

## RESEARCH ARTICLE

## The Prevalence of Skin Diseases and its Association with Hygiene Behavior and Level of Education in a Pesantren, Jakarta Selatan 2013

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### Abstract

*Skin diseases are very common in places where the society lives in a crowded area. Pesantren is an Islamic school with a dormitory for its students, thus making the spread of skin infection easier to occur. The objective of this research was to identify the association between the prevalence of skin diseases with the hygiene behavior and level of education of santri (students of pesantren). This cross-sectional study was conducted in a pesantren in South Jakarta. Data collection was carried out through a questionnaire consisting of ten questions about hygienic behaviors and history of previous dermatological examinations from July until September 2013. Results showed that out of 98 santris, 88 of them had skin diseases (89.7%). The most frequent skin infection was scabies with 67 cases (49.3%). Furthermore, 78 (88.6%) out of all santris who had skin diseases, were categorized to have poor hygienic behaviors. There were only 10 santris that did not have any skin disease, 3 of them had good hygienic behaviors. There was no significant difference between hygienic behaviors of santris and the prevalence of skin disease ( $p=0.350$ ). Associated with the level of education, ibtdaiyah had the highest number of santris (51.2%) affected by skin diseases. There was a significant difference between the level of education and the prevalence of skin diseases ( $p<0.001$ ). In conclusion, the prevalence of skin diseases in the pesantren was 89.7%; there was no association between skin diseases and hygienic behaviors. However, there was an association between skin diseases and level of education.*

**Keywords:** skin diseases, prevalence, personal behavior, level of education

## Prevalensi Penyakit Kulit dan Hubungannya dengan Perilaku Kebersihan dan Tingkat Pendidikan di Pesantren, Jakarta Selatan 2013

### Abstrak

*Penyakit kulit sering terjadi pada masyarakat yang hidup di lingkungan padat penghuni. Pesantren adalah asrama sekolah Islam yang biasanya padat penghuni sehingga mudah terjadi penularan penyakit kulit. Tujuan riset ini adalah untuk mengetahui prevalensi penyakit kulit dan hubungannya dengan perilaku dan tingkat pendidikan santri. Desain riset adalah cross-sectional dengan subyek seluruh santri di sebuah pesantren di Jakarta Selatan. Pengambilan data menggunakan kuesioner berisi 10 pertanyaan mengenai perilaku kebersihan dan pemeriksaan dermatologi pada bulan Juli-September 2013. Dari 98 santri, sebanyak 88 orang mempunyai penyakit kulit (prevalensi 89,7%). Penyakit kulit menular yang paling banyak adalah skabies (67 penderita, prevalensi 49,3%). Sebanyak 78 santri (88,6%) yang mengidap penyakit kulit memiliki perilaku kebersihan yang buruk. Hanya 10 santri yang tidak berpenyakit kulit. Tidak terdapat perbedaan bermakna antara prevalensi penyakit kulit dengan perilaku kebersihan ( $p=0,350$ ). Tingkat pendidikan ibtdaiyah mempunyai santri paling banyak berpenyakit kulit (51,2%). Terdapat perbedaan bermakna antara prevalansi penyakit kulit dengan tingkat pendidikan ( $p<0,001$ ). Disimpulkan prevalensi penyakit kulit di pesantren adalah 89,% yang tidak berhubungan dengan perilaku kebersihan namun berhubungan dengan tingkat pendidikan.*

**Kata kunci:** penyakit kulit, prevalensi, perilaku kebersihan, tingkat pendidikan

## Introduction

Skin diseases can be divided into infectious and non-infectious. In terms of infectious, the disease can be caused by bacteria, parasite, virus and fungi while non-infectious skin diseases can be caused by allergic reaction, autoimmune, and drug reaction.<sup>1-3</sup>

Skin diseases are very common in places where society lives in a crowded area. In terms of parasitic infection, the most common skin diseases are scabies, pediculosis, and cutaneous larva migrans. These diseases can be transmitted through direct contact.<sup>4-6</sup> Common bacterial skin infections are impetigo, folliculitis, and ecthyma. While the most common fungal skin infections are pityriasis versicolor and dermatophytosis. Lastly, wart is the most common skin infection caused by virus.<sup>7</sup>

Indonesia is one of the countries that has a high prevalence of skin diseases. A community-based survey in Sumatra reported that prevalence of skin diseases was 28%. These diseases are endemic to communities that live closely.<sup>8</sup> One example of communities that live closely is *pesantren* an Islamic boarding school.

The most common symptom of skin disease is itchiness. Severe itchiness would disturb the quality of life and lead to other complications. The attempt to let the skin infection heals by itself might fail due to the risk factors of *santris* (students of *pesantren*) lifestyle. The skin diseases must be totally controlled to achieve a free of skin disease environment.<sup>9</sup>

In Jakarta Selatan, there is a *pesantren* full of *santris*. It was presumed that the prevalence of skin disease was high and a research should be done in order to identify the prevalence and its association with hygiene behavior and level of education. If the prevalence is known, medication and health education can be given to *santris* with skin infections, in order to cure and prevent recurrence. There was a similar study done by Nitibaskara et al<sup>10</sup> however it did not evaluate the association between the prevalence of skin disease and level of education. The objective of this study was to determine the prevalence of skin diseases and its association with hygiene behavior and education level of *santris* in *Pesantren*, Jakarta Selatan.

## Methods

This study used a cross-sectional study design and was conducted in a *pesantren* in South Jakarta. Data collection was done in June-September 2013, including all *santris* who agreed to join the research.

Diagnosis was determined based on history

taking and dermatological examinations. Subjects who were diagnosed with skin disease, were given the appropriate medication. Bacterial skin infections can be treated by topical antibiotics whereas scabies infection can be managed by giving permethrine. On the other hand, atopic dermatitis can be treated by topical corticosteroids. Chi square test was used to identify whether there was an association between the prevalence of skin diseases with hygiene behavior and level of education.

A questionnaire consisting of ten questions was distributed to each *santris*. Personal hygiene was regarded as good when a subject could answer seven or more good answers. On the other hand, poor personal hygiene was determined if a subject could only answers six or less good answers.

Questions regarding hygienic behavior that needs to be identified are:

1. Bathing habit
  - 1= Good (a minimal of two times a day)
  - 0= Poor (once a day or infrequently)
2. Cleaning the genital area and drying the towel
  - 1= Good (a minimal of two times a day)
  - 0= Poor (less than two times a day)
3. Towel exchange
  - 1=Good (never exchange towel with other *santris* )
  - 0= Poor (exchange clothes with other *santris* )
4. Drying the towel
  - 1= Good (never dry the towel)
  - 0= Poor (drying the towel after using it three times or more)
5. Changing clothes
  - 1= Good (minimal two times a day)
  - 0= Poor (less than two times a day)
6. Clothing exchanges
  - 1= Good (never exchanges clothes with other *santris* )
  - 0= Poor (exchange clothes with other *santris* )
7. Washing the clothes
  - 1= Good (washed after being worn once)
  - 0= Poor (more than once)
8. Ironing the clothes
  - 1= Good (ironed after every wash)
  - 0= Poor (after more than once)
9. Drying the mattresses under the sun light
  - 1= Good (dry at least once a week)
  - 0= Poor (less than once a week)
10. Multiple subjects who sleep in one mattress
  - 1= Good (never)
  - 0= Poor (at least once)

## Results

In this *pesantren*, there were 119 students. However, only 98 *santris* were available throughout the study. All of the students were male who had different level of education. From 98 *santris*, there were 50 students from *ibtidaiyah* (51%), 35 students from *tsanawiyah* (36%), and 13 students from *alijah* (13%). After dermatological examinations, we found that there was 88 *santris* who had skin disease. Therefore, the prevalence of skin disease in the *pesantren* was 89.7%.

**Table 1. The Distribution of Skin Disease in a Pesantren, South Jakarta**

Type	Number of Cases (n=136)
<b>Infection</b>	
Scabies	67 (49.3%)
Acne vulgaris	13 (9.6%)
Folliculitis	13 (9.6%)
Pityriasis versicolor	8 (5.9%)
Tinea cruris	8 (5.9%)
Tinea corporis	7 (5.2%)
Candidiasis cutis	6 (4.4%)
Xerosis cutis	5 (3.7%)
Carbuncle	4 (2.9%)
Impetigo	3 (2.1%)
Molluscum contagiosum	2 (1.4%)
<b>Total</b>	<b>136 (100%)</b>
<b>Non-Infection</b>	
Irritant contact dermatitis	6 (30%)
Lichen simplex chronicus	5 (25%)
Miliaria	4 (20%)
Postinflammatory hyperpigmentation	3 (15%)
Seborrheic dermatitis	2 (10%)
<b>Total</b>	<b>20 (100%)</b>
<b>No skin lesion</b>	<b>10</b>

Table 1. illustrates the distribution of skin disease in the *pesantren*. There were a total of 156 skin disease cases, with 75 people who had multiple skin diseases. There were 136 *santris* who had infectious skin; higher than the number of cases of non-infectious skin disease which only involved 20 *santris*. Scabies had the highest prevalence in the infection category with 49.3% followed with acne vulgaris and folliculitis, both had 9.6%. Furthermore, irritant contact dermatitis was the highest non-infectious skin disease comprising of 30% of all cases, followed by lichen simplex

chronicus (25%) and miliaria (20%). Only ten subjects who did not have any skin lesion.

**Table 2. Association between Level of Education and Skin Disease**

Level of Education	Skin Disease		Total
	Positive	Negative	
<i>Ibtidaiyah</i>	45 (51.2%)	5 (50%)	50 (51%)
<i>Tsanawiyah</i> *	32 (36.3%)	3 (30%)	35 (35.7%)
<i>Aliyah</i> *	11 (12.5%)	2 (20%)	13 (13.3%)
<b>Total</b>	<b>88 (100%)</b>	<b>10 (100%)</b>	<b>98 (100%)</b>

\* On statistical analysis, *tsanawiyah* and *alijah* were combined

Table 2 shows that 51.2% of skin disease in the *pesantren* comes from *ibtidaiyah*, 36.3% from *tsanawiyah*, and 12.5% from *alijah*. There was association between the level of education and the prevalence of skin disease in that *pesantren* ( $p < 0.001$ ).

**Table 3. Association between Hygiene Behaviors with Skin Disease**

Behavior	Skin Disease		Total
	Positive	Negative	
Good	10 (11.4%)	3 (30%)	13 (13.3%)
Poor	78 (88.6%)	7 (70%)	85 (86.7%)
<b>Total</b>	<b>88 (100%)</b>	<b>10 (100%)</b>	<b>98 (100%)</b>

Table 3 illustrates the distribution of skin disease in the *pesantren* based on the questionnaire score. Overall, there was 13.3% out of the total sample who had good hygienic behaviors and 86.7% with poor hygienic behaviors. It was found that 88.6% *santris* who had poor hygienic behavior, also suffered from skin disease and 11.4% of *santris* with good personal hygiene suffered from skin disease. There was no association between hygienic behaviors of *santris* with the presence of skin disease ( $p = 0.350$ ).

Table 4. illustrates the distribution of lifestyle and behavior aspects related to the presence of skin disease. After data collection, it was found that the results varied. Based on the results, the habits mainly associated with the presence of skin disease were multiple subjects in one mattress for sleeping, washing and ironing the clothes. Almost all *santris* (85%) who shared mattress for sleeping suffered from skin diseases. There were 67 *santris* who washed their clothes not more than once and 66 *santris* who ironed their clothes after wearing it more than once, suffered from skin disease. Despite that, there were 67 *santris* having good bathing

habits compared with 21 poor bathing habits, who still suffered from skin disease. Additionally 58

*santris* still experienced skin disease even though they did not exchange towel.

**Table 4. Distribution of Behavior Aspects Related to Skin Disease**

Behavior	Skin Diseases		Total
	Positive	Negative	
Bathing Habits			
Good	67	8	75
Poor	21	2	23
Cleaning the genital area & drying the towel			
Good	37	5	42
Poor	51	5	56
Change the towel			
Good	58	6	64
Poor	30	4	34
Drying the towel			
Good	47	7	54
Poor	41	3	44
Changing clothes			
Good	42	4	46
Poor	46	6	52
Clothing Exchange			
Good	56	6	62
Poor	32	4	36
Washing the clothes			
Good	21	3	24
Poor	67	7	74
Ironing the clothes			
Good	22	4	26
Poor	66	6	72
Drying the mattresses under the sun ray			
Good	37	3	40
Poor	51	7	58
Multiple subjects in one mattress for sleeping			
Good	14	2	16
Poor	74	8	82

## Discussion

Skin disease is one of the major problems in developing countries, including Indonesia. The hot and humid climate conditions support growth, replication and transmission of pathogens. The most important risk factor associated with skin disease in developing countries is household overcrowding. Poor sanitation and bad hygiene also

contributes to the transmission of skin disease. As a result, the prevalence of skin disease is high among developing and tropical countries.<sup>8,9</sup>

In this study, the prevalence of skin disease was very high in *pesantren* in South Jakarta, with 89.7% of all participated *santris* who had skin diseases, either infectious or non-infectious. The fact that most of the *santris* had poor hygienic

behaviors, such as rarely washed and ironed the clothes, did not dry the mattress under the sun and had multiple subject in one mattress for sleeping, clearly contributed to the development of infection and the transmission of skin disease.

The most frequent infectious skin disease in *pesantren* in South Jakarta was scabies with 67 cases (49.3% of total infectious skin disease cases). The high prevalence of scabies was affected by poor hygiene habits that 86.7% of *santris* had. The sharing of clothes, towels and mattresses makes it easier for scabies to transmit and spread from one *santris* to another.

*Sarcoptes scabiei* lives in the stratum corneum layer of the skin, with predilection on the flexor aspect of the wrist, interdigital web spaces of the hands, axilla, buttocks and genitalia. It can spread through direct or indirect contact. The most common pathway of transmission is through direct contact with mites that walks on the surface of the skin. For instance, prolonged direct contact during sleeping can easily transmit scabies from one person to another. However, short period of direct contact, such as holding hands, does not cause transmission of scabies. As a result, scabies can be easily transmitted in a situation where many people live in a crowded and adjacent environment such as *pesantren*. Additionally, indirect contact way of transmission depends on how long the mite can survive outside the body of the host. It varies on the temperature and humidity of the environment. Common households that may cause transmission of scabies diseases are bed cover, blankets, pillow case, cloths and towels. Parasites that infests those households can live up to 2-3 days with room temperature and 30% humidity. As the humidity increases the mite can live much longer.<sup>11,12</sup>

Bed covers and clothes are considered infectious until the management is successful or two weeks after the last exposure. Recurrent infestation occurs when there is a direct contact with a person with scabies or indirectly with things infested with the parasite. Hence, treatment has to be conducted in a large scale that involves all of the *santris* and should be performed concurrently to treat the disease effectively. If the treatment is not conducted in that manner, *santris* that have not been cured, will be the source of infection to another *santris*.<sup>11-13</sup> The prevalence of skin disease in this study is in accordance with the study done by Nitibaskara.<sup>10</sup> The study showed higher prevalence of infectious skin disease compared with non-infectious skin disease.

*Santris* thinks that scabies is a trial from God that every *santris* should suffer at every *pesantren*. There is a notorious slogan that states people who join the *pesantren*, cannot be called as *santris* if scabies has not infected them. In fact, however, scabies occurs mostly due to over-crowded environment and poor hygienic behaviors. False information and poor hygiene have to be resolved through education along with strict monitoring by staffs of the *pesantren*. *Santri* should maintain good hygiene behavior and if one of them is infected, he should report to staffs of the *pesantren*, so he can receive proper medication.<sup>15-17</sup>

Acne vulgaris, folliculitis, pityriasis versicolor, tinea capitis and tinea corporis, had relatively high frequency in the infectious skin disease group. All of these diseases were the consequence of poor hygiene behavior. These diseases could be transmitted through direct or indirect contact. Examples of indirect contact were through the use of same towels, clothes and mattresses.

The most frequent non-infectious skin disease in *pesantren* in South Jakarta was irritant contact dermatitis. Irritant contact dermatitis is a delayed allergic reaction that causes inflammation to the skin. It is characterized by erythema, edema and vesiculation.<sup>18</sup> Non-infectious skin disease happens more frequently in developed countries.

Most of *santris* who had skin disease came from *ibtidaiyah* level of education, followed by *tsanawiyah* and *aliyah*. There was an association between the level of education and the prevalence of skin disease in *pesantren* in South Jakarta. This means that prevalence of skin diseases is associated with level of education. The number of *santris* who suffered from skin disease at lower level of education was higher than the *santris* at higher level of education. This situation happened due to the relatively new settlement of *ibtidaiyah*, whereas *tsanawiyah* and *aliyah* had stayed longer at the *pesantren*, which enabled them to develop immunity towards scabies. *Tsanawiyah* and *aliyah* are also groups of people that are older compared to the other group in the study, hence they can seek medication by themselves in the primary health care if they gets infected with skin disease. Hygienic behaviors are one of the risk factors of skin disease. A study done by Nitibaskara,<sup>10</sup> showed an association between the prevalence of skin diseases and hygiene behavior ( $p=0.008$ ).

There was 88.6% out of 88 *santris* with poor hygienic behaviors who suffered from skin disease. This high rate of association surely shows that

hygienic behaviors are closely related to skin disease. The poor habits, such as occasional showers and change of cloth, could contribute to the occurrence of skin disease and the transmission of it. However, Fisher exact test revealed that there was no association between hygienic behaviors of *santris* with skin disease ( $p=0.350$ ) in this study. The reason is that they live in the same environment with similar lifestyle that adopts poor hygiene behavior, hence the statistical value is not significant.

### Conclusions

The prevalence of skin disease in a *pesantren* in South Jakarta was 89.7%; and 89% *santris* with poor hygiene behaviors were diagnosed with skin disease. Only 30% *santris* with good behavior did not have any skin disease. There was no association between hygiene behaviors of *santris* with the presence of skin disease. However, there was an association between skin disease and level of education. As the *santris* had higher level of education, the prevalence of skin diseases decreased.

Cautious steps should be taken in order to prevent the skin disease from recurrence. *Pesantren* should provide facilities in order to minimize skin disease such as more towels, clothes, and mattresses. *Santris* should also be more aware on how to prevent from getting and transmitting skin disease. Raising the *santris* awareness of good hygienic behavior can be achieved through presentations or brochures.

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