



FACTORS ASSOCIATED WITH SCABIES (LITERATURE STUDY IN INDONESIAN ISLAMIC BOARDING SCHOOLS)

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Abstract

Scabies is a contagious disease caused by the mite called *Sarcoptes scabiei* variety *hominis*, which is characterized by itching at night and the appearance of tunnels and rashes on the skin. Scabies is caused by various factors, both environmental factors and individual or community factors. The purpose of this study was to analyze the factors associated with scabies in Indonesian

Islamic boarding schools. This research was a literature review with simplified approach. The Literature searches were conducted through online databases such as Google Scholar, Neliti, and Garuda, then obtained 148 articles that fit to keywords. The inclusion criteria were articles that aimed to determine factors associated with scabies in Indonesian Islamic boarding schools, published between 2010-2020, and indexed at least SINTA 4. From 148 articles that obtained, there were 52 full text articles that fit to the title, but only 18 articles fit the inclusion criteria. The results of this literature review from 18 articles showed that environmental factors (occupancy density, humidity, lighting, ventilation, temperature, provision of clean water, and environmental hygiene) and individual or community factors (gender, age, personal hygiene, level of education, level of knowledge, socio-economic conditions, and contact with sufferers) were associated with scabies in Indonesian Islamic boarding schools. The most dominant environmental factor associated with the scabies was occupancy density. Meanwhile, the most dominant individual or community factor associated with scabies was personal hygiene.

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INTRODUCTION

Scabies is a contagious disease caused by the mite called *Sarcoptes scabiei variety hominis*. This disease is often found in places with high population density with poor hygiene conditions and can affect all ages, both adults and children. Transmission of scabies can be through direct contact with sufferers or indirect contacts such as through clothes, towels, bed linen, and other items that have been used by the sufferers. (Budiman and Hamidah, 2015) The symptoms of scabies are characterized by itching at night in a group of people. In addition, people with scabies have symptoms such as the appearance of tunnels and rashes on the thin stratum corneum such as between the fingers, wrists, inner folds of the armpits, and so on. (Djuanda, 2015)

In 2017, World Health Organization (WHO) stated that scabies is included as the Neglected Tropical Disease (NTDs), which is a tropical disease that is still being neglected. This means that people often ignore and allow this disease without treatment. (WHO, 2017)

Scabies is related to clean and healthy living habits very closely, especially poor personal hygiene. Research that conducted by Pande Mirah Dwi Angraeni et al in Bali on 2019, showed that most cases of scabies were found in respondents with poor personal hygiene (92,6%). (Anggraeni, 2017)

Besides, *scabies* also often associated with the environmental conditions where the patient lives. Research that conducted by Fika Rachma Nisa et al in Bogor on 2018, explained that the respondents who suffered from scabies were more likely to an unqualified occupancy density room at 60,8% and room ventilation that did not fit the requirements at 61,2%. (Nisa and Rahmalia, 2019)

One of the places with a high risk of scabies is Islamic boarding school. Even scabies has been considered as a hereditary disease in Islamic boarding schools. (Syafe'i, 2017) Some of the habits that have been attached to students include borrowing personal items such as bath soap, towels, combs, and so on. Research by Fransiskus Hardin in Agam Regency on 2018, explained that the prevalence of scabies among students in Islamic boarding school was 60,5%. (Hardin, 2018)

As a country where the majority of the population is Muslim, Indonesia has many Islamic boarding schools scattered throughout the region. According to data from the Indonesian



Ministry of Religion on 2019, there were 27.722 Islamic boarding schools in Indonesia (Kementrian Agama, 2018) This number is comparable to many studies examining factors associated to the incidence of scabies in Islamic boarding schools. Therefore, the researcher wanted to conduct a literature review to identify the factors associated with scabies in Indonesian Islamic boarding schools based on previous research. By looking at the results of the literature review, it was expected that it could explain the various dominant factors associated with scabies in Indonesian Islamic boarding schools. So that the prevention of transmission could be done early to reduce the prevalence of scabies.

METHOD

This research was a literature review with simplified approach. This method is a data analysis by analyzing various articles and simplifying each finding.⁹ Literature searches were conducted through online databases, like Google Scholar, Neliti, and Garuda with the keywords "the incidence of scabies, the scabies factors, scabies in Islamic boarding schools, scabies in Indonesia, and risk factors of scabies". The exclusion criteria of this research was articles that were not available in full text. While the inclusion criteria of this research were:

1. The study aimed to determine the factors associated with scabies in Islamic boarding schools.
2. The research study was carried out in Indonesia.
3. Research articles published between 2010-2020 and at least had been indexed SINTA 4 (18 articles).

RESULTS AND DISCUSSION

The search results through online databases found 148 articles that fit the keywords. Then, they were screened by the title and obtained 52 full text articles. After that, researcher reviewed according to the feasibility based on the inclusion criteria, so that 18 articles which fit the criteria were obtained. This was a flowchart of article selection conducted by the researcher.

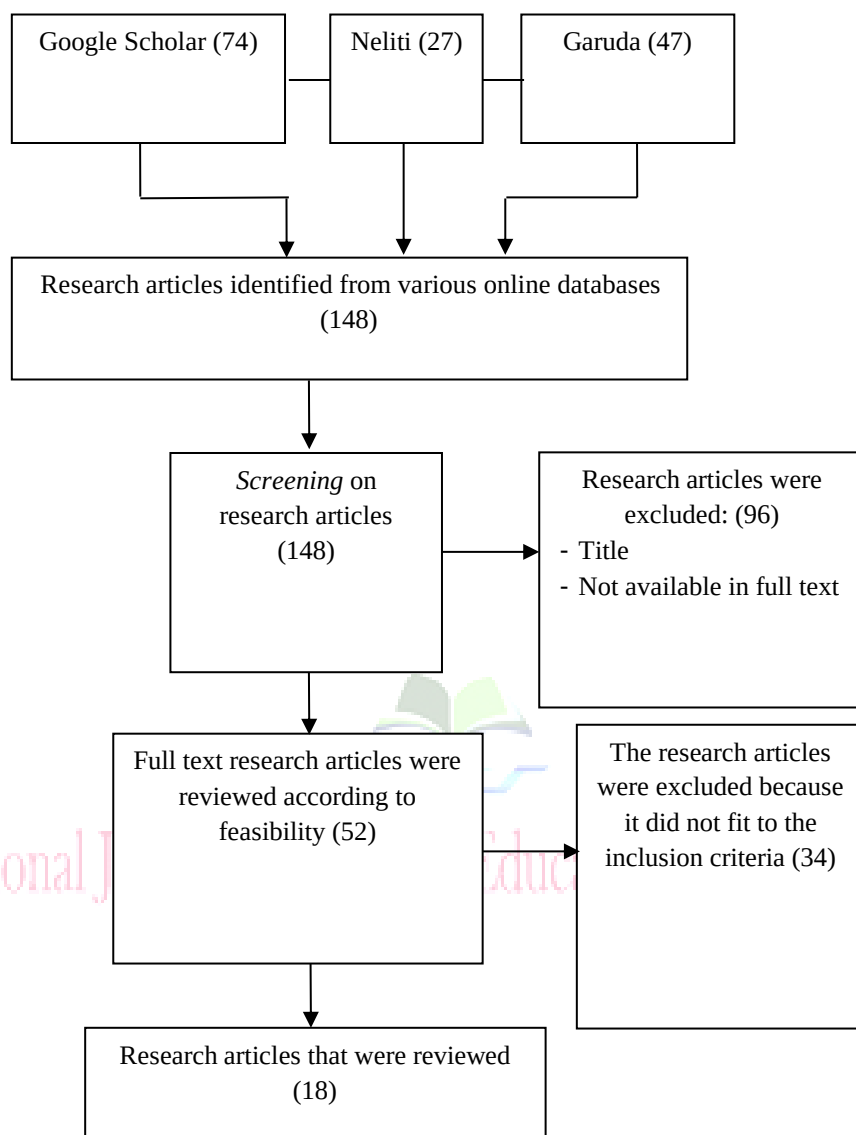


Figure 1. Article Selection Flowchart

After getting 18 articles which fit to the criteria, the researcher identified by creating a synthesis matrix that aimed to collect information from all articles. This was a synthesis matrix table for the articles sampled in this literature review.



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Table 1. Article Synthesis Matrix

No.	Researcher and Year of Publication	Source	Research Place	Sample Characteristics	Design Study	Result
1.	Suci Chairiya Akmal, et al. (2013)	Andalas Health Journal, Vol. 3 No.2	Padang, West Sumatra	Total sampling (138 respondents)	Cross sectional	- There was an association between personal hygiene and the incidence of scabies. (p=0,000)
2.	Indra Sianturi, et al. (2014)	eJournal of Indonesian Medicine, Vol.2 No. 2	East Jakarta, DKI Jakarta	Total sampling (119 respondents)	Cross sectional	- There was a significant association between personal hygiene and the incidence of scabies. (p=0,008)
3.	Amajida Fadia Ratnasari, et al. (2014)	eJournal of Indonesian Medicine, Vol.2 No.1	East Jakarta, DKI Jakarta	Total sampling (192 respondents)	Cross sectional	- There was a significant difference in the prevalence of scabies based on gender (p=0,048) and education level (p=0,023).
4.	Hilma UD, et al. (2014)	Indonesian Journal of Medicine and Health, Vol.6 No.3	Sleman, Yogyakarta	Total sampling (53 respondents)	Cross sectional	- There was an association between knowledge (p=0,038) and the frequency of indirect contact (p=0,008) with the incidence of scabies.
5.	Mu'linatu Sa'adatin, et al. (2015)	Indonesian Journal of Public Health, Vol.10 No.1	Semarang, Central Java	66 people as the case group and 66 people as the control group	Case control	- The risk factors of scabies were personal hygiene (OR=2,934; p=0,005), which consisted of the habit of using toiletries (OR=6,500; p=0,000) and clothing habits (OR=2,734; p=0,008).
6.	Berta Afriani (2017)	Journal of Health Sciences, Vol.2 No.1	Ogan Komering Ulu, South Sumatra	Total sampling (51 respondents)	Cross sectional	- There was a significant association between socio-economic status (p=0,021) and personal hygiene such as bathing habit (p=0,006), hand and nail hygiene practices



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7.	Novita Nuraini, et al. (2016)	INOVASI Scientific Journal, Vol.1 No.2	Jember, Java	East	Proportional sampling (56 respondents)	Cross sectional	(p=0,010), clothing hygiene practices (p=0.012), towel exchange practices (p=0,004), and bed hygiene practices (p=0,039) with the incidence of scabies.
8.	Hasna Ibadurrahmi, et al. (2016)	Journal of Medical Professions: Journal of Medicine and Health, Vol.10 No.1	Depok, Java	West	Proportional stratified random sampling (286 respondents) and Total sampling (30 rooms)	Cross sectional	- There was a significant association between gender (p=0,021) and level of knowledge (p=0,000) with the incidence of scabies.
9.	Nur Muafidah, et al. (2017)	Journal of Health Science and Prevention, Vol.1 No.1	Banjarbaru, South Kalimantan		Simple random sampling (127 respondents)	Cross sectional	- There was an association between the level of knowledge (p=0,045), attitude (p=0,017), behavior (p=0,001), occupancy density (p=0,007), humidity (p=0,029), natural lighting (p=0,029), temperature (p=0,011), and ventilation (p=0,031) with the incidence of scabies.
10.	Umm Fariyah, et al. (2017)	STRADA Health Scientific Journal, Vol.6 No.1	Gresik, Java	East	Simple random sampling (96 respondents)	Cross sectional	- There was a significant association between personal hygiene (p=0,000) such as skin hygiene (p=0,000), hair hygiene (p=0,017), hand and nail hygiene (p=0,000), cleanliness of clothes (p=0.000), and cleanliness of the bed (p=0,000) with scabies.
11.	Parman, et al. (2017)	Batanghari University Scientific Journal, Jambi, Vol.17 No.3	Tanjung Jabung Barat, Jambi		63 people as the case group and 63 people as the control group	Case control	- Environmental factor associated to the incidence of scabies in Islamic boarding school was the place of clean water supply (p=0,002)
12.	Nila Puspita Sari,	Journal of	Pekanbaru,		Simple random	Cross	- Skin hygiene (OR=3,125; p=0,004), hand and nail hygiene (OR=3,473; p=0,001), genital hygiene (OR=3,782; p=0,002), clothing hygiene (OR = 4.062; p=0,000), towel hygiene (OR=4,316; p=0,000), cleanliness of beds and sheets (OR=13,895; p = 0,000) were associated with the incidence of scabies and as the risk factors of scabies.
							- There was a significant association between personal



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	et al. (2018)	Community Health, Vol.4 No.2	Riau	sampling (83 respondents)	sectional	hygiene (p=0,047) and knowledge (p=0,011) with the incidence of scabies.
13.	Siti Riptifah Tri Handayani, et al. (2018)	Journal of Medicine and Health, Vol.14 No.2	Bogor, West Java	Consecutive sampling (75 respondents)	Cross sectional	- Factors associated with scabies were personal hygiene (p=0,0005), humidity (p=0,002), ventilation (p=0,015), and occupancy density (p=0,008).
14.	Yessi Arisandi, et al. (2018)	Sriwijaya Medical Magazine, Vol.51 No.4	South Sumatra	Proportional random sampling (93 respondents)	Cross sectional	- There was an association between gender (p=0,001), age (p=0,003), education level (p=0,001), and occupancy density (p=0,001) with the incidence of scabies.
15.	Zaira Naftassa, et al. (2018)	BIOMEDIKA, Vol.10 No.2	Depok, West Java	Accidental sampling (50 respondents)	Cross sectional	- There was an association between gender (p=0,009), education level (p=0,001), and knowledge level (p=0,009) with scabies.
16.	Fifa Argentina, et al. (2019)	Journal of Medicine and Health, Sriwijaya University, Vol. 6 No.3	Palembang, South Sumatra	Purposive sampling (199 respondents)	Cross sectional	- Occupancy density was the most associated factor with the incidence of scabies (PR=2,746; p=0,002), followed by personal hygiene (PR=2,333; p=0,007) and gender (PR=2,068; p=0,019).
17.	Suci Ihtiarintyas, et al. (2019)	Balaba: Journal of Research and Development for Disease Control Sourced Animals Banjarnegara, Vol.1 5 No.1	Purworejo, Central Java	52 people as the case group and 52 people as the control group	Case control	- Environmental hygiene factors (OR=9,490; p=0,000), contact with patients (OR=2,912; p=0,040), gender (OR = 5,083; p=0,000), and age (OR=2.857; p=0,000) were associated with scabies transmission and also as risk factors of scabies transmission.
18.	Sonhaji, et al. (2019)	Journal of Smart Nursing, Vol.6 No.2	Batang, Central Java	Purposive sampling (48 respondents)	Cross sectional	- There was an association between knowledge (p=0,000) and bathing habit of students (p=0,000) with the incidence of scabies in Islamic boarding school.



Based on this literature review of 18 selected articles, there were factors associated with scabies in Islamic boarding schools:

1. Environmental factor

a. Occupancy Density

The occupancy density in this literature review is the comparison between the area of the room and the number of students in that room. (Mawardi, 2014) Based on KEPMENKES Number 829 on 1999, the minimum bedroom area is 8 m² and it is not recommended to use more than 2 people in a room, except for children under five years. (Decree of the Minister of Health, 2011)

Based on the results of the review, there were 4 articles that showed a significant association between occupancy density and the incidence of scabies in Islamic boarding schools. High occupancy density caused less air circulation, so that air humidity increased. It made the mites breed easier. In addition, high occupancy density caused contact between residents became more frequent, so that the mites could transmit easily from patients to other students.

b. Air Humidity

Air humidity is the percentage of the amount of water content in the air in a room, with health requirements criteria of 40-70%. (Rofifah, 2018) From the results of the review, there were 2 articles that showed a significant association between air humidity and the incidence of scabies in Islamic boarding schools. Based on PERMENKES Number 1077 on 2011, inappropriate humidity can accelerate the breeding of mites, so that it can increase the chance of students to have scabies. (Regulation of the Minister of Health, 2011) High humidity can be affected by poor house construction, for example floors and walls that are not waterproof, roofs that leak when rain, and lack of lighting.



c. Lighting

Lighting leads to natural lighting source, which is sunlight. Indoor lighting requirements are at least 60 lux and not dazzling. If there is less sunlight entering the students' room, it can increase air humidity in the room. However, if the incoming sunlight is too much, it can increase the temperature in the room. (Widiasih and Budiharta, 2012)

Based on the results of the review, there was 1 article that showed an association between lighting and the incidence of scabies in Islamic boarding schools. The amount of light that enters affected humidity and temperature, whereas high humidity could increase mite breeding. Meanwhile, high temperatures could cause students to sweat easier, so that the itching due to scabies got worse.

d. Ventilation

The ventilation is the area of the opening of the air that can enter the room. According to PERMENKES Number 1077 on 2011, the requirements for good ventilation are the area of permanent ventilation holes at least 5% of the floor area of the room, while the area of incidental ventilation holes that can be opened and closed is at least 5% of the floor area of the room, so that the total ventilation area is 10% of the floor area of the room. (Regulation of the Minister of Health, 2011)

Based on the results of the review, there were 2 articles that showed an association between ventilation and the incidence of scabies in Islamic boarding schools. A room that had insufficient ventilation could cause poor air circulation, heat the room, and occupants would sweat more easily. This could make the condition of people with scabies got worse.

e. Temperature

Temperature is the feeling of hot or cold air in the room which is expressed in certain degrees. Room temperature that fit to health requirements is around 18-30°C. (Ibadurrahmi, Veronica and Nugrohowati, 2017)



Based on the results of the review, there was 1 article that showed an association between temperature and the incidence of scabies in Islamic boarding schools. Temperature affected the humidity in the room. The temperature that was too low can increase air humidity, so that it was easier for mites to breed. However, the temperature that was too high also caused someone in the room to sweat quickly, so that the patients felt uncomfortable because the skin became itchier. This condition caused constant scratching of the skin which made scabies worse.

f. Clean water supply

The provision of clean water is one of the important things that support bathroom sanitation which plays a role in disease transmission in Islamic boarding schools. Islamic boarding schools generally use a bathroom with a large tub or so-called *kolah*. *Kolah* is a large and long water tub building that is used for several bathrooms. (Farihah, 2017) So they were usually used together, whereas it had a greater risk of increasing the transmission of scabies between students. Tubs of water that were used together had the potential to transmit scabies if the water that entered the body was already contaminated with dirt, including mites. Based on the results of the review, there was 1 article that showed an association between the provision of clean water and the incidence of scabies in Islamic boarding schools.

g. Environmental Hygiene

Environmental cleanliness is an effort to preserve the environment in order to achieve sustainability and health. The cleanliness of the Islamic boarding schools's environment includes cleaning efforts in various places in the boarding schools, such as mosques, dormitories, classes, canteens, halls, and so on. If the cleanliness of the environment around the boarding schools is maintained, the risk of disease transmission due to the environment can be minimized. (Haridana, 2018)



Based on the results of the review, there was 1 article that explained the association between environmental cleanliness and the incidence of scabies in Indonesian Islamic boarding schools. The worse environment where students live, the more susceptible students were to contracting scabies.

2. Individual / Community Factors

a. Individual Characteristics

Gender is a biological characteristic possessed by a person and is divided into male and female. Gender is related to the characteristics, and behavior of a person.(Amriani, 2018) Based on the results of the review, there were 6 articles that showed an association between gender and the incidence of scabies in Indonesian Islamic boarding schools. From 6 articles, 5 of them indicated that male students were more at risk of developing scabies. Women tended to pay more attention to personal hygiene and were usually less comfortable exchanging clothes and personal equipment with their friends.

Meanwhile, age is an individual characteristic that distinguishes a person's maturity level. Age greatly affects a person's level of knowledge, attitudes, and behavior.(Argentina, 2019) Based on the results of the review, there were 2 articles that showed an association between age and the incidence of scabies. The prevalence of scabies was more common in younger students. It was associated that someone who had an older age had more experience, so they tended to know more about the transmission and prevention of scabies and had better awareness about healthy living.

b. Personal Hygiene

Personal hygiene is a person's effort to maintain and maintain his / her health and cleanliness to gain both physical and psychological well-being.(Sholihah, 2015) Based on the results of the review, there were 7 articles that showed a significant association between personal hygiene and the incidence of scabies in Indonesian Islamic boarding schools. Students who had bad personal hygiene were more likely to suffer from scabies. Personal hygiene was an important factor of scabies because it influenced a person in



preventing contagious diseases such as scabies. The worse personal hygiene of the students, the faster the scabies mite to transmit. Some of the personal hygiene referred to the habit of using toiletries, clothing habits, bathing habits, skin hygiene, hair hygiene, hand and nail hygiene, clean bed and bed linen, and genital hygiene. Bad habits among students, such as using personal tools in turn, caused scabies transmission to accelerate.

c. Level of education

The level of education in this literature review was the level of education that is being pursued by students in Islamic boarding schools. Based on the results of the review, there were 3 articles that showed an association between education level and the incidence of scabies in Indonesian Islamic boarding schools. Students at the Tsanawiyah level (Junior High School) had a greater risk of getting scabies than students at the Aliyah level (Senior High School). Education level was associated with person's age. Age was related to person's knowledge, behavior, and attitudes. In their effect on the incidence of scabies, the students who were more mature had better experience and knowledge, so they understood the various prevention and transmission of scabies.

d. Level of Knowledge

Knowledge is something that is very important in a person's actions and behavior. The level of knowledge can be students' understanding of scabies, such as prevention, causes, symptoms, treatment, and so on. (Samosir, 2019) Based on the results of the review, there were 6 articles that showed an association between the level of knowledge and the incidence of scabies in Indonesian Islamic boarding schools. Someone who had good knowledge tended to have a good attitude towards preventing scabies, so they had a lower risk of developing scabies.

e. Social and Economic Conditions

Socio-economic status is one aspect that shapes a person's lifestyle. (Afriani, 2017) Based on the results of the review, there was 1 article that showed an association between social and economic conditions and the incidence of scabies in Indonesian Islamic



boarding schools. The socio-economic condition of a person could affect the fulfillment of personal hygiene facilities. Students who had low socio-economic status tended to be less fulfilled, so they were forced to borrow from their friends. This could increase the risk of scabies transmission.

f. Contact with The Patients

Contact with the patients in this literature review was the interaction with a person who suffered from scabies. Based on the results of the review, there were 2 articles that showed an association between contact with patients and the incidence of scabies in Indonesian Islamic boarding schools. Both direct and indirect contact was associated to the incidence of scabies. Therefore, apart from having to avoid direct contact such as sleeping with patients, students should also use their own tools or not take turns with friends. Borrowing personal tools can increase the risk of scabies in Islamic boarding schools. (Audhah, 2012)

3. Dominant Factors that Most Influence the Incidence of Scabies based on Literature Review

Based on the literature review, it was found that the most dominant environmental factor associated with the incidence of scabies in Indonesian Islamic boarding schools was occupancy density. This could be seen from the amount of articles that examined the association between occupancy density and the incidence of scabies in Islamic boarding schools. Based on this 4 articles, all articles stated that there was a significant association between occupancy density and the incidence of scabies. In addition, several articles stated that occupancy density is the most important environmental factor in the transmission of scabies in Islamic boarding schools.

Meanwhile, the most dominant individual or community factor associated with the incidence of scabies in Indonesian Islamic boarding was personal hygiene. This could be seen from the amount of articles that examined the association between personal hygiene and the incidence of scabies in Islamic boarding schools. From the 8 articles that examined, 7 articles showed a significant association between personal hygiene and the incidence of scabies.



Personal hygiene was the most important behavior in the prevention of scabies. The bad habits of students in Islamic boarding schools who often used personal items in turn showed that most of the students still had poor personal hygiene, so the prevalence of scabies in Islamic boarding schools was still high.

CONCLUSION AND RECOMMENDATION

The results of this literature review from 18 articles concluded that the factors associated to the incidence of scabies in Indonesian Islamic boarding schools were divided into 2, environmental factors (occupancy density, humidity, lighting, ventilation, temperature, clean water supply, and environmental hygiene) and individual/ community factors (gender, age, personal hygiene, level education, knowledge, socio-economic conditions, and contact with patients). The most dominant environmental factor associated with the incidence of scabies was occupancy density. Meanwhile, the most dominant individual / community factor associated with the incidence of scabies was personal hygiene.

Islamic boarding schools should pay attention to the number of rooms available to the number of students, so that the occupancy density could be adjusted according to health requirements applicable. Then for students, they should pay more attention to personal hygiene, such as avoiding the use of personal tools in turns, because this could increase the risk of scabies in Islamic boarding schools.



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