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Risk Factors Associated with Scabies Occurring in Islamic Boarding Schools: Literature Review

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ABSTRACT

Background: *Islamic boarding schools in Indonesia, in particular, have classic health problems. Some diseases that are common in Islamic boarding schools are scabies, shortness of breath, fever, fainting, cough and cold with influenza, gastritis/ulcer, and so on. And the most common health problem in Islamic boarding schools is scabies. It seems that students who live in boarding schools are "obliged" to experience an itchy disease characterized by symptoms of mruntus (pustules), redness, and itching. There is a saying that being a boarding school student is not valid if you don't suffer from itchy skin. Scabies and hut children's diseases are the same. Personal health, knowledge, teacher and peer support are some of the causes.* ***Objective:*** *The purpose of this literature review was to identify some risk factors for scabies in Indonesian Islamic boarding schools.* ***Method:*** *The research was conducted using relevant literature databases, such as google scholar, SageJournal and PubMed. The keyword used for this literature review was "scabies in Islamic boarding schools". The literature search was limited from 2013 - 2022. There were 11 articles that were relevant and related to scabies that occurred in boarding schools.* ***Results:*** *The results of the 11 articles showed that personal hygiene has a lot to do with and even influences the incidence of scabies in some boarding schools.* ***Conclusion:*** *So improving the personal hygiene of students is one of the important factors in preventing the incidence of scabies in Islamic boarding schools.*

Keywords: *Boarding School, Personal Hygiene, Scabies*

INTRODUCTION

In 2017, WHO categorized scabies, and other ectoparasitic diseases as neglected tropical diseases (NTDs), in response to requests from several member states and recommendations from the Technical Advisory Group for NTDs. WHO's 2030 global targets for scabies are therefore: member states include scabies treatment in the universal health coverage package of services, and conduct mass treatment interventions in endemic areas, areas with a prevalence of 10% or more. By 2020, WHO estimates that the current prevalence of scabies ranges from 0.2% to 71% and affects more than 200 million people every day (WHO, 2023). Meanwhile, the prevalence of scabies in Indonesia is 4.60-12.95%, ranking third out of twelve skin diseases in Indonesia (Mayrona *et al.*, 2018).

Age, gender, level of hygiene, use of shared personal items, housing density, level of education and knowledge about scabies, as well as local culture and socioeconomics are risk factors for the incidence of scabies (Trasia, 2021). Research conducted by Yunita *et al* found that there was a relationship between the number of scabies cases in the Lubuk Buaya Health Center working area in Padang City with personal hygiene factors, room occupancy density, and room ventilation area (Yunita *et al.*, 2015). Some of the variables associated with scabies cases above can be categorized into personal factors, factors originating from scabies sufferers such as: age, gender, level of cleanliness or personal hygiene, level of knowledge, and environmental factors such as: occupancy density, room ventilation area.

Personal hygiene is an effort to maintain a healthy life, including hygiene in activities and social life. In addition, personal hygiene is also referred to as self-care to maintain physical and mental

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health. One way to prevent disease is to maintain hygiene. Several factors influence personal hygiene, one of which is knowledge and attitude towards personal hygiene. This is also in line with Patmawati and Sumardi's research, which found that there is a relationship between the knowledge of students and their attitudes towards personal hygiene (Patmawati & Sumardi, 2020). Many studies have shown that personal hygiene is associated with the incidence of scabies.

Knowledge can help a person avoid diseases, especially infectious diseases. Students with low knowledge have a high prevalence of scabies, while low prevalence occurs in students with high knowledge ((Hilma & Ghazali, 2014)). So increasing student of boarding schools knowledge about scabies is one of the solutions to reduce scabies cases.

In addition to personal factors that play a role in the incidence of scabies, environmental factors are also related to this disease. Navylasari *et al*'s research shows that the social environment is related to the incidence of scabies in students, namely peer and teacher support (Navylasari *et al.*, 2022). The physical environment plays an important role in the incidence of scabies, such as humidity, ventilation and overcrowding (Handari & Yamin, 2018), and in another study showed that natural lighting and room temperature were also associated with the incidence of scabies (Ibadurrahmi *et al.*, 2016).

METHODS

This study used the literature review method. This study used various relevant database literature search sources, such as Google Scholar, SageJournal, and PubMed. In this literature review, the keyword used was "scabies in islamic boarding schools". The literature search was limited by the inclusion criteria:

1. The research was conducted between 2013 and 2022,
2. Research results published in SINTA 3 indexed journals or above, and
3. The results of the research specifically discuss the factors associated with scabies.

The study was only conducted in Islamic boarding schools in Indonesia.

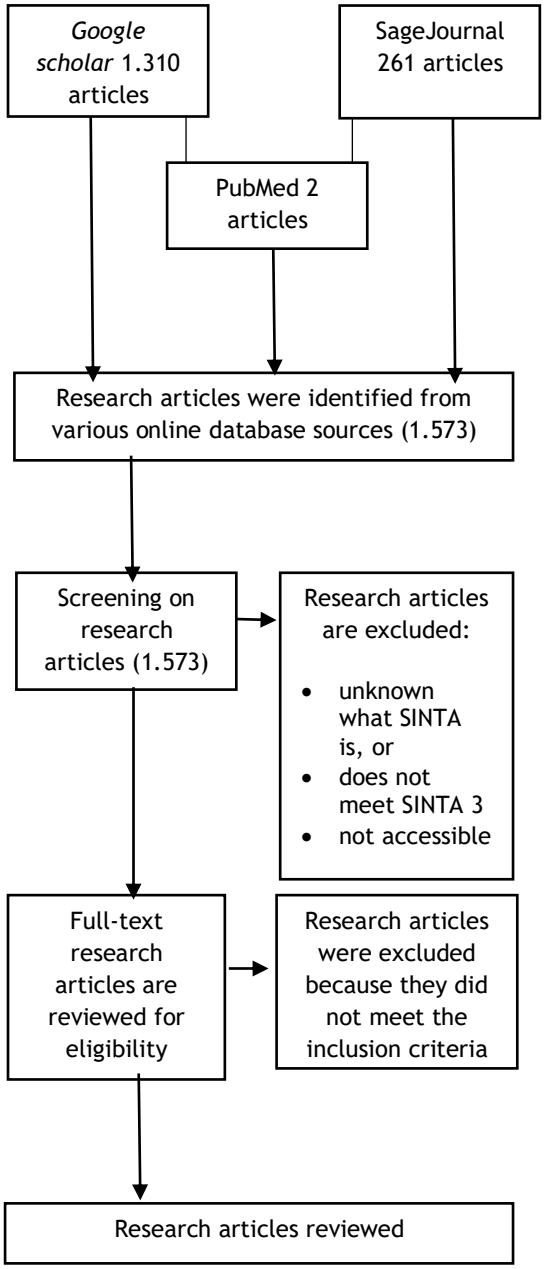

Figure 1. Flowchart of Article Selection

RESULTS

Search results through online databases found 1310 articles in Google Scholar, 2 articles in PubMed, and 261 SageJournal articles. Next, articles were selected based on title, year of publication, and full text, and 10 articles were selected based on inclusion and exclusion criteria

Based on the literature review, 10 journal articles studied various variables that contribute to scabies cases in Islamic boarding schools. Figure 1 is the result of

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journal identification using systematic review. The online journal database review found 1,310 articles from Google Scholar, 2 articles from PubMed, and 261 articles from SageJournal. All of them were excluded because they did not meet the requirements for inclusion. The requirements that were not met included: the journal did not meet SINTA 1, 2 and 3, or it was not known which SINTA, the article was not accessible, and the article was not specific to scabies. In addition, the eleven articles discussed had complete text, were appropriate, and relevant to this study.

Table 1 is the result of a literature review that shows the characteristics of articles that are eligible for systematic review. Personal hygiene (cleanliness of clothing, cleanliness of towels, cleanliness of skin, cleanliness of hands and nails, cleanliness of bedding), knowledge, attitude, support from ustadz and peer students, and other factors were the subjects of the study from 2013-2022.

Table 1. Results of Literature Review

No	Researcher and Year of Publication	Source	Place of Research	Research Sample	Study Design	Results	Determinants of Scabies
1	Laurensia Nofti Navylasari, *et al* (2022)	ULUL ALBAB: Jurnal Ilmiah Multidisipli n Vol. 1, No. 2 Januari 2022	Islamic Boarding School Darul Ulum Takeran Magetan	41 responde ns	Observatio nal Survey with cross sectional approach	Bivariate test shows there is a significant effect of independen t variables, namely: personal hygiene practices (p-value = 0.003 / less), knowledge (p-value = 0.039 / good), teacher (ustadz / ustadzah) support (p-value = 0.010 / less), peer support (p-value = 0.001), on the dependent variable, namely the incidence of scabies. Factors that contribute to the students' efforts to avoid the transmission of scabies are: application	Personal hygiene, knowledge, teacher (ustadz) and peer support

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						of personal hygiene, student knowledge, support from teacher (ustadz and ustadzah), and peer support. Personal hygiene is lacking because they often exchange clothes, lend each other towels, rarely clean the room, and rarely wash bed sheets. Bathing with unclean water no more than twice a day.	
2	Suci Ihtiaringtyas, *et al* (2019)	BALABA: Jurnal Litbang Pengendalian Penyakit Bersumber Binatang Banjarnegara Vol. 15, No. 1 Juni 2019: 83-90	Islamic Boarding School An Nawawi Berjan Gebang Purworejo Jawa Tengah	161 respondens	Observational Analytic with case control design	Factors associated with the transmission of scabies (p=0.000) were environmental hygiene (p=0.000; OR=9.490), contact with patients (p=0.040; OR=2.912), gender (p=0.000; OR=5.083), and age of students. Environmental cleanliness is the most dominant variable that affects the transmission of scabies. Patient contact is in the form of	Environmental hygiene, contact, gender, age

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						exchanging clothes, towels, toiletries and bedding. And this is related to personal hygiene	
3.	Kholilah Samosir *et al* (2020)	Jurnal Ilmu Kesehatan Masyarakat Vol. 9	Islamic Boarding School Madani Unggulan Bintan	106 responde ns	Observatio nal analytic with cross sectional design	There is a relationship between personal hygiene and the incidence of scabies. The results of multivariate analysis show that students with poor individual hygiene have a higher risk of experiencin g scabies than students with good individual hygiene	Personal hygiene
4.	Tisna Sendy Pratama *et al* (2017)	MEDISAINS: Jurnal Ilmiah Ilmu-Ilmu Kesehatan Vol. 15	Islamic Boarding School Miftahul Huda Rawalo Banyumas	26 responde ns	Observatio nal analytic with cross sectional design	Scabies was most common in females (62.9%) and highest in people aged 13 years (33.3%). Scabies was most commonly suffered by respondents with moderate knowledge (74.1%). For the attitude variable, most of the scabies was suffered by respondents with a good attitude (59.3%). For the personal hygiene	Personal hygiene, knowledge, attitude, habits

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						variable, most of the scabies was suffered by respondents with moderate (63%) and poor (48.1%) personal habits	
5.	Siti Riptifah Tri Handari *et al* (2018)	Jurnal Kedokteran dan Kesehatan Vol. 14	Islamic Boarding School an Nur Ciseeng Bogor	75 responde ns	Descriptive analytic with cross sectional design	Personal variables (p = 0.0005), humidity (p = 0.002), ventilation (p = 0.015), and occupancy density (p = 0.008) are all factors associated with the incidence of scabies.	Personal hygiene, humidity, ventilation, occupancy density
6.	Dwi Atin Faidah *et al* (2022)	Medsains Vol. 8 No. 1 Juni 2022	Islamic Boarding School Raudlatul Mubtadiin Kubang Wanayasa Banjarnega ra	83 responde ns	Observatio nal with cross sectional design	Most of the students were 13 years old (26.5%), had MTs education (60.2%), and the majority were female (63.1%). The proportion of personal hygiene students in the poor category was 68.7% or 57 people, and the proportion of students who had scabies was 71.1%.	Personal hygiene, age, gender, education
7.	Hilma UD, Ghazali L, (2014)	Jurnal Kedokteran dan Kesehatan Indonesia Vol. 6 No. 3 September -Desember	Islamic Boarding School Mlangi Nogotirto Gamping Sleman Yogyakarta	53 responde ns	Observatio nal with cross sectional design	There was no significant correlation between the level of hygiene and occupancy density with the incidence of	Knowledge, frequency of contact

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						scabies, but there was a significant correlation between the level of knowledge and frequency of indirect contact with the incidence of scabies	
8.	Hasna Ibadurrahmi, *et al* (2016)	Jurnal Profesi Medika Vol. 10 No. 1 Januari - Juni	Islamic Boarding School Qotrun Nada Cipayung Depok	258 responde ns and 30 rooms	Observatio nal Analytic with Cross sectional design	There is a correlation between the knowledge, attitudes, behavior of students, the density of occupants, air humidity, natural lighting, temperatur e, and ventilation of the students' rooms to cases of scabies disease. The behavior of students and the density of occupants in the students' rooms are the most influential factors on the incidence of scabies disease	Knowledge, attitude, behavior of students, occupant density, air humidity, natural lighting, room temperatur e and ventilation
9	Berta Afriani, (2017)	Aisyah: Jurnal Ilmu Kesehatan Vol. 1	Islamic Boarding School Al Falah Banding Agung OKU	51 responde ns	Analytical Survey with Cross sectional design	The study showed a significant relationship between personal hygiene and socioecono mic status with the incidence of Scabies at	Personal hygiene, status economy

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						Al-Falah Islamic Boarding School.	
10	Dwi Setyowati, Wahyuni (2014)	GASTER Vol. 11 No. 2 Februari	Islamic Boarding School Al Muayyad Surakarta	208 responde ns	Analytic survey with cross sectional approach	Female student with good knowledge were 155 (74.5%) and supported by good prevention behavior against scabies as many as 167 (80.3%). There is a correlation between knowledge and prevention behavior of scabies. This is evident from the results of the analysis obtained the value of ÷2 count (61.165) >÷2 table (3.841).	Knowledge
11	Nur Muafidah *et al* (2016)	Journal of Health Science and Prevention Vol 1 (1) April 2017	Islamic Boarding School Al Falah Putera Liang Anggan	127 responde ns	Observatio nal analytic with cross sectional design	Of the 127 students, 59 students have poor personal hygiene conditions with the category of scabies 53 students (89.8%). While the remaining 68 students have good personal hygiene with the category of scabies 23 students (33.8%). There is a significant relationship between personal	Personal hygiene

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			hygiene and the incidence of scabies in students with a p-value = 0.000. Where many students pay less attention to the hygiene conditions of hands and nails, hair, clothing and skin, resulting in a high incidence of scabies.

Of the 11 articles selected and presented in table 1, the factor or determinant of personal hygiene is the most related and influential factor to scabies disease in Islamic boarding schools in Indonesia with 7 articles. 1 article calls it a behavioral factor, where behavior here tends to individual hygiene behavior or personal hygiene. Next is the knowledge of students about scabies with 5 articles.

Several determinants followed, namely: contact factor and frequency of contact with patients with 2 articles, gender with 2 articles, age factor with 2 articles, attitude with 2 articles, humidity with 2 articles, ventilation with 2 articles, residential density with 2 articles, support from clergy and peers with 1 article, environmental hygiene with 1 article, habits with 1 article, natural lighting with 1 article, temperature with 1 article, and socio-economic with 1 article.

DISCUSSIONS

Based on a literature review of 11 selected articles, there are factors associated with the incidence of scabies in Islamic boarding schools in Indonesia. One variable that is most associated with scabies is personal hygiene which is contained in 7 articles, or it can be said that 8 articles, because the behavioral factors in question lean towards individual hygiene behavior. The second factor that appears the most is knowledge with 5 articles and this shows that these 2 determinants have a lot to do with the incidence of scabies in islamic boarding schools in Indonesia.

Other factors such as attitude, as well as some environmental factors also play a role in causing scabies. These variables can be categorized into two major groups: personal variables and environmental variables.

Related to personal variables include:

Knowledge

There are 5 articles that show if knowledge is related to the incidence of scabies. Like the results of research by Navylasari *et al*, the knowledge of students has an influence on the occurrence of scabies with a p value = 0.039 / either (Navylasari *et al*., 2022). Pratama *et al*'s research also showed that the incidence of scabies occurred in students with a moderate level of knowledge as much as 74.1% ((Pratama *et al*., 2017)). Hilma's research also corroborates this where knowledge has a relationship with the occurrence of scabies with p = 0.038 (Hilma & Ghazali, 2014). Even Setyowati's research identified a relationship between knowledge and scabies, where the OR reached 17.075, meaning that female student who have good knowledge have a chance to prevent scabies 17 times greater than female student with poor knowledge (Setyowati & Wahyuni, 2014). This is as said by Notoatmodjo that a

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person must understand what the meaning or benefits of the behavior are for himself or his family before adopting it. including knowledge about the causes of the disease, symptoms or signs, how the disease spreads, and so on (Soekidjo, 2012).

Attitude

There are 2 articles that show that attitude affects the incidence of scabies. The results of the analysis show that attitude affects the occurrence of scabies in students with a p value of 0.017 (p <0.05). In the article, it is stated that if students have a poor attitude, more will suffer from scabies with a percentage of up to 61.5% (Ibadurrahmi *et al.*, 2016). Also in a study conducted by Pratama which showed that the incidence of scabies was common among students with poor attitudes, where almost half or 48.2% had a poor attitude (Pratama *et al.*, 2017). This is also as said by Notoatmodjo that the indicators for attitude are the same as knowledge, namely:

- Attitude towards illness and disease,
- Attitude towards maintenance and healthy living, and
- Attitude towards environmental health.

The next process of assessing or acting on a stimulus or health object after someone knows it (Soekidjo, 2012).

Age and Gender

Age and gender are associated with the transmission of scabies as mentioned in 2 articles. In Suci Ihtiringtyas' study, it was mentioned that gender and age had a correlation with the transmission of scabies (p=0.000, OR=5.083) (Ihtiaringtyas *et al.*, 2019). Likewise, the results of research by Faidah *et al* showed that students affected by scabies were mostly 13 years old (26.5%) and most students were female (63.1%) (Faidah & Saputro, 2022). Children are more affected by scabies due to lower immunity compared to adults, less hygiene and more frequent play with other children. Likewise with gender, scabies can affect both men and women, but men are more often affected by scabies. This is because men pay less attention to individual hygiene when compared to women (Trasia, 2021).

Personal Hygiene

Personal hygiene is the factor that has the most correlation with the occurrence of scabies in Islamic boarding schools. There are 8 articles that mention if personal hygiene is related to the occurrence of scabies in Islamic boarding schools. Among them are Faidah *et al*, that the results of cross tabulation between personal hygiene categories and the occurrence of scabies obtained the results that personal hygiene less (42%) will have the highest prevalence when made in comparison with the category of good personal hygiene (28.8%). The proportion of personal hygiene students in the poor category was 68.7% or 57 people, and the proportion of students who had scabies was 71.1% (Faidah & Saputro, 2022). Handari *et al*'s research also shows the same thing, that there is a significant correlation between personal hygiene and scabies at p=0.0005 with p value <0.05, and OR=9.773, which means that male student and female student with good personal hygiene have a chance of not getting scabies 9.773 times when compared to male student and female student with less personal hygiene. A total of 43 people (79.6%) respondents who experienced scabies personal hygiene less (Handari & Yamin, 2018). Samosir's research showed that the group with poor personal hygiene, there were 32% who experienced scabies, and 7.1% in the good personal hygiene group who experienced scabies. The statistical test results show that p (0.003) < α, meaning that there is a correlation between personal hygiene and the incidence of scabies. There is a PR value of 4.48 (95% CI: 1.604-12.513), which means that respondents who have poor personal hygiene are at risk of developing scabies 4.5 times higher when compared to people who have good personal hygiene (Samosir *et al.*, 2020). Pratama's research also showed that most of the scabies occurred in students with poor personal hygiene (63%) (Pratama *et al.*, 2017). Afriani's research also shows in detail the correlation between personal hygiene practices and the incidence of scabies, such as: analysis of the correlation between bathing practices and the incidence of scabies obtained p value 0.006 (<0.05), it can be concluded that there is a significant relationship between bathing practices and the incidence of scabies, and the correlation between the practice of exchanging clothes and towels obtained p value

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0.004, it can be concluded that there is a significant correlation between the practice of exchanging clothes and towels with the incidence of scabies skin disease (Afriani, 2017). Finally, Navylasari's research also showed the same thing, where there was a significant influence between independent variables, including personal hygiene practices (p value = 0.003) with the incidence of scabies (Navylasari *et al*., 2022).

Research specifically examining the correlation between personal hygiene and scabies was conducted by Muafidah in 2016, and showed the results that there were 68 students who had poor personal hygiene, and of these, 53 students (89.8%) were affected by scabies. And the X2 test results show that there is a significant correlation between personal hygiene and scabies in students, with p value = 0.000 (Muafidah & Santoso, 2017). This means that personal hygiene is related and even influences the incidence of scabies.

Some key indicators of individual hygiene associated with scabies include skin hygiene such as shared use of soap, bathing with unclean water, shared use of towels and not drying towels. Hair hygiene includes intensity of hair washing, rinsing hair with unclean water and shared use of combs. Nail and hand hygiene which includes: washing hands not with soap and running water, scratching the body when nails and hands are dirty, and leaving nails long. Clothing hygiene includes rarely changing clothes, stacking dirty clothes, and borrowing clothes from each other. And bed hygiene includes the intensity of cleaning the bed, drying the mattress more than 2 weeks, and never changing pillowcases and bed linen (Muafidah & Santoso, 2017).

The factors that relate and influence the incidence of scabies related to environmental factors include:

Social Environment

There is 1 article that explains that the support of teacher (p value = 0.010) and peer support (p value = 0.001) correlate with the incidence of scabies (Navylasari *et al*., 2022). This happens because the role of teacher is very important to foster awareness to carry out personal hygiene to prevent the transmission of scabies in students, which can be done through providing information about the importance of maintaining personal hygiene. The support of teacher and even the boarding school leaders can be in the form of implementing rules that support clean and healthy living behavior. Even with peer support, where their presence is needed to provide information and provide support to prevent scabies.

Physical Environment

There are 3 articles that show there are factors that correlate with the occurrence of scabies. 2 articles mentioned in detail and 1 article mentioned in general terms.

Ihtiaringtyas' research in 2019 showed that a clean environment is one of the factors correlated with the incidence of scabies, with p=0.000, and is the most important factor affecting the transmission of scabies. In this study, the clean environment was only divided into healthy and unhealthy (Ihtiaringtyas *et al*., 2019).

Handari's 2017 study details the environmental conditions in question, namely: occupancy density, ventilation and humidity. All of these are factors that correlate with the incidence of scabies (Handari & Yamin, 2018). Even Ibadurrahmi's research in 2016 strengthened this research with additional factors of temperature and natural lighting. It was found that there was a 0.851 times greater risk of scabies in room temperatures that did not meet health requirements, inversely proportional to the room temperature of students who met health requirements. Likewise with natural lighting, that natural lighting affects the occurrence of scabies with a p value of 0.029. In addition, the air humidity in rooms that do not meet health requirements is quite high for students who suffer from scabies, with a percentage of 68.4 percent (Ibadurrahmi *et al*., 2016). Occupancy density is a major risk factor for scabies, especially in communities that live in high density (Trasia, 2021).

Environmental hygiene issues are important to consider in controlling scabies. One of the WHO recommendations in the prevention of scabies is to clean and vacuum or sweep the room after the infected person is treated (WHO, 2023).

According to Lawrence Green in the PRECEDE and PROCEED theory, it is stated

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that quality of life is strongly influenced by one's health. And health is influenced by one of them behavior, and there are 3 factors that influence a person's behavior, namely: predisposing factors, enabling factors and reinforcing factors (Glanz *et al*., 2015). If described with this theory, these factors can affect the incidence of scabies. Predisposing factors include knowledge, attitudes, habits, personal hygiene, age, gender, education and frequency of contact. The enabling factors include environmental hygiene, humidity, ventilation, occupancy density. The reinforcing factors are the support of teacher (ustadz) and peers.

As if according to Albert Bandura, it can be explained that healthy behavior that can prevent scabies in Islamic boarding schools can be influenced by personal factors and environmental factors. And these three factors are very influential with one another (Glanz *et al*., 2015). The occurrence of scabies can be influenced by personal factors consisting of student knowledge, attitudes and lack of personal hygiene practices. Social environmental factors are also influential such as peer support and boarding school leaders. However, it can also be influenced by environmental factors such as humidity, occupancy density, room ventilation, temperature and others.

CONCLUSION

The results of this literature review can be the basis for determining appropriate interventions to prevent the incidence of scabies in Islamic boarding schools, so that the prevalence of scabies in Islamic boarding schools can be reduced. The results show that there are several factors that correlate and influence scabies, namely individual hygiene or personal hygiene, knowledge, attitude, age, gender, contact, environmental cleanliness, humidity, ventilation, occupancy density, attitude. So it is necessary to coordinate and cooperate between the government and Islamic boarding schools to improve the quality of life of students by preventing the incidence of scabies in Islamic boarding schools.

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