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Profile of Scabies in Surabaya Boarding School

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ABSTRACT
Background: Scabies is a skin infection caused by infection and susceptibility to the variant mite Sarcoptes scabiei hominis and its derivatives. Scabies disease can be transmitted through direct contact with mites and causes itching on the human body, which can develop into secondary infections. **Purpose**: to determine the characteristics of scabies according to age, location of lesions, and signs of lesions in students of Surabaya Boarding School on December 2021. **Methods**: This study is a cross-sectional descriptive study with data collection through interviews and clinical examinations. **Results**: Scabies included 40 cases out of 86 respondents. Scabies cases occurred in boys aged between 13 and 15 (37%). The largest proportion of lesions were found all over the body, including between the fingers (75%), between the fingers and arms (15%), between the toes and legs (7%), and underarms (3%). The most common lesions were erythema papules and crusts in 57%, erythema papules, pustules, and crusts in 28%, and erythematous macules only in 18%. **Conclusion:** The importance of education for children about scabies, personal hygiene behavior, environmental hygiene, and other variables that affect the incidence of scabies. It is important that all affected household members are treated and their living environment properly disinfected to ensure tick removal and ultimately prevent further transmission.

Keywords: *sarcoptes scabei*, boarding school, children, human and disease.

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BACKGROUND

Scabies is a skin disease caused by parasitic infestation of Sarcoptes scabiei on the skin. It was reported that in 2010, an estimated 100 million people in the global population were affected by scabies; the prevalence varies across countries, ranging from 0.2% to 71.4%. In general, the prevalence in developing countries is higher and greatly affects the health and social lives of sufferers. [1]

Clinical manifestations of scabies include intense itching, especially at night, which is the most common symptom an itchy acne-like (papular) rash, which is also common and thin, bumpy tunnels consisting of blisters or small bumps on the skin, which are caused by mite burrows. The intense itching encourages the sufferer to scratch the lesions, resulting in the potential for secondary infection or pyoderma which can progress to more serious and potentially life-threatening infections such as rheumatic heart disease and acute glomerulonephritis. Thick crusts on the skin are characteristic of crusted (Norwegian) scabies. Skin infections, such as impetigo, can occur due to scratching and open wounds. Scabies can affect various parts of the body, including the fingers, wrists, arms, legs, belt area, penis, nipples, waist, scalp, palms, soles, and ankles. Symptoms of scabies usually begin 4-6 weeks after infestation, but sometimes there are visible signs before symptoms begin. The diagnostic of scabies is based on a clinical examination of the characteristic features of the infestation and may be supported by visual imaging techniques such as dermatoscopy or microscopy of skin scrapings from burrows.[2]

The pathophysiology and host immune response to Sarcoptes scabiei infestation are still unclear. Various studies to examine the immune response (both humoral and cellular) arising from scabies show varying results. Experimental animal studies or in vitro studies using human skin equivalents and PBMCs show that Sarcoptes scabiei proteins induce the production of various pro-inflammatory cytokines as well as anti-inflammatory cytokines. It is believed that the mite, in its attempt to evade the host immune response, will modulate the host immune response by stimulating the secretion of various anti-inflammatory cytokines so as to suppress inflammation. To date,in Indonesia, no studies have examined the host immune response or the possibility of immune dysregulation in scabies.[3]

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The incubation period of scabies is the time between the infestation and the onset of symptoms. The incubation period for scabies can vary depending on the individual and other factors, such as the severity of the infestation and the host's immune response. The following is an estimate of the incubation period of scabies based on available information if a person has never had scabies before, symptoms may take 4-8 weeks to develop. In people who have had scabies before, symptoms usually appear sooner (1-4 days) after exposure. Sometimes there are visible signs before symptoms begin. It may take 2-6 weeks before itching appears in people not previously exposed to scabies. Symptoms develop much more quickly if a person is re-exposed, often within 1-4 days. It is important to note that an infected person can spread scabies during the incubation period, even if he or she does not yet have symptoms. Therefore, it is important to identify and treat scabies promptly to prevent the spread of the tick.[17]

Scabies can have social repercussions for affected individuals. Some of the social issues associated with scabies are ostracism, stigma, and discrimination. Scabies can be associated with poor hygiene and is often stigmatized, leading to discrimination and social isolation for affected individuals. Secondly, the intense itching associated with scabies can cause sleep disturbances, leading to fatigue, irritability, and decreased productivity. Third, scabies can cause economic losses due to missed work or school, medical expenses, and treatment costs. Fourth, scabies is highly contagious and can be transmitted to others through close skin-to-skin contact, leading to the spread of ticks to family members, friends, and others who come into close contact with the affected individual. Fifth, scabies can lead to serious complications, such as skin sores, sepsis, heart disease, and kidney problems, especially in individuals with compromised immune systems.[5,6] Therefore, this descriptive study was conducted to describe the characteristic of children with scabies patients, depending on their personal hygiene, lesion location, and lesion marks. The right treatment and education can cure scabies.[16]

METHODS

This cross-sectional descriptive study was made to describe the characteristics of patients with scabies at Surabaya Boarding School in December 2021. This study was conducted in October 2021. Sampling was done using the consecutive sampling technique. The number of research samples was all children with clinical manifestations-as many as 44 students out of a total sample of 86 students in just one boarding school. In determining the sample, there are inclusion criteria that include: 1) boys who live in boarding schools between 10-18 years old; 2) willing to be research subjects or become respondents; and exclusion criteria, such as: 1) children who are not willing to be research subjects; and 2) children who suffer from skin diseases other than scabies. Data processing and analysis were carried out with the help of the Microsoft Excel 2007 program. From the records, basic data (age, sex, domicile, number and time of visits), anamnesis (chief complaint, onset, reinfection, family history, other diseases), and examination (location, morphology, diagnosis) were recorded

RESULT

In this study, the number of research samples that could be present during data collection was 86 and all of them were male. Based on the age of the total 86 study samples, 40 children (47%) were found to have scabies (Table 1). Based on the location of the lesions, 6% of the lesions were between the fingers and wrists, 3% were on the feet, 1% were underarms, and 75% were on all parts of the body (Figure 1). Lesion signs include erythematous macules 25% of the time, erythematous papules accompanied by crusts 57.5% and erythematous papules with pustules and crusts 17.5% (Figure 2).

Table 1. Age characteristics of children in the boarding school.

Age Groups	Not Scabies	Scabies
10-12 years old	15 (17%)	9 (10%)
13-15 years old	16 (19%)	31 (37%)
16-18 years old	15 (17%)	0
Total	46 (53%)	40 (47%)

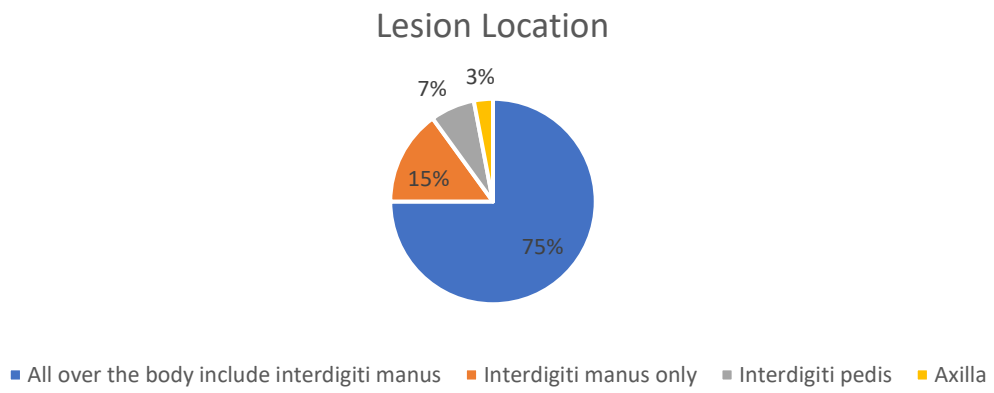

Figure 1. Scabies disease graph by proportion.

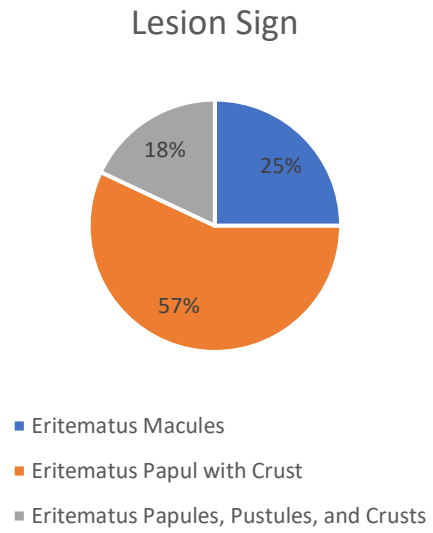

Figure 2. Lesion signs graph by proportion.

DISCUSSION

The results of this study indicate that of the 40 samples, all (100%) were male. This is because the boarding school only specializes in boys staying. A total of 40 children (47%) experienced scabies. This incidence rate is still relatively low and different from research showing that the prevalence of scabies reached 51.6% in East Jakarta. This difference in results is related to the level of population density in Surabaya, which is not as high as in East Jakarta, and environmental factors, water sources, and the behavior of the Surabaya community, which is classified as quite clean.[7]

The results of this study showed that there were two age groups. The age group 10-12 years had 9 children with scabies and the age group 13-15 years had more 31 children with scabies. These results are in accordance with the research of Sunil Agrawal (2012), who found that the incidence of scabies infection was highest in the 10-15 year age group (51%), followed by the 5-10 year age group (27%). This is due to the fact that age level, children do not understand about efforts to maintain personal hygiene.[8]

In this study, the location of the lesions was mostly found throughout the body and especially in the hand area (75%). The results of other research found the location of lesions in general most on the buttocks (33.8%) and between the fingers (29.2%), while in Das et al.'s research the most locations were found in the genitalia area (60%) and between the fingers (57%). This condition is because the wrist and between the fingers are areas with a thin stratum corneum, which make it easier for scabies mites to tunnel.[7,9,13] From the findings of the lesion signs in this study, we know that, in addition to itching and redness, due to persistent scratching of the lesion site, crusts or other secondary infections may develop.

Based on this study, it can be concluded that, out of 86 respondents, the proportion of children who have experienced scabies is 47%. The highest proportion of scabies disease was found in the age

group of 13 to 15 years (37%).[14,15] The proportion of lesion locations was mostly found throughout the body, including between fingers and toes at as much as 75%, between fingers and wrists at 15%, between toes at 7% and armpits at 3%. In addition, the proportion of lesion signs found was erythematous papules with papules and crusts (57%) , erythematous papules with crusts (25%), and erythematous macules alone (18%). Regarding personal hygiene behavior, it was found that 100% of children had contact with people with skin diseases, and 100% of children had bathed with a frequency of twice a day.

This study has several limitations, namely: 1) there are some samples that may be missed, such as children who are unable to attend; 2) there is time owned by researchers when conducting interviews because the respondents at that time had educational activities, and sampling could only be done in one place. The suggestions in this study include: 1) the importance of education for children who live in boarding schools regarding scabies including management; 2) for further research, it can develop other variables that affect the incidence of scabies, for example, personal hygiene behavior, environmental hygiene, and can finding sources of disease transmission.

Scabies is a skin disease that affects an individual's quality of life. The diagnosis is determined clinically or by additional tests. It is important that all affected household members are treated and their living environment properly disinfected to ensure tick removal and ultimately prevent further transmission. The role of health care workers in scabies screening and surveillance in large communities will contribute to scabies eradication.

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