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Incidence and Management of Scabies in Boarding School: Perception from Residents

Abstract

Background: Scabies is a *Sarcoptes scabiei* infection of the human epidermis. This disease is often found in patients who live in groups, such as in boarding schools. Although the risk factors, knowledge, and treatment of scabies have been known, the incidence of scabies in Islamic boarding schools is still high. There is a perception that scabies is a common disease among students. Scabies can interfere with the quality of life or activities of sufferers.

Objective: Therefore, it is necessary to study the perceptions of managers and residents of boarding schools regarding the management and incidence of scabies in Islamic boarding schools.

Methods: This research was conducted in an Islamic boarding school using a qualitative method. The information was obtained from 40 participants: school leaders or managers, teachers, non-educational staff, students, and parents of students in boarding schools. Information was collected using a google form, then coded and grouped based on the item. This study has been declared ethically feasible by the research ethics committee.

Result: The result showed that participants considered scabies a skin disease that could interfere with daily activities. It could be transmitted through direct contact, using toiletries or clothes together. School leadership policies, based on good knowledge, followed by the appropriate behavior of all school residents, had an important role in the incidence of scabies in boarding schools.

Conclusion: The participants had explained similar perceptions about scabies and their management in their boarding school. Participants agreed that scabies could be eliminated by jointly implementing healthy lifestyle behaviors based on Islamic values. The researchers suggest continuing and improving activities and management of students with scabies so that the school can be free from scabies. Second, further research can be carried out in schools with a high incidence of scabies so that it can be compared and find the basic problem about why there is still a high incidence of scabies in boarding schools in Indonesia.

Keywords: Scabies; Boarding School; Infection; Perception; Risk Factor

INTRODUCTION

Scabies is still widely found in Indonesian society, especially in people who live in groups. Scabies is an infectious disease of *Sarcoptes scabiei* on the skin of the human epidermis. It is a human-to-human disease through direct skin contact or contact with mites. Scabies can affect all races, ages, and education levels worldwide¹. It is easily transmitted, so the disease is commonly found in patients who live in groups, such as in boarding schools or orphanages (Engelman et al., 2020).

The prevalence of scabies in the general population is 18.5% in Fuji and tends to be higher in children (43.6%) (Romani et al., 2015). Until now, the prevalence of scabies in certain boarding schools is still high, reaching 54.7% of 53 people (Hilma & Ghazali, 2014) and even 85% of 52 people (Tresnasari et al., 2018). In other boarding schools, it has greatly decreased, like a study in Kulon Progo which found the prevalence of scabies in urban and rural boarding schools of 0% and 2% with a population of 30-40 people (Aminjati & Estri, 2014) and 5,3% in the boarding school of Kendal (Ratnaningrum & Avidah, 2020). Various factors that influence the case of scabies are different, namely knowledge, perceptions and healthy behavior (Hidayati & Akrom, 2006), occupants of room density, endurance, environmental sanitation, and closeness of physical contact (Chandler & Fuller, 2019).

Complaints of itching, especially at night, in scabies can interfere with either learning activities or rest, so it can be said that this disease can interfere with the quality of life. Scabies caused moderate to severe quality of life in 61% of subjects (Purwanto, 2016) and 79.1% of 105 patients in Brazil, with an impressive rate of 0.72 (Worth et al., 2012). The management of scabies has been widely researched, namely by controlling various risk factors and appropriately administering anti-rabies drugs. Treatment of permethrin 5% as an anti-scabies in an appropriate way is still the first choice and is effective (Gunning et al., 2019; Widaty et al., 2017).

Although the risk factors, knowledge and treatment of scabies have been known and identified, it turns out that the case of scabies is still quite high in the

population and boarding schools. Managers' perceptions may influence the management of scabies in boarding schools. There is a perception that scabies is a disease that occurs among students or a harmless disease, although scabies actively interferes with the sufferer's activities (Setiawan, 2018). Therefore, it is necessary to re-examine the perceptions of managers and residents of a boarding school regarding the management of scabies disease.

METHOD

This study used a qualitative method to determine a phenomenon of human experience. The phenomenon in this study included the incidence of scabies in boarding schools. To understand the experience of managing scabies events, this study examined the experiences of subjects who were directly involved and relatively long in boarding schools to develop certain patterns and meaningful relationships (Creswell, 2017). This study has been declared ethically feasible by the research ethics committee of the Faculty of Medicine and Health Science Universitas Muhammadiyah Yogyakarta with ethical approval number 031/EP-FKIK-UMY/III/2020.

This study was conducted at an Islamic boarding school in Yogyakarta from September to October 2020. To fully understand the phenomenon of scabies incidence, information was collected from participants from all people who lived or were involved in the school's activities. The participants of this study were residents of a boarding school located in the city of Yogyakarta. This boarding school was selected since the information from several parents stated that the incidence of scabies in the boarding school was not much; thus, an overview of the management of scabies disease could be obtained. The school could ensure that none of the school residents experienced scabies. The participants involved in this study were: (a) School leaders or managers; (b) Implementers of education, consisting of teachers, caregivers/*musyrif*, supervisors for academic or extracurricular activities, health workers, cleaning service; (c) Students at grades 8 and 9; (d) Parents of students.

Questionnaires were sent to 5 groups of participants via WhatsApp, including student and parent groups.

To find out participants' experience in managing scabies events in schools, the researchers asked various questions via google form to school residents. Researchers chose to use google forms as it is simple, safe, cheap, and accessible to many people. The questions given to participants were in the form of open-ended questions (Table 1.) and were distributed or given to participants by the research coordinator at the school. Participants in this study were members of the WhatsApp group who filled out the questionnaire within the specified time limit, appropriate to consecutive sampling. The information described by the participants was stored automatically in the Google form and documentation of research data information. The filling of the questionnaire or the determination of participants was closed after the study ended, and the answers of many participants were similar.

(see table 1)

Data were collected through a questionnaire via Google Form. The questions were made in the form of open-ended questions so that subjects could explain according to their respective knowledge, understanding and expectations. The insufficient information was confirmed via WhatsApp messages or telephone. The information collected from the Google Form was grouped based on the theme or category presented by the participants. Information that had been grouped was squeezed into several sentences in the form of a certain pattern or relation of meaning as a result of the analysis of this research.

The validity of the data in this study could be identified from the willingness of the subject to provide information. Confirmation of the results to school leaders and teachers had also been carried out, and observations were done with subjects at the research location.

RESULT

Characteristics of the Participant

This study obtained information from 40 participants consisting of 6 males and 34 females, aged 13-51 years with an average age of 30. The subjects worked as part of school residents between 1-29 years old with a mean of 4.9 years old. Students and parents were limited to students in grade 8 and

above and lived in the dormitory. It is to ensure that the subjects had experienced or become residents of the school for at least 1 year. The status of these subjects consisted of various parties in boarding schools, as shown in Table 2.

(see table 2)

The case of scabies in boarding schools was caused by various factors. The results of this study indicated that all components of school members played an important role in preventing the case of scabies in schools. This study also showed the role or participation that each component could play so that scabies or other infectious diseases could be prevented.

Information about the school environment was not only provided by the teacher but also based on direct observation. The dormitories in Islamic boarding schools were grouped based on the gender of the students. Female students occupied a dormitory built by the school, with a room measuring 10x10 m² containing 12 students. Rooms contained 30-50 cm apart wooden beds, wardrobes, windows, and adequate ventilation and light. Male students occupied dormitories in the form of houses around the school rented by the school. Each room was filled by 4-8 students depending on the room size. The room contained a wooden bedroom with a wardrobe and books made of wood. Rooms had good ventilation and lighting; some rooms were equipped with a fan. The number of bathrooms in dormitories varied, with a ratio of 1 bathroom for 10 students. The bathroom in the female dormitory was equipped with a bucket to collect water, while in the male dormitory, the bathroom was equipped with a water tub. Students were required to bring their own water spoon and toiletries.

Perception: Disease Awareness

The subject's knowledge and understanding of scabies factors were not yet qualified as most subjects only explained that scabies was a skin disease characterized by itching and was contagious. However, as written below, most subjects did not understand that scabies is a disease caused by certain microorganisms, namely mites. In fact, some subjects explained that scabies was an allergic disease.

"Scabies is a disease that occurs in the skin. In general, it causes itching." (Teacher or musyrif)

"Scabies is an infectious disease that usually happens in the fingers, caused by lack of hygiene." (Teacher or musyrif)

"Scabies is a disease on the skin surface. If you are exposed to the disease, spots appear on the skin surface, the skin feels itchy, and if you scratch it, it will hurt." (Students)

However, some subjects were able to explain that scabies is caused by certain mites or germs, such as the following:

"Skin disease is caused by mites" (Parents of students)

"One of the skin diseases caused by the scabies germ which is quickly transmitted" (Parents of students)

"Scabies is an itchy and rash on the skin caused by lice mange." (Students)

Perception: Incidence of Scabies

The results showed that most participants did not see any scabies in their boarding schools, but 2 out of 9 students (22,2%) claimed to have experienced scabies during the 2019/2020 school year. Several factors could prevent the number of scabies cases, namely a clean environment, consistent use of personal tools, or being able to maintain good personal hygiene, as in the following statement:

Question: Has anyone ever been scabies in the past year, as far as you know? If there is, please explain the characteristics and why he could get scabies. If not, please explain why there was no scabies incident in this school.

"Nothing, because children are used to maintaining cleanliness and using personal equipment" (Non-Education Employees)

"Nothing, because the toilet itself keeps clean" (Parents of students)

"Nothing, because my school keeps the environment clean and no one has scabies." (Students)

"Nothing, because our pesantren is relatively clean" (Teacher or musyrif)

"I don't know. But in my opinion, cleanliness in schools, especially dormitories, needs to be improved again because there are many cats pee found." (Students)

"It's been a long time....no. Thank god." (School managers)

Meanwhile, participants who had seen students with scabies stated that the disease was related to personal hygiene behavior or unclean air. Like the statement below:

"I have experienced itching on the hands, specifically between the fingers. When I saw the doctor, the doctor said it was scabies. As far as I know, no friends or teachers have been affected besides me." (Students)

"There is. In direct contact, the water is not clean." (Parents of students)

"It seems someone has itching, maybe because of living in the same dormitory and sometimes lack of personal hygiene. Usually, the treatment by school health unit (SHU) officers is by giving ointment or medicine" (Teacher or musyrif)

Perception: Scabies Transmission

The subjects sufficiently understood information about the transmission of scabies and explained that scabies could be transmitted through interaction, touch, or physical contact. Some subjects explained that behaviors that supported the transmission of scabies are sharing personal items, such as bedding, clothes, toiletries or towels and bath water. Some subjects also stated that the factors that influenced the transmission of scabies included the lack of personal hygiene or through animals. The statement below is an example.

"Lack of personal hygiene" (Students)

"From one to another, that people do not maintain healthy behavior" (Parents of students)

"Often interact, through touching, sharing items or bathrooms that many people use," (Teacher or musyrif)

"Usually because of using the same water and soap," (Teacher or musyrif)

"Because of contamination with bacteria through skin contact with sufferers, clothing, other personal tools and water used together." (Parents of students)

"Through physical contact and contaminated fluids." (School managers)

Perception and Practices: Disease Management

This *pesantren* had a health management system with a School Health Unit (SHU), with 1 general practitioner and 1 dentist, who came once a week and took medical practices. However, online health consultations with doctors could be done 24 hours. If students in the dormitory were sick and needed medical examination or treatment, they would be taken to a hospital 100 meters from the school. Medicines were also available in each hostel. If students in the dormitory were sick, they would be checked or confirmed by the *musyrif* (dormitory caretaker), given medicine, or taken to the hospital. Some students had also been given medicines according to their respective health conditions.

The cleanliness of the dormitory was carried out by all students with a daily cleaning picket system, both inside and outside the dormitory yard, coordinated by *Musyrif*. The hostel's cleanliness was supported by adequate room facilities and equipment. Room facilities in the dormitory included wooden bunk beds with mattresses arranged separately at 30-50 cm, a wardrobe, lamp, and fan, although it was not always available in every room. Not all rooms had windows. However, other means of ventilation were available. The following is a subject statement that explains the aspects mentioned above.

"Dormitory health management is good; medicine boxes are provided in each room, and students can deliver medicine boxes to SHU to update the contents of the box every 2 weeks. There is SHU for schools but no SHU for dormitories, and school SHUs are only open during working hours and weekdays/study times, so it is a bit difficult if there are sick students. However, the musyrif is quite quick to respond if there are students who are sick." (Students)

"It is good enough, there is a janitor team to help in cleaning, and there is a picket schedule for each dormitory" (Teacher or *musyrif*)

"Yes, there is a SHU, a prayer room to keep the daily activities and morals of the students in the dormitory." (Students)

"It has been good. In the dormitory, there is a cleaning picket schedule, a hostel cleaning competition and each dormitory is equipped with a medicine box, and there is health counseling." (Teacher or *musyrif*)

"Air circulation is quite good, the distance between the beds is not too tight, the pillow sheets and bolsters are washed regularly." (Parents of students)

However, there was some information that the management of health, especially environmental health, was hardly good. It is evidenced by saying there was still garbage scattered everywhere, used mattresses, or an insufficient number of clotheslines. The subject statement is as follows:

"Not very good, we still tend to use personal medicine. In some places, there are still piles of garbage." (Parents of students)

"Not very good because when I moved to the dormitory. I used mattresses from other students whom I didn't know the history of, also for clotheslines, too little space so wet clothes are close together." (Students)

Perception and Attitude: Promotion and Scabies Prevention

The topic in this study required policies or rules in schools to maintain environmental health and clean and healthy behavior in accordance with Islamic values, current management of ill students, and guidelines that provided information or health education. These aspects are indicated in the statement below:

"Always keep the school environment clean, especially for children, given instructions about the importance of maintaining cleanliness. Keep telling them." (Non-Education Employees)

"Applying Islamic values properly" (Parents of students)

"Students' initial orientation on hygiene and health

Regular health education

Routine cleaning schedule

Health and fitness counseling

Provide medicines and SHU officers." (Teacher or *musyrif*)

"Arranging picket schedule and socializing the importance of cleanliness together" (Teacher or *musyrif*)

"Hygiene management must always be improved both at the school level (school environment) and the personal level of the children. Because skin diseases usually arise from a person who does not know how to keep their body clean." (School managers)

DISCUSSION

The result showed that there were 2 out of 9 students claimed to have experienced scabies during the 2019/2020 school year. Based on data from health centers throughout Indonesia in 2008, the prevalence of scabies in Indonesia was 5.6-12.95% (Ministry of Health of the Republic of Indonesia). At the same time, the prevalence in boarding schools or Islamic boarding schools varied between 5,3% (Ratnaningrum & Avidah, 2020), 38% (Ridwan et al., 2017), 52.33% (Ibadurrahmi et al., 2016), to 84,8% (Mayrona et al., 2018).

This study also showed that scabies was considered a skin disease, and one participant stated that scabies was a disease that usually occurred in *santri* or boarding school students. It is different from the results of other studies, which found that most participants said that scabies was a common disease among *santri*, and some students who had lived in Islamic boarding schools had experienced scabies. In addition, participants thought that scabies was harmless, but the disease was disturbing the patient's activities (Setiawan, 2018). Similar results were shown by Lopes, who found that 92% of participants had experienced scabies symptoms. Participants assumed that scabies was not a serious disease and did not cause death (Lopes et al., 2020). The other research showed that scabies interfered with patients' quality of life due to complaints of itching, disturbances in sleep, study and work activities.

Research that examined risk factors for scabies revealed that there were 2 groups of risk factors, namely the characteristics of the host or student and the student's environment, including school leadership policies. This research involved all groups of people or communities in a boarding school: school leaders, teachers, school officials, students and parents. By involving all of these components as participants, a good picture of the perception of the incidence of scabies in the boarding school environment would be obtained.

Furthermore, Ibadurrahmi's research revealed that the characteristics of students with the greatest relationship strength to the incidence of scabies are attitudes, knowledge, and behavior (Ibadurrahmi et al., 2017). This study showed that students had good

knowledge about scabies by explaining that scabies was a contagious skin disease characterized by itching and infection. Most of the participants were able to explain that mites caused scabies. Some participants explained that scabies was a disease that often occurred in students. It is in line with the consensus that the clinical diagnosis of scabies could be made by finding lesions in the predilection area accompanied by itching and a history of contact with scabies patients (Engelman et al., 2020). A good understanding of scabies in most participants is the basis for increasing awareness and ability of the boarding school community to behave in a healthy manner (Pedoman Penyelenggaraan Pesantren Sehat, 2019).

The next individual factor related to the incidence of scabies is attitudes and behavior in maintaining individual hygiene and health. Attitude and behavior factors with less risk are 2.4 times greater than those with sufficient and good attitudes and behavior (Ibadurrahmi et al., 2017). This study showed that most participants had good attitudes and behaviors about scabies. It is shown from the participants' explanations about the mode of transmission of scabies, caused by direct and frequent touch, or indirectly, through the use of shared items or sleeping together. This participant's knowledge was followed by daily attitudes and behavior in the dormitory, such as using their own personal items, not lending personal items to other students, and changing bed linen, pillowcases or bolsters regularly. Parents supported students' hygiene behavior at this school by providing bed linen and pillowcases so that students could change them weekly. The results of this study align with the Lopes research, which revealed that individual health was less associated with the incidence of scabies by 96% based on interviews with respondents in Bijago (Lopes et al., 2020).

Furthermore, environmental factors that affect the incidence of scabies are residential density, air humidity, natural lighting, temperature and room ventilation (Ibadurrahmi et al., 2017). Research by Ibadurrahmi et al. (2017) revealed that environmental factors had a greater role or relationship strength than student characteristics. Environmental factors in this boarding school that supported the least incidence of scabies included

each student sleeping on a mattress with wooden beds separated by 30-50 cm; there were wardrobes, lights, and fans, although they were not always in every room. Not all rooms had windows, but there were other means of air ventilation. It is in line with the requirements for a healthy home set by the Minister of Health of the Republic of Indonesia (RI) in 1999. The bathroom environment in boarding schools was considered good as there were bathrooms with buckets and the use of individual toiletries and a clothesline, although there was a participant who believed that the available clotheslines were still lacking. To maintain the cleanliness of the dormitory environment, the school leadership required students to carry out picket cleaning of their respective rooms and dormitories by sweeping the rooms and the dormitory environment every day. The dormitory cleaning picket activities were carried out by the students who lived in the rooms or dormitories, each of which was monitored and coordinated by the *musyrif* of the dormitory. It similarly happened at the Walisongo Islamic boarding school, Pontianak (Setiawan, 2017). Students in the class carry out cleanliness in the classroom by taking turns. Meanwhile, to maintain the cleanliness of the school environment, the school leadership assigned janitors to sweep the school grounds every day.

Various activities were carried out to keep the environment clean, which was the policy of the school leadership to keep the school environment clean and healthy. School leaders held cleanliness competitions between rooms in one dormitory or between dormitories in schools to increase student motivation and *musyrif* in maintaining the cleanliness and health of the room and dormitory environment. It was a school leadership innovation activity. Setiawan's research report (2017) explained that no cleaning competition activity had been like this.

Other efforts made by school leaders to maintain the health of school residents were by conducting counseling, providing information or socialization about health, and providing a school health business unit (SHU). Besides, health counseling was carried out when students entered school orientation, and health and hygiene information was also placed in a strategic school environment. In SHU, there were doctors, nurses, provision of simple examination facilities, medicines and vitamins. Provision of

simple medicines and vitamins was also available in each dormitory. Although, there were participants who complained that the School Health Unit opening hours were limited to working hours. If a student were seriously ill, the *musyrif* or the teacher would take the ill student to the hospital closest to the school. Health checks were carried out regularly. School leaders built hand washing stations with liquid soap in various school environments. Most of the student participants and their parents considered the management of ill students in this boarding school quite good.

Some participants thought and hoped that school leaders would teach and apply Islamic values in maintaining the personal health of students and the school environment. Many Islamic values are related to cleanliness and health, as in the letter of Al Mudassir verse 4, which means "and clean your clothes", and the hadith of the Prophet Muhammad, which means "cleanliness is part of faith". In Islam, daily activities intended as worship to Allah Almighty have a very meaningful reward value for Muslims. School leaders, teachers or *musyrif*, school cleaners and students collaborated in various activities to maintain school cleanliness and students' health. This activity was supported by parents who had facilitated their children by providing personal tools so that student participants used personal items well, not lending to each other. The collaboration formed in boarding schools is in line with the Ministry of Health to realize healthy Islamic boarding schools, which requires the cooperation and involvement of all parties in boarding schools or Islamic boarding schools by involving health workers in the school health unit, including student as health cadres, nurses, and doctors (Pedoman Penyelenggaraan Pesantren Sehat, 2019). Hulaila's research showed that the availability of a large number of health cadres who have strong motivation to be actively involved, good skills, and a background in the health sector is necessary for the successful implementation of the boarding school health unit (Hulaila et al., 2021).

Many studies related to scabies had examined the incidence of scabies in students but had not seen the incidence of scabies in all residents or school members, such as school leaders or administrators, teachers or dormitory assistants, or non-educational officers. Likewise, the role of school members or educational institutions has not been

widely studied; how big is their role in preventing scabies in boarding schools or Islamic schools. This study showed that all school members had a role in health management, especially in infectious diseases such as scabies.

CONCLUSION

Participants included students, parents, teachers and *musyrif*, non-educational staff and school leaders. They had good knowledge and modes of transmission of scabies. Participants had similar attitudes and behaviors toward keeping boarding schools clean and healthy, so the participants who experienced scabies would not exceed. Various efforts had been made jointly by all participants. School leaders made various policies that students implemented with the support of parents and supervision of teachers and *musyrif*. Non-educational staff involved in managing school health and hygiene also carried out their duties to maintain school hygiene and health. If all of these activities are based on Islamic values, then maintaining personal hygiene and health and the room environment, dormitories and schools is worth worship. All these activities made the incidence of scabies at the boarding school decrease.

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Table 1. The Question in The Questionnaire

No	Question
1.	What is scabies disease?
2.	How is scabies transmitted, or how can someone get scabies?
3.	Has anyone ever been scabies in the past year, as far as you know? If there is, please explain the characteristics and why he can get scabies. If not, please explain why there are no scabies incidents in this school.
4.	Is the school's management of boarding student's health and environmental health good? Please explain how the management is carried out.
5.	What are the policies or regulations that (should) be implemented so that there will be no students with scabies in this school?

Table 2. Participants' Characteristic

No	The Subject's status	Total
1.	School managers	2
2.	Teacher or <i>musyrif</i> (dormitory teacher)	9
3.	Non-Education Employees	4
4.	Students	9
5.	Parents of students	16
Total		40