

Research Article

Characteristic of Skin Diseases in Two Public Boarding Schools Occupants in West Java 2018

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Abstract

Skin diseases are among the most common diseases found in developing countries, and it is very commonly encountered especially in children living in groups. This study aimed to identify the ten most common skin diseases in two public boarding schools in West Java and the environmental factors that influence them. This study was part of large scabies and pediculosis study in two public boarding schools on 2018 in West Java. Diagnosis was made through history taking and physical examination using Deskab[®] instrument. The results showed that 93% of children had skin diseases. Skin diseases were found to be higher in girls (94.5%) than in boys (91.1%), but no significant differences ($p=0.08$) were obtained. The most common skin diseases were pediculosis (50.14%), scabies (40.51%), dermatitis (8.15%), dermatophytosis (6.6%), insect bite hypersensitivity (6.18%), post-inflammatory hypo/hyperpigmentation (4.92%), acne vulgaris (3.51%), miliaria (3.37%), xerosis cutis (2.25%), and folliculitis (1.83%). Some environmental factors might influence the incidence of infectious skin diseases in public boarding schools, such as open-space areas, the number of bedrooms, and the number of individuals occupying each bedroom.

Keywords: skin diseases, boarding schools, pediculosis, scabies, environmental factors.

Karakteristik Penyakit Kulit di Dua Pondok Pesantren Di Jawa Barat Tahun 2018

Abstrak

Penyakit kulit merupakan salah satu penyakit yang paling banyak ditemukan di negara berkembang, dan sangat sering dijumpai terutama pada anak-anak yang hidup berkelompok. Tujuan dari penelitian ini adalah untuk mengidentifikasi sepuluh penyakit kulit yang paling sering ditemukan di dua pondok pesantren di Jawa Barat dan faktor lingkungan yang mempengaruhinya. Penelitian ini merupakan bagian dari penelitian skabies dan pedikulosis skala besar di dua pesantren pada tahun 2018 di Jawa Barat. Diagnosis ditegakkan melalui anamnesis dan pemeriksaan fisik menggunakan instrumen Deskab[®]. Hasil penelitian menunjukkan bahwa 93% anak memiliki penyakit kulit. Penyakit kulit ditemukan lebih tinggi pada anak perempuan (94,5%) dibandingkan anak laki-laki (91,1%) tetapi tidak ada perbedaan yang signifikan ($p=0,08$) yang diperoleh. Penyakit kulit terbanyak adalah pedikulosis (50,14%), skabies (40,51%), dermatitis (8,15%), dermatofitosis (6,6%), hipersensitivitas akibat gigitan serangga (6,18%), hipo/hiperpigmentasi pasca inflamasi (4,92%), akne vulgaris (3,51%), miliaria (3,37%), xerosis kutis (2,25%), dan folikulitis (1,83%). Ada beberapa faktor lingkungan yang dapat mempengaruhi kejadian penyakit kulit menular di kedua pondok pesantren seperti luas ruang terbuka, jumlah kamar tidur, dan jumlah individu yang menempati setiap kamar tidur.

Kata kunci: penyakit kulit, pesantren, pedikulosis, skabies, faktor lingkungan.

Introduction

Skin diseases are found mostly in developing countries and often in children. Along with subcutaneous tissue diseases, skin diseases were the third most common findings in outpatient settings in 2016, with 192.414 cases (Indonesian Ministry of Health, 2016). Based on data from the Indonesian Child Dermatology Study Group (KSDAI) in 2017, the most proportion skin diseases at six national hospitals were scabies, vitiligo, acne vulgaris, atopic dermatitis, pityriasis versicolor, irritant contact dermatitis, tinea cruris, insect bite, and nummular eczema. Data were collected from Dr. RSUP Cipto Mangunkusumo Jakarta, Dr. dr. Manado Kandouw, H. Adam Malik General Hospital Medan, Dr. Wahidin Soedirohusodo Makassar, RSUP dr. M. Hoesin Palembang, and RS Dr. Hasan Sadikin Bandung.

Skin diseases often affect children who live in groups, commonly due to infection and non-infection. The proportion of infectious skin disease in boarding schools is 89.7%, with the highest findings including scabies (49.3%), acne vulgaris (9.6%), and folliculitis (9.6%). The most common non-infectious skin disease include irritant contact dermatitis (30%), lichen simplex chronicus (25%), and miliaria (20%).¹ Other studies in Turkey also showed that the proportion of skin disease in boarding schools was 55.42%, with tinea pedis, acne vulgaris, and onychomycosis are the most common, respectively (32.5%, 28,6%, and 8/06%).²

Based on the previous epidemiological data, skin diseases are a common health problem in boarding schools. However, data about the proportion of skin diseases in boarding schools are still scarce. Hence, this study will identify skin disease in children who live in the boarding schools population and the environmental factor that influences it.

Methods

This study was part of a large study of scabies and pediculosis in public boarding schools A (PBS

A) and B (PBS B). The study was conducted at PBS A on 23 September 2018 and PBS B on 14 November 2018 in West Java. The subject from this study are all Tsanawiyah and Aliyah students aged 11-17 years old. We included all children in PBS A and PBS B. We excluded children who didn't obtain informed consent from their parents. This cross-sectional study examined all children in public boarding schools using Deskab (instrument).³ Diagnosis was made through history taking and physical examination. Collected data were analyzed with R version 3.5.1. This study was approved by the Health Research Ethics Committee, Faculty of Medicine, Universitas Indonesia (1098/UN2.F1/ETIK/2017).

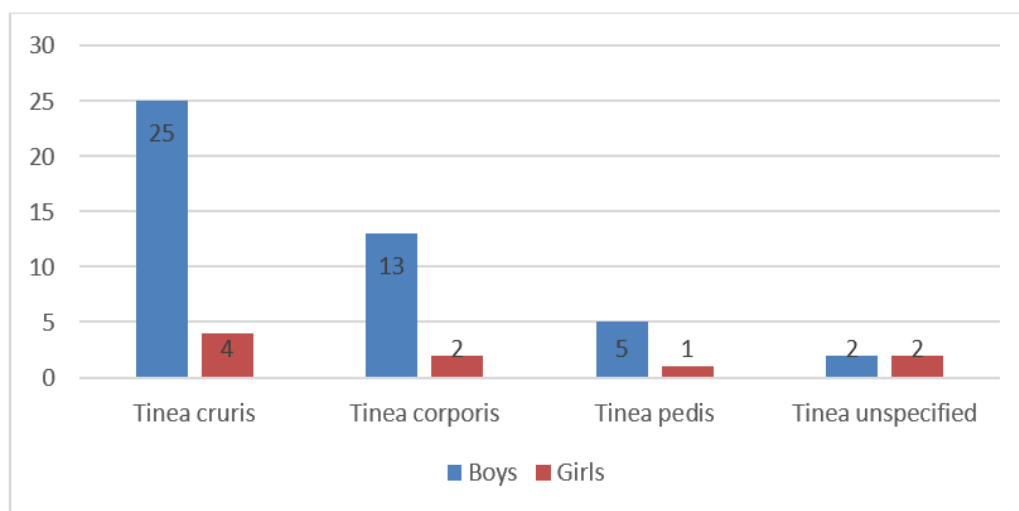
Results

Data about the demographic characteristics of each public boarding school were obtained from interviews with the boarding school leaders. PBS B has a land area of 6000 m² with a building area of 4500 m², while PBS A has a land area of 15000 m² with a building area of 800 m². PBS B has 204 students, while PBS A has 509 students. PBS B has ten bedrooms with 20-22 students in one bedroom, while PBS A has 20 bedrooms with 20-35 students in one bedroom. PBS B has ten bathrooms, while PBS A has 30 bathrooms.

From our study, we found that 662 children have skin diseases from 713 children (93%) in both public boarding schools. From these results, we also found that the proportion of boys with skin diseases was 308 children (91.1%), and the proportion of girls with skin diseases was 345 (94.5%). Statistical analysis was conducted to find out whether there was a relationship between sex and the incidence of disease with $p = 0.08$. The ten most common skin diseases are shown in Table 1. The most common dermatophytosis was tinea cruris (61.70%), followed by tinea corporis (31.91%), tinea pedis (12.27%), and tinea unspecified (8.51%) (Figure 1).

Table 1. Ten Most Common Skin Diseases From Students in Two Public Boarding Schools In West Java 2018

Skin disease	Number (%)	Boys	Girls	p
Pedikulosis	357 (50.1)	46	311	< 0.001
Scabies	288 (40.5)	186	102	<0.001
Dermatitis	58 (8.1)	16	42	0.0016
Dermatophytosis	47 (6.6)	38	9	< 0.001
Insect bite	44 (6.1)	22	22	0.72
Post inflammatory hypo/hyperpigmentation	35 (4.9)	24	11	0.01
Acne vulgaris	25 (3.5)	24	1	< 0.001
Miliaria	24 (3.3)	3	21	< 0.001
Xerosis cutis	16 (2.2)	11	5	0.12
Folliculitis	13 (1.8)	4	9	0.27

**Figure 1. The Proportion of Dermatophytosis in Two Public Boarding Schools in West Java 2018**

The most common dermatitis was allergic contact dermatitis (20.69%), followed by seborrheic dermatitis (15.12%), irritant contact dermatitis (13.79%), atopic dermatitis (12.07%), intertriginous dermatitis (10.34%), numularis dermatitis (1.72%), and perioral dermatitis (1.72%).

In this study we also observed the proportion of skin diseases in each public boarding school shown in Tabel 2. Pediculosis cases were found higher in PBS B (57.3%) compared to PBS A (47.1%), as well as scabies cases were found higher in PBS B (49.5%) compared to PBS A (36.7%).

Table 2. The Proportion of Skin Diseases From Students in Two Public Boarding Schools in West Java 2018

Skin Disease	PBS A	PBS B	p
	n = 509 (%)	n = 204 (%)	
Pedikulosis	240 (47.1)	117 (57.3)	0.014
Scabies	187 (36.7)	101 (49.5)	0.0015
Dermatitis	45 (8.8)	9 (4.4)	0.021
Dermatophytosis	47 (9.2)	8 (3.9)	0.068
Insect bite	38 (7.4)	6 (2.94)	0.022
Post inflammation hypo/hyperpigmentation	33 (6.4)	2 (0.9)	< 0.001
Acne vulgaris	23 (4.5)	2 (0.9)	0.022
Miliaria	20 (3.9)	4 (1.9)	0.251
Xerosis cutis	6 (1.1)	10 (4.9)	0.002
Folliculitis	11 (2.1)	2 (0.9)	0.367

Discussion

From the results of this study, we found that the proportion of skin disease in both public boarding schools was very high at 93%. This result is similar to the Sahala¹ study at a boarding school in South Jakarta, where the proportion of skin diseases was 89.7%.¹ This result is also higher than the study conducted at an Islamic boarding school in Egypt (41,5%) and Turkey (55,42%).^{2,4} From the results of this study, we also found that the proportion of skin disease in girls was greater than boys (94.5% and 91.1%), but from the results of statistical analysis no significant difference was found ($p= 0.08$). The results are different from the studies conducted at a boarding school in Egypt where the proportion of skin disease in boys was higher than that of girls with a ratio of 5.1: 4.9.⁴

Pediculosis is the most common skin disease found in both public boarding schools (50,1%), this is in accordance with research conducted in Egypt where the highest incidence of skin disease in boarding schools is pediculosis (27.3%).⁴ The proportion of pediculosis in this study is also in accordance with previous studies by Riswandi⁵ on two boarding schools in Jakarta where the proportion of pediculosis was 40.2% and 47.5%.⁵ Pediculosis capitis is more common in children and the disease is rapidly spreading in people who live in group, such as boarding schools. In our study, one bedroom is occupied by more than 20 students in both public boarding school so it can facilitates the transmission of pediculosis. In addition, poor personal hygiene also increase the incidence of pediculosis. Research conducted by Sianturi⁶ at a boarding school in Jakarta showed 76.4% of students had poor hygiene practice, such as exchanging towels and beds.⁶ Poor personal hygiene also facilitates indirect transmission of lice through objects such as combs, pillows, mattresses, and hats.

The second most common disease found in this study was scabies (40.5%). The proportion of scabies in this study was lower than the previous research by Sahala¹ and Ratnasari⁷ at a boarding school in Jakarta which was 49.3% and 51.6%, but was higher than the research conducted by Sianturi⁶ where the proportion of scabies was 36%.^{1,6,7} Scabies is also very contagious like pediculosis, commonly found in people who live in groups with poor hygiene. Study by Sianturi⁶ showed that students who had good personal hygiene experienced lower incidence of scabies than students with poor personal hygiene.⁶ Like pediculosis, the higher the number of students in one bedroom, the easier the disease transmission

process occurs. Study by Widury⁸ showed that students that sleeping together in one bed increase the risk of getting scabies 21 times.⁸ There was a previous study at PBS B by Rihatmadja⁹ that showed the students have poor hygiene practice that can increase the risk of getting scabies such as sharing clothes and prayer attire, sharing beds, and washing the clothes without hot water.⁹

The proportion of dermatophytosis in both public boarding schools is also quite high at 6.6%. The most common type of dermatophytosis is tinea cruris (61.7%) followed by tinea corporis (31.9%), and tinea pedis (12.7%). This data is consistent with the results of Fung¹⁰ study in Hong Kong where the most common type of dermatophytosis was tinea cruris.¹⁰ Sahala¹ study also showed the most common type of dermatophytosis was tinea cruris.¹ The high incidence of dermatophytosis may associated with poor personal hygiene. Study by Putra¹¹ at a boarding school in Semarang showed students with poor hygiene had a risk of 4.9 times to suffer from tinea cruris compared to students with good hygiene.¹¹

From our study we found that the proportion of tinea pedis was high. Usually the incidence is found higher in athlete and military soldier. Study by Muhajid¹² in military recruits at Pakistan showed 9.71% subjects were diagnosed tinea pedis by clinical examination.¹² Tinea pedis infection occurs when a soldiers lives in a community, uses a shared bathroom, and wears boots for outdoor activities that are not removed for a long time. Another determining factor is the shoe microenvironment. Military shoes generally cause hot and humid environment, making it easier for dermatophytes to grow.¹³ Study by Sabadin¹⁴ in athletes from Brazil showed that 12% athletes were diagnosed tinea pedis.¹⁴ Athletes have high risk of developing tinea pedis due to the increased frequency of contact with swimming pools, the use of sports shoes and sports equipment, occlusion due to equipment, and rarely in some cases due to depression of the immune system. This is different from students in public boarding school because they usually use slippers for daily activities. The proportion of tinea pedis in our study is almost the same as the two studies and this might be caused by transmission from the communal bathroom floor, but further research is needed to prove it.

We found that pediculosis was higher in PBS B (57.3%) compared to PBS A (47.1%). A similar case was found in cases of scabies where the proportion was higher in PBS B (49.5%) compared to PBS A (36.7%). From demographic characteristics, there

is a big difference in both public boarding schools. PBS B has a small amount of open space, while PBS A has a wide open space. The wider the open space the more sunlight comes in so the temperature of the environment gets hotter. High temperatures will accelerate the dessication and death of these mites. Meanwhile scabies mite can live longer (up to 19 days) in cold and humid environment.¹⁵ This might cause the transmission of skin infections disease, especially parasitic infestation, higher in PBS B compared to PBS A. Although the proportion of skin disease was higher in PBS B, the number of skin diseases in PBS B was lower than in previous studies in 2017. Study by Widaty³ showed the incidence of scabies infestation was 79.5% compared to our study in 2018 where the incidence is 49.5% ($p= 0.014$). This is due to the role of non-medical personnel by providing hygiene education, managing fomites, and helping the referral system from the public boarding school to the Public Health Center.

This study has some limitation because there was no evaluation of students personal hygiene so further research is needed to see the relationship between personal hygiene and proportion of skin diseases in both public boarding school.

Conclusion

The ten most common skin diseases found in both public boarding schools are pediculosis, scabies, group dermatitis, tinea group, insect bite hypersensitivity, post inflammatory hypo/hyperpigmentation, acne vulgaris, miliaria, xerosis cutis, and folliculitis. The high proportion of skin disease in both public boarding schools may be associated with environmental factor thereby facilitating the transmission of skin diseases, especially skin diseases due to parasitic infections. By modifying these environmental factors it may decrease the incidence of skin diseases so the role of the boarding school management is highly expected.

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