

Review

SCABIES IN INDONESIA: EPIDEMIOLOGY AND PREVENTION

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ABSTRACT

Scabies is still a health problem in the world, including Indonesia. The World Health Organization (WHO) in 2017 stated that scabies is included in the Neglected Tropical Disease (NTD) which requires large-scale control. In Indonesia, according to data from the Ministry of Health Republic of Indonesia the prevalence of scabies in 2017 is 6% of the total population in Indonesia. Discussion on the incidence and prevention of scabies from various regions in Indonesia so far is still not comprehensive. This review will provide an overview related to epidemiology and preventive measures against scabies so that scabies cases in Indonesia can be controlled properly.

Keywords: scabies, epidemiology, prevention, indonesia, transmission

INTRODUCTION

Scabies is also called the itch, parch itch, seven year itch because of intense itching that lasts for years. In Indonesia, scabies is called scurvy, scabies, or buduk. Scabies is found throughout the world with varying prevalence, but it is commonly found in tropical and subtropical regions in developing countries. Anyone who contacts with *S.scabiei* can be infected with scabies, however scabies is more prevalent in the population who have a high risk factor for scabies infestation. In communities that have a high risk of scabies the

prevalence can reach 80%.¹ The number of people with scabies in the world is estimated at more than 300 million each year, causing economic burdens for individuals, families, communities and the health system. The cost of treating scabies is quite expensive because scabies usually infects poor people who cannot afford medical expenses. The cost becomes more expensive if the patient has severe scabies with complications of secondary infection by bacteria. At the household level, funds used for medical treatment result in a reduction in costs for basic needs, for example for food, thus increasing the burden on the family. At the institutional level, a significant amount of funds is spent to cope with outbreaks of scabies.²

Scabies has a close relationship with personal hygiene and neighborhoods so that it often occurs in people who live together in densely populated settlements, for example in densely populated settlements or in boarding schools with high population densities. Scabies outbreaks are often found in densely populated environments with close and prolonged skin contact such as in day care centers, orphanages, care centers for the elderly, prisons, refugees, and pesantren even in hospitals.³

Scabies has a long incubation period so people who are exposed to scabies do not realize it before clear clinical lesions arise and can be diagnosed as scabies. In healthy young people, scabies is considered a more annoying disorder due to intense itching. In the elderly or

people with low immunity, scabies is often undiagnosed because the lesions resemble other diseases. Therefore scabies is often diagnosed late, treatment is inadequate or wrong, and the follow-up is inadequate so that it often causes outbreaks and endemic endeavors in areas that have a high risk factor for scabies infestation.¹

EPIDEMIOLOGY

Romani et al⁴ conducted a systematic review of 48 studies of scabies in various countries with the main study in developing countries that have middle to lower economic status. The prevalence of scabies in the general population is highest in Papua New Guinea, Panama and Fiji while the prevalence of scabies in children is most prevalent in Panama. In a systematic review it was reported that scabies is a skin disease commonly found in developing countries, especially in children, underprivileged communities, low education and high population density. Based on this review, Romani et al⁴ concluded that scabies is a skin disease which is a public health problem in developing countries that is difficult to eradicate so that comprehensive research is needed to obtain an effective and efficient control strategy.

Scabies Risk Factors

The existence of scabies is influenced by various things namely age, sex, level of cleanliness, use of personal tools together, density of occupants, level of education and knowledge about scabies, local culture, and socio-economy.

Age

Scabies can be found at any age but infest children more often than adults.⁵ A retrospective study of 29,708 children in India in 2009 showed that scabies was the second most common skin disease in the pediatric age group and the third most frequent in infants.² Children children are more susceptible to scabies because of lower endurance than adults, lack of hygiene, and more often they play with other children with close contact. Scabies is also easy to infest the elderly because of decreased immunity and changes in skin physiology. In addition to immunity, older people also experience changes in skin physiology, namely atrophy of the epidermis and dermis, hyperkeratosis, decreased skin

barrier function against attacks from the outside, and a slower healing process. Dry elderly people's skin is also a port of pathogenic pathogens, including *S. scabiei*.

In addition to the elderly, scabies vulnerable groups are patients who are treated in psychiatric wards, patients with mental disorders, people who receive organ transplants, people with leprosy, and drug users. Scabies easily attacks people who have high risk factors such as elderly people who are treated in nursing homes, people with HIV / AIDS, and people who take medication or undergo therapy that results in a decrease in the immune system. Lay et al⁷ reported that people with scabies who were treated in long-term care facilities in 399 hospitals in Taiwan were 80 years old on average. At the hospital, of the 706 patients diagnosed with scabies, 86% were bed rest patients and 42% had type 2 diabetes mellitus. Scabies often infest elderly people living in long-term care facilities such as nursing homes due to overcrowding and inadequate care and hygiene. Risk factors for scabies infestation in elderly care homes are having more than 120 beds and a ratio of beds to healthcare workers <10: 1.⁶

In elderly people manifestations of scabies can be atypical skin lesions due to changes in the immune response to mites. Atypical skin lesions cause scabies lesions are not easily recognized, so they often escape diagnosis. In addition to atypical lesions, elderly people often experience pruritus due to dry skin or anxiety so that if you experience itching do not think about the possibility of scabies. Patients are generally given oral antihistamines and topical corticosteroids to reduce itching complaints.

Long-term use of topical corticosteroids can change the presentation of skin lesions from typical skin lesions to atypical.⁸ Therefore, it is understandable if scabies outbreaks often occur in nursing homes or other elderly care settings. In 2011, Meyer et al⁹ reported an outbreak of scabies in a teaching hospital in France that attacked staff and sufferers. The outbreak was successfully treated in 3 months with mass treatment of 490 patients and 529 health workers.

Gender

Scabies can infest both men and women, but men more often suffer from scabies. That is because men pay less attention to personal hygiene than women. Women are generally more concerned about cleanliness and beauty so that they take better care of themselves and maintain cleanliness compared to men. In a study in an Islamic boarding school in Pekalongan, it was found that the prevalence of scabies in men was higher than in women. Hilmy⁵ conducted a study at a pesantren in East Jakarta and found that the prevalence of scabies in 2011 was 51.6% with male students suffering from scabies more than women. Research Fakoorziba et al¹⁰ in Iran also shows that the prevalence of scabies is higher in men. Ratnasari¹¹ reported the prevalence of scabies in a pesantren in East Jakarta in 2014 was 51.6% and male students (57.4%) suffered more scabies than women (42.9%).

Cleanliness

Maintaining personal hygiene in a person must be thorough, from the skin, hands, feet, nails, to the genitals. Washing hands is very important to prevent bacterial, viral and parasitic infections. Scabies causes intense itching, especially at night and in hot or sweaty conditions. Because of the intense itching, scabies sufferers will scratch so as to provide comfort and relieve itching even though for a while. As a result of scratching, eggs, larvae, nymphs or adult mites can cling to the nails and if the nails contaminated by the mites scratch other areas, the scabies will spread easily in a short time. Therefore, washing your hands and cutting your nails regularly is very important to prevent scabies. Bathing twice a day using soap is very important because when bathing mites that are on the surface of the skin are washed and separated from the skin.¹²

The habit of ironing clothes, drying towels, and drying the mattress in the hot sun at least once a week can prevent the transmission of scabies. Mites will die if exposed to a temperature of 50o C for 10 minutes.¹³ Therefore, the heat of the iron and blistering sunlight can kill adult mites attached to these items if exposed in sufficient time. Scabies is closely related to the level of personal and environmental hygiene. Putri¹⁴ conducted research in Magelang Public Elementary School about the relationship of individual hygiene, environmental sanitation, and nutritional status to scabies in children.

The results of this study indicate there is a relationship between individual hygiene with the prevalence of scabies. Children with poor hygiene have a 6-fold risk of scabies infestation compared to children with good personal hygiene.

Susilo's research¹⁵ at an Islamic boarding school in East Jakarta also revealed that there was a relationship between personal hygiene and scabies. As many as 49 out of 183 students have good personal hygiene and 134 students have poor personal hygiene. Bad behavior that is mostly done by students is to use one bed together or to move to sleep (84.4% of students). In a survey at a pesantren in South Jakarta, the prevalence of scabies was 49.3% and generally santri (86.7%) had poor hygiene behavior. Santri with good hygiene behavior are those who wash their clothes with soap, dry their clothes in the sun and ironing every day, do not exchange clothes, do not exchange towels, do not share mattresses, bathe more than once a day using soap, and dry mattresses every week.¹⁶

In fact, the survey results show, all students behave badly because sometimes they do not bathe or bathe but do not use soap and do not dry the pubic area with a dry towel after a worm. Santri also does not hang sun-washed towels but only hangs in the bedroom. Clothing and underwear that have been used are not immediately washed but folded or hung and then used again. Clothes that have been washed will be ironed but if you are lazy clothes are only washed and not ironed.

Another bad habit is that students often borrow one another's towels, clothing and prayer equipment (sarong, mukena, veil) and do not dry the mattress they use in the hot sun and often sleep on their friend's mattress. Santri have a habit of using layers of clothing such as t-shirts, shirts or koko clothes and jackets even though the air is hot. The situation caused the students to sweat a lot and their sweat soaked the clothes, but the clothes that were wet with sweat were not washed but only piled on the cupboard and used again after dry. Worse behavior of students is often to exchange or borrow clothing that has been worn and not washed.

Use of Shared Personal Tools

Upon entering the pesantren, santri did not suffer from scabies but after staying in the pesantren for 1-3 months, the clinical symptoms of scabies began to arise due to contracting from friends.⁵ The use of personal equipment together was one of the risk factors for scabies. The habit of exchanging personal items such as soap, towels, blankets, gloves and clothes and even underwear is a daily behavior of students. Borrowed clothes are not only clothes that are clean but also clothes that have been worn and have not been washed. Susilo¹⁵ stated that 82.2% of students in East Jakarta pesantren had a bad habit, that is, they often exchanged towels and clothes. Adult mites can come out of the stratum corneum, attach to clothing and can live outside the human body for about three days; this period is enough to transmit scabies. Therefore, students should not borrow from each other clothes and prayer equipment, especially clothing that has been used and not washed.¹⁵

Occupant Density

The main risk factors for scabies are overcrowding and close contact. The prevalence of scabies is twice as high in densely populated urban slums than in non-dense fishing villages.¹⁷ During mass human migrations in Europe during World War I and II and the Vietnam War, the prevalence of scabies in communities was more than 30% due to during the war, people lived together in refugee camps with high population densities. Very high prevalence of scabies is found in Aboriginal people in Australia due to poor hygiene behavior and high population density. Kanish et al¹⁸ reported that the most common skin disease found in Indian prisons was scabies (37%). The high prevalence of scabies in Indian prisons is due to the overcrowded environment and poor hygiene and sanitation. Population density without poor sanitation can also increase the prevalence of scabies as is the case in Old Indian communities living on small coastal islands of Panama.¹⁹

Many scabies descend upon students who live in dormitories with high occupancy rates, for example in Islamic boarding schools, namely Islamic schools with a dormitory system and their students are called santri. The lessons given in the pesantren are general knowledge and religion but are more emphasized in Islamic religious studies. In Indonesia, as the country with the most Muslim population in the world, there are

14,798 Islamic boarding schools. Santri generally come from families with low social, economic and educational conditions, so they cannot afford to pay for education and living costs in an Islamic boarding school. Therefore, it is not surprising that pesantren are generally densely populated with limited facilities. One bedroom can contain 30-50 students with inadequate facilities and levels of cleanliness. This condition makes scabies easily spread quickly and is difficult to eradicate.

In Temanggung Regency, there are 76 Islamic boarding schools whose students have scabies problems. In pesantren with poor individual hygiene and environmental hygiene, the prevalence of scabies is 25%, while the prevalence of scabies in pesantren with good hygiene is the prevalence of scabies which is lower at 3%.²⁰ Scabies is mostly found in pesantren because students generally sleep in densely populated spaces and often exchange mattresses or sleep on his friend's mattress. Various studies report that scabies is more easily transmitted to people who frequently exchange beds or mattresses.

Level of Education and Knowledge of Scabies

In general, the higher the level of education, the more knowledge, including health knowledge. Education in pesantren has the same level as general education, namely madrasah ibtdaiyah (elementary school), madrasah tsanawiyah (junior high school), and madrasah aliyah (senior high school). Educational material provided is general knowledge and religious knowledge but more religious knowledge. With the increase in education, it is expected that knowledge about scabies will increase because higher educated students usually have the initiative to look for information outside of formal education for example from the internet. In fact various surveys in pesantren show that the prevalence of scabies is not related to the level of santri education.²¹ Knowledge is important in influencing a person's behavior towards diseases including scabies. If someone has high health and hygiene knowledge, it is expected that they can behave well in maintaining their health, including in avoiding scabies.

In fact, in areas that often experience epidemics or endemic scabies, public knowledge about scabies is generally low. Hilmy⁵ reported that 93.6% of students

had less knowledge about scabies and only 1.4% of students had good knowledge. Nindrya's research²² showed that the majority of students (67.9%) lacked knowledge of the clinical symptoms of scabies while students with good knowledge were only 4.2% and moderate knowledge 27.9%. From the Ramadhan study²³ it was found that the majority of students (71.4%) did not know how to transmit scabies and only a few students (4.5%) had good knowledge of scabies transmission. Aulia²⁴ reported that students with less knowledge about the causes of scabies were 93.6% while students with sufficient knowledge and good knowledge were 5% and 1.4%. Ningtiyas's research²⁵ on scabies treatment knowledge showed that 70.7% of students had less knowledge and only 5.7% had good knowledge. Rangganata²⁶ reports that 9.3% of students have good knowledge about scabies prevention, 8.6% have enough knowledge and 82.1% have less knowledge. The lack of knowledge of students about scabies because this knowledge is not taught in formal education in pesantren even though many students suffer from scabies. Based on the results of the study, students' knowledge of scabies needs to be increased, for example through health education.

Rosandi²⁷ reports that health education in the form of lectures and discussions can increase students' knowledge about scabies. Santri with good education level increased from 14.4% to 82.7% after counseling, while students with poor level of knowledge decreased from 68.3% to 5.8%. Sari²⁸ explained that there was a significant difference between the level of knowledge of students about the causes of scabies before and after counseling. Santri who have a good level of knowledge about scabies treatment increased in number from 22.1% to 65.4% while students who had a poor level of knowledge decreased in number from 51.9% to 9.6% after counseling. Thamrin²⁹ reported that the level of knowledge of students regarding scabies treatment before and after counseling was significantly different. From Adriansyah's research³⁰, it was found that there was an increase in good knowledge score by 54% and a decrease in knowledge score by less than 29% regarding the etiology and clinical symptoms of scabies.

Landika³¹ said that counseling can increase students' knowledge about scabies transmission and prevention.

Through the knowledge that has been obtained, students are expected to be able to recognize the symptoms of scabies so that they can go immediately to a doctor and not be a source of infection for their environment. With good knowledge, students are expected to also behave clean and healthy lives so as to prevent scabies. Health education is proven to increase knowledge about scabies, but if health education is only done once, over time the knowledge gained will be forgotten. Therefore, students need to be given information continuously and easily accessed.⁵ Such information can be given in the form of posters displayed in classrooms, prayer rooms, study rooms, bedrooms, etc.

Culture

Community culture can affect the prevalence of disease in an area. In certain areas, sick people should not be bathed because they worry they will make the disease worse. Therefore, if someone suffers from scabies, then it is not allowed to take a shower or wash their hands or even water. Such a culture needs to be stopped by providing counseling to the community.

Santri have a spirit of togetherness because they feel the same fate and continuity so they are accustomed to using personal items together such as towels, mattresses, clothes, blankets, gloves, mukena, etc. The use of personal belongings together certainly facilitates the transmission of scabies. In pesantren there is a belief that scabies is a trial from Allah SWT. Therefore, santri and pesantren managers consider scabies to be normal and only seek help from a doctor if the disease is severe. This false belief needs to be corrected because scabies is a disease that can be treated and prevented. Scabies is not a trial from Allah but because of poor hygiene behavior and high density of bedroom occupants. Thus, santri and pesantren managers need to be given comprehensive information about scabies.³²

Socio-Economic Level

To maintain personal hygiene, a variety of cleaning tools such as toothpaste, shampoo and soap are needed, but because santri usually come from families with less socio-economic level, santri find it hard to buy personal cleaning equipment. Due to the lack of economic level,

students also cannot sleep in their own rooms but must be with friends.

In pesantren, students are used to sleeping together in one room with 30 other students. Santri sleep on a thin mattress, which is close to one another; even one mattress is worn together. According to the Indonesian Ministry of Health quoted by Sarayar³³ the standard of bedroom occupancy is 8m² per person and it is not recommended for more than two people in one room. In fact, one room in the Islamic boarding school is 15m² in size and is inhabited by 15 people. The average boarding school does not meet room occupancy standards so prevention and eradication of scabies becomes difficult. The quality of life of sufferers living in slums is very alarming. House conditions are poor, sanitation infrastructure is inadequate, and densely populated so scabies is not a priority because there are many other things that need to be prioritized.

Scabies Prevention

Disease prevention is divided into primary, secondary, and tertiary prevention. Primary prevention is prevention of disease carried out before the pathogenesis period, including health promotion and special protection. Secondary and tertiary prevention is carried out during the pathogenesis, when germs have entered the human body. Secondary prevention is the initial stage of healing the disease and the prevention of subsequent impacts, including early diagnosis and prompt treatment and disability limitation, namely prevention of complications or disability due to scabies and early treatment according to standards. Tertiary prevention in the form of rehabilitation and prevent the recurrence or emergence of other complications due to major diseases.

Primary Prevention

Primary prevention during the pre-pathogenesis phase of scabies is done by maintaining physical hygiene, clean clothes, not using personal tools such as towels, sheets, clothing together with others, and counseling for the community. Scabies is a disease that can be prevented if someone has the awareness to maintain personal hygiene and the environment. How to prevent scabies is to take regular baths at least twice a day using running water and soap and clean the genital area and

dry it with a clean towel. Patients should not use towels or clothing alternately. Avoid prolonged and close contact with scabies sufferers such as sleeping together on one bed. All infested family or community members need to be treated simultaneously to break the chain of scabies transmission.

All clothes, sheets and towels must be washed with hot water at least 2 times a week to kill mites. Furthermore, clothes are dried in the hot sun for at least 30 minutes then ironed. Population who live together need to be educated about the signs and symptoms of scabies, prevention of transmission, and encourage participants to report when experiencing scabies complaints after traveling to a place.

In maintaining bodily hygiene, the things that need to be considered are skin hygiene, hand nail hygiene, and foot hygiene. Skin hygiene can be maintained by regular bathing twice a day using a mild soap and does not make the skin dry. Hand nail hygiene is maintained by washing hands with soap and cutting the nails so that pathogens do not get lodged in the nails. Foot hygiene needs to be considered because the feet are often covered by shoes and are a good moist medium for parasites. Low knowledge about the importance of cleanliness of the genitals resulted in many young men being infected with scabies in the area. If a person has scabies in other parts of the body it will be very easy to move to the genitals that are not kept clean because the genitals are moist and covered areas. In studies in pesantren, scabies lesions in male students were mostly in the scrotum and penis and buttocks. This is due to the students having the habit of wearing layers of clothing, namely underwear, shorts, trousers or gloves. Therefore, it is important to teach how to clean yourself properly and improve hygiene behavior.

Scabies causes itching and itching gets worse when sweating. Therefore, if you sweat for example after an activity, the clothes must be replaced immediately. Even better if after the move immediately take a shower and not let the sweat dry by itself. Skin integrity can be disturbed if skin hygiene is not maintained. Sianturi et al³⁵ suggested that there is a relationship between clean living behavior and scabies infestation in a pesantren in East Jakarta.

Health promotion which is a primary prevention is needed to prevent scabies outbreaks. Health promotion in the form of counseling needs to be given to ordinary people, especially high-risk subjects to increase knowledge about scabies. Counseling contains information about the causes, symptoms and signs, treatment, transmission, and prevention of scabies. Media that can be used to disseminate information about scabies in an effort to increase public knowledge can be in the form of pocket books, pamphlets or flyers about scabies. Pocket books are more effective than other media because more information capacity and small form make it easy for readers to read anytime and anywhere.¹

Counseling must also be adjusted to the socio-cultural characteristics and level of education of the people who will be given counseling so that the counseling will be beneficial. For groups of children in boarding schools or boarding schools, counseling should also be given to parents or guardians and school teachers. Children are still difficult to process information with difficult terminology. Therefore, it is necessary to use media that are interesting and easy to understand. Young children need more attention from caregivers.¹

Peers have more influence on attitudes about disease prevention behavior than lecture methods especially if the tutor is a role model in the group. Peers have a very high influence in determining attitudes in adolescents and young adults because they tend to follow the attitude of peers to be more accepted in the community.

Secondary Prevention

When someone is infected with scabies, the action that must be taken is to prevent people around people suffering from scabies. Form of secondary prevention is done by treating the patient directly so that the mites do not infest those around them. For a while, avoid prolonged and close bodily contact such as sexual intercourse, hugging, and sleeping in the same bed with the sufferer. People who have had direct contact with sufferers or who are often around sufferers need to be examined

Tertiary Prevention

After the patient is declared cured of scabies, tertiary prevention needs to be done so that the patient and those around him are not infested with scabies for the second time. Clothing, towels and bed linen used in the last five days by sufferers must be washed with hot water so that all mites die. Another way is that all items are washed thoroughly with detergent and dried in the hot sun. Items that cannot be washed but are suspected of being infested with mites are isolated in sealed plastic bags in a place unreachable to humans for a week until the mite dies.¹

CONCLUSION

Based on the description above it can be concluded that scabies is still a public health problem in Indonesia. The existence of scabies is influenced by various things namely age, sex, level of cleanliness, use of personal tools together, density of occupants, level of education and knowledge about scabies, local culture, and socio-economy. However, this can be avoided by primary, secondary and tertiary prevention.

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