

The Dominant Factors of High Scabies Incidence In Indralaya Islamic Boarding School Students South Sumatera, Indonesia

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ABSTRACT

Scabies is a skin disease caused by infestation towards *Sarcoptes scabiei*, the condition locally known as "kudis", occurring easily in moist and densely populated vicinities. Kudis was classified into one of the top 10 most prevalent diseases of Ogan Ilir District in 2014. This research was conducted to analyse the relation between air quality and personal hygiene towards the incidences of scabies among students of boarding school Al Ittifaqiah, Indralaya. This research was an epidemiological method using cross-sectional analytic approach, conducted in March 2016. The population were all students of boarding school (1.859 individuals) and the samples selected were 200 respondents with proportional stratified random sampling. The measuring instruments were cardinal scabies physical diagnostic and questionnaire of demographic interviewing, and air quality observation. Obtained results were then analysed with Chi-Square, Logistic Regression Statistical Tests, and correspondence analysis. The result of scabies prevalence was 74.0%. The statistical test has shown that all free variables present relation towards the occurrence of scabies with the p-value < 0.05 except for the variables of temperature and humidity. Logistic Regression testing result yielded the free variable bearing the most dominant influence towards scabies incidence, which was the residential density (OR: 8.117; 95% CI: 3.176-20.745), ventilation (6.712; 1.323-34.066) and age (3.246; 1.555-6.775). The significant relationship of residential density, ventilation, and age towards the occurrence of scabies should be further investigated in order to prepare for elimination programs.

Keywords: factors, scabies, student

1. Introduction

Scabies is an ordinary tropical and subtropical countries contagious parasitic skin disease and a public health problem [1,2]. Hundreds of millions of people in urban and rural communities worldwide suffer from the infestation [3,4]. Outbreaks

of scabies in closed groups have been reported not only in resource-poor communities in low and middle income, but also from high income countries [5,6]. High prevalence and re-infestations are correlated with communal use of clothes, beds, and pillows, armed conflicts, homelessness, and crowding [7-9].

Communities in India, on south Pacific islands, and in Australian Aboriginal communities are reported between 18% and 70% of people being affected [1,10].

Severe morbidity is quite common, such as abscess formation, lymphadenopathy, and post-streptococcal glomerulonephritis [10–12]. Control and prevention strategies by chemotherapy require public health services and home resources [3,13]. The actual prevalence of scabies disease is unclear, that the severe morbidity is often under looked [14]. Scabies is still neglected disease [11,12,15]. General Hospital of South Sumatra noted that in 2007-2011 the percentage were only 6.32%-9.38%-4.36%-4.08%-5.13% respectively, of the total scabies cases of skin diseases infection per year [16]. To provide on the epidemiology and to analyse the relation to its with personal hygiene and environment facility, a cross-sectional school-base of scabies infestation was conducted in crowded sub-urban school in Indralaya West Indonesia.

2. Methods

This cross-sectional study aimed to find out the relationship between the free variables: characteristics of respondents (age, gender, education, economy and place live), room air quality (temperature, humidity, lighting, ventilation and a density of occupancy) and personal

hygiene. Research conducted in March 2016 at boarding school. The population of the research was all students boarding schools in grade 2016 (1.859 students) with a selected sample of 200 respondents using the proportional stratified random sampling.

Measuring instruments

Primary data was collected through interviews, observation, physical examinations and measurements of air quality by using a questionnaire, checklist and measuring instrument. Secondary data taken was a figure in the region of scabies in district health and clinic reports of boarding school.

Statistics Analysis

Data analysis was performed by using a statistical test of Chi-Square and logistical regression with 95% degree of confidence to analyse the relationship between air quality and personal hygiene against scabies incidence in boarding school students.

3. Results

Table 1 showed the respondents' characteristics, of 200 respondents. The age was around 14 years old; more participants were male and the junior high school student. Most of them lived in the boarding house, with low income per month.

Table 1. Frequency distribution of respondents based on characteristics (N = 200)

Variable	Mean Median	$\bar{X} + SD$ or %
Age	14.14 14.00	1.684
Male	103	51.5
Female	97	48.5
JHS	134	67.0
SHS	66	33.0
< Rp. 2.206.000,-	118	59.0
> Rp. 2.206.000,-	82	41.0
Live In boarding school	170	85.0
Live Outside boarding	30	15.0

Table 2 showed the environments' air quality variables, except for the ventilation was poor and lack of facilities. Table 3 showed that the personal hygiene quality, which is quite good. Table 4 showed the prevalence of scabies with physical examination diagnostic,

was 74.0%. Table 5 showed the relation between prevalence of Scabies with respondents' characteristics, which all variables resulted in significance relation with the infestation of parasite.

Table 2. Frequency distribution of respondents based on the air quality (N = 200)

Air Quality	N	%
No Air conditioner	177	88.5
Air conditioner	23	11.5
Not Good Lighting	153	76.5
Good Lighting	47	23.5
Too Humid	165	82.5
Good Moisture	35	17.5
No Ventilation	32	16.0
With Ventilation	168	84.0
Too Dense Residential	170	85.0
Normal Dense	30	15.0

Table 3. Frequency distribution of respondents based on personal hygiene (N = 200)

Personal Hygiene	N	%
Good	176	88.0
Not Good	24	12.0

Table 4. The prevalence of Scabies (N = 200).

Scabies	N	%
Positive	148	74.0
Negative	52	26.0

Table 5. The relationship of scabies incidence against the respondent characteristics (N = 200).

Variable	Scabies						<i>p-value</i>
	Positive		Negative		Total number		
	n	%	n	%	n	%	
Age							
≤ 14 years	95	85.6	16	14.4	111	100	0.000
> 14 years	53	59.6	36	40.4	89	100	
Gender							
Male	64	62.1	39	37.9	103	100	0.000
Female	84	86.6	13	13.4	97	100	

Education							
Junior high school	110	82.1	24	17.9	134	100	0.000
Senior high school	38	57.6	28	42.4	66	100	
Economy							
<2,206,000,-	96	81.4	22	18.6	118	100	0.007
≥ 2,206,000,-	52	63.4	30	36.6	82	100	
Places to Stay							
Inside school	140	82.4	30	17.6	170	100	0.000
Outside of school	8	2.7	22	73.3	30	100	
Total	148	74.0	52	26.0	200	100	

Table 6 showed the relation between prevalence of scabies with air quality, which all variables with exception for temperature and moisture, resulted in significance relation with the infestation of parasite. Table 7 showed the relation between prevalence of scabies with personal hygiene. The ones with

good personal hygiene have 0.705 lower risks to be infected with scabies. Table 8 showed the relation between prevalence of scabies with respondent' characteristic and personal hygiene, which the significant variables were the ventilation, the residential density, and the age. OR 8.117-6.712-3.246, respectively.

Table 6. The relationship of air quality with scabies incidence (N = 200).

Variable	Scabies				Total number		p-value
	Positive		Negative		n	%	
	n	%	n	%			
Temperature							
Not eligible	134	75.7	43	24.3	177	100	0.203
Eligible	14	60.9	9	39.1	23	100	
Lighting							
Not eligible	119	77.8	34	22.2	153	100	0.045
Eligible	29	61.7	18	38.3	47	100	
Moisture							
Not eligible	121	73.3	44	26.7	165	100	0.799
Eligible	27	77.1	8	22.9	35	100	
Ventilation							
Not eligible	30	93.8	2	6.3	32	100	0.010
Eligible	118	70.2	50	29.8	168	100	
Residential Density							
Not eligible	137	80.6	33	19.4	170	100	0.000
Eligible	11	36.7	19	63.3	30	100	
Total	148	74.0	52	26.0	200	100	

Table 7. The relationship of personal hygiene with scabies incidence (N = 200).

Personal hygiene	Scabies				Total number		p value	OR
	Positive		Negative		n	%		
	n	%	n	%				
Good	124	70.5	52	29.5	176	100	0.004	0.705
Not good	24	100	0	0	24	100		(0.640-
Total	148	74.0	52	26.0	200	100		0.775)

Table 8. The results of logistic regression analysis (N = 200).

Variable	The coefficient	p-value	OR	95% C. I. for Exp (B)	
				Lower	Upper
Ventilation	1.904	0.022	6.712	1.323	34.066
Residential density	2.094	0.000	8.117	3.176	20.745
Age	1.177	0.002	3.246	1.555	6.775
Constant	-3.786	0.000	0.023		

4. Discussions

Our study represents an extremely high prevalence and dominant factors that affects the occurrence of scabies [17]. The prevalence 74.0% is comparable to studies in high risk for population, such as Thailand orphanage (87%) [18], Korean leprosarium (87%) [19], rural village in Papua New Guinea (80%) [20], displacement camps in Sierra Leone (67%) [21], and Islamic religious school in Bangladesh (61%) [22]. The disease was associated with age, gender and personal hygiene [23,24]. Young age is a significant sovereign risk factor for the presence of scabies. Behaviour pattern may play a significant role in contracting the disease [25]. The higher prevalence in toddler than in adults may be due to the bigger chances of close contact. Immunity may play important role [26]. Incidence of skin sores infection and scabies are often presented in paediatric clinic [27,28].

The sex distribution of scabies is not equal whole of the world. More distribution in boys than in girls has been reported suffered from scabies with no significant discrepancy [29]. No significant difference was found between the positive rates in males and females in a serologic survey among the Orang Asli in Malaysia [30]. Personal hygiene plays important role in development of scabies [29]. Respondent who shares towel with others or not take daily bath are more prone for development of scabies [31]. Scabies mites are resistant to soap and alcoholic hand rub, but are manageable by the use of disposable gloves [32]. The use of disposable gloves have the potential to limit future scabies outbreaks [6].

5. Conclusions

There was a relation of respondent characteristics and air quality to scabies prevalence on students of boarding school. The significant relationship of residential density, ventilation, and age towards the occurrence of scabies should be further investigated in order to prepare for elimination programs.

Acknowledgments

The authors would like to thank the teachers and students of Al Ittifaqiah Boarding School for volunteering to support the research, also head and staff of Public Health Centre (Puskesmas) of Indralaya South Sumatra for diagnosing and treating the patients.

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