

Pityriasis versicolor in primary school children in Medan Labuhan

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Abstract. Personal hygiene is an activity in which done by someone, directly and indirectly, to keep healthy to prevent the risk of diseases. Personal hygiene is also a factor that plays a role in the occurrence of skin diseases and one of them is *Pityriasis versicolor*. *Pityriasis versicolor* is a superficial fungal infection caused by *Malassezia furfur* which is a saprophytic organism in the skin. Activation of *M. furfur* into a pathogenic form due to changes in the normal flora of the skin that caused by several factors and one of them is poor personal hygiene. A cross-sectional study consist of 115 eligible students is done to determine the relationship between personal hygiene with the occurrence of *Pityriasis versicolor* among students in primary school in Medan Labuhan district. The result showed that 59.8% of the subject with poor personal hygiene and there is a significant association between personal hygiene with *Pityriasis versicolor* ($p < 0.05$).

1. Introduction

Fungal skin infections or mycoses suffered by many people especially those living in the tropics warm climates such as Indonesia. Based on the location, fungal infections (mycoses) is classified into superficial fungal infections and profunda¹. The superficial mycoses are dividing into dermatophytosis (which digest keratin) and non-dermatophytosis (which does not digest keratin), and *Pityriasis versicolor* (PV) classified to non-dermatophyte group¹⁻³. The incidence of PV in areas with cold climates is 1%, whereas in regions with tropical climate can be as high as 40-60%⁴. In Central and Northern Europe the incidence is only 0.5%-1%⁴. In Indonesia, an estimated of 50% of the population suffer from this disease². The disease can occur in men and women, where men are more frequently affected than women by a ratio of 3:2. *Pityriasis versicolor* may affect all age groups ranging from children to the elderly, but more often in young adults because they are more active and frequently more exposed to predisposing factors of PV^{1,4}. Based on data from the Health Office of North Sumatra Provincial 2012, District of Medan Labuhan is one of the districts adjacent to the River Deli and children in this area found to have lack of Clean and Healthy Behaviour Lifestyle (PHBS)⁵. A study also found that in Medan Labuhan district the occurrence of skin disease in children of a few primary school that caused by fungi are quite high due to lack of awareness of the local community, especially parents⁵.



2. Methods

An observational study with the cross-sectional design was done. A total of 115 out of 117 students were eligible for the study. All students are within the 11-13 years old and in grade 5 or 6 of primary school in Medan Labuhan. Data on personal hygiene are collected by interview using structured questionnaires. The presence of hypo or hyperpigmentation on the skin is then followed with KOH10% exam by a dermatologist to ensure the presence of the fungus.

3. Result

We measured personal hygiene through four variables namely skin, nails and hands, clothes and towels cleanliness and results are described in Table 1 below.

Table 1. Measures of personal hygiene among school children.

Measures of personal hygiene's	n	%
Skin cleanliness		
Good	59	51.3
Poor	56	48.7
Nail and hands cleanliness		
Good	83	72.2
Poor	32	27.8
Clothes cleanliness		
Good	22	19.1
Poor	93	80.9
Towel cleanliness		
Good	57	49.6
Poor	58	50.4

Based on Table 1, we further analyze on two factors which found poor among the student which are clothes and towels cleanliness. This was done to understand better which parts need to be improved once the study is finished. More specific questions are asked, and results are described in Table 2 below.

Table 2. Measures on clothes cleanliness among school children.

Clothes cleanliness	n	%
Frequency of clothes changing/day		
Rare	7	6.1
Once a day	53	46.1
More than twice a day	55	47.8
Clothes changing after sweating		
Never	56	48.7
Sometimes	24	20.9
Always	35	36.4
Towel cleanliness		
How towel is place		
Anywhere in the house	10	8.7
Hanged in the room	57	49.6
Place outside the house	48	41.7
Towel condition when used		
Wet	36	31.3
Moist	50	43.5
Dry	29	25.2

Table 3. Association between personal hygiene and *Pityriasis versicolor*.

Personal Hygiene	<i>Pityriasis Versicolor</i>	Non- <i>Pityriasis Versicolor</i>	Total	<i>p value</i>
Good	18(15.6)	38(33.0)	56(48.6)	0.027
Poor	31(27.0)	28(24.4)	59(51.4)	
Total	49(42.6)	66(57.4)	115(100)	

4. Discussion

Theories stated that the incidence of PV might affect all age groups ranging from children to the elderly, but more often on children too young adults because this age group is more prone to predisposing factors of PV namely hyperhidrosis due to hyperactivity coupled with the lack of excessive behavior in maintaining cleanliness. A previous study also mentioned that within the period of primary school age, children are exposed more often to skin diseases because of their habit of playing thus more exposed to pathogens that can cause skin diseases mainly caused by bacteria and fungus⁶.

This study found almost balance numbers of PV among male and female students with 53% and 47% respectively. Several types of research mentioned that male experiences more than female due to their physical activities. However, females may experience more due to a more productive of oil glands^{7,8}. The excessive activities without good personal hygiene are risk factors to the occurrence of PV³. In Medan Labuhan male children often play soccer in school or go overboard with their father during the day for fishing without replacing or changing their outfit since morning. In contrary, the female mostly does all activities within their respective homes.

The personal hygiene is being measured through cleanliness of their skins, nails, and hands, clothes, and towels. Out of these factors, both cleanliness of clothes and towel are in poor condition with 93% and 58% respectively. In general most of the students in this study have poor personal hygiene (51.3%), and this explained the high occurrence of PV among them. The students pay less attention understood from answers to the questions. Most students only changed their clothes once a day, towels are not hung properly for it to dry and used while it is in a moist condition. This poor personal hygiene can easily excuse a person to experience skin diseases caused by fungi such as *Pityriasis versicolor*. The skin is providing a good environment for bacteria and fungus to live and grow and eventually developed into skin diseases^{1,3}.

5. Conclusion

This study found a significant association between personal hygiene and the occurrence of *Pityriasis versicolor* among school children. Both the cleanliness of clothes and towel are poor and this lead to a conducive environment for fungus to grow. An excessive involvement of adult in the house such as parents are needed to achieve better personal hygiene. School involvements might better their education of the need for personal hygiene. It is suggested the topic of personal hygiene integrated into physical education program in the school.

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