include living in the boarding school for 1-2 years and not having a residential density level that meets the standards. Most of the students have been diagnosed with scabies and have experienced scabies symptoms during their stay at the Islamic boarding school. Most respondents had good knowledge about scabies, but had poor scabies prevention behavior.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICS CONSIDERATION

This research has received an ethical certificate from the Health Research Ethics Committee, Faculty of Medicine, Airlangga University, with approval number 56/EC/KEPK/FKUA/2024, dated February 26, 2024, granted by Dr. Soebagjo

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AUTHOR CONTRIBUTION

All authors have contributed to all processes in this research, including preparation, data gathering and analysis, drafting, and approval of this manuscript for publication.

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