



Correlation Behaviour, Personal Hygiene, Home environment Sanitation With Prevalence Of Soil Transmitted Helminthes infection Among Primary School Children In Medan

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Abstract: Prevalence of STH infection among primary school students in Indonesia is still high. Factor causing the high number of the prevalence of STH is the poor awareness in hygiene and inadequate environmental condition. The purpose of this study was to examine the correlation of behavior, personal hygiene, and home environment sanitation with the prevalence of STH infection in SDN 060925 students Medan. This study was an analytical survey with a cross sectional design. The population in this study were all member of third and forth grade in SDN060925 Medan and the total is 114 person. The number of sample is 80 person who are determined based on inclusion and exclusion criteria. Kato-Katz method is employed for detecting worm eggs on feces. The result showed that prevalence of STH infection were 40,00%. Questionnaires showed good knowledge 62,50%, good attitude 68,75, good personal hygiene 75,00%, good home environment 67,50%. Chi-Square test showed for knowledge $p=0,000$, attitude $p=0,003$, personal hygiene $p=0,008$, home environment sanitation $p=0,006$. There is a significant correlation between behavior, personal hygiene, and home environment sanitation with the prevalence of STH infection among student in SDN 060925 Medan.

Keywords : Behavior, Personal Hygiene, Home Environment Sanitation, STH infection, Primary School Student.

Introduction

Helminthiasis (helminthiasis) is one or more parasitic infestations of intestinal nematodes. Species of Nematode worms groups that often infect the human gut are *Ascaris lumbricoides* , *Ancylostoma duodenale* , *Necator americanus* , and *Trichiuris trichiura*. Some species of these worms are parasites that in completing its life cycle requires soil to develop into their infective form . The infective form of these worms play a major role in transmission, thus being called Soil-Transmitted Helminthes (STH).^{1,2}

In 2014 more than 1.5 billion people , or about 24 % of the world's population is infected by STH . Based on reports from cities in 2012, the prevalence of worm infection in Indonesia is between 10% -85.9%, especially in disadvantaged groups with poor sanitation. Of the 10 provinces in the survey report conducted by Ditjen PPM-PL, North Sumatra was ranked third with a prevalence of 60,4%.^{3,4,5}

The high number of STH infection at preschool and school age children is due to exposure to contaminated soil from playing and the habit of eating foods sold in schools with poor hygiene and

environmental sanitation. Contaminated soil is a major cause of eggs transmission to humans through the hands or nails containing worms' eggs and then into the mouth through food . In addition, larvae of worms on contaminated soil is also able to penetrate the human skin, causing infection.^{6,7,8}

In an effort to improve personal hygiene, children's knowledge of personal hygiene is very important as knowledge or cognition plays a major role in determining a person's action. One cause of the high number of intestinal worms infection is the poor personal hygiene or habits such as not washing hands before eating and after defecation, eating contaminated food, defecating not in the toilet, as well as the availability of clean water. The high prevalence of soil transmitted helminthes infections in Indonesia is due to inadequate sanitation, low social economy and the habit of polluting the environment which are further aggravated by a suitable climate for the growth and development of the worms. Clean water supply and latrine ownership will reduce the prevalence of worm infection, but it must be followed by modification of child's behavior and social economic improvement.⁹⁻¹² This is due to a low socio-economic status and poor educational systems, and a bad household sewage drainage system. This study aims to determine the relationship between habits or behaviour, personal hygiene and sanitation of home environment and the prevalence of Soil Transmitted Helminthes in students at SDN 060925 Medan.

Methods

This is an analytic survey with cross sectional study. This study was conducted at SDN 1 060 925 Harjosari village, sub district of Medan Amplas. The study was conducted in March-December 2015. The population of this study was the 114 third and fourth year students of SDN 060925. The sampling technique used in this study is total sampling technique. Samples were obtained with some of the criteria established in advance: parents approval, willingness to submit stool specimen, not taking antihelminthic medications in the last 6 months, and not being sick or receiving treatment during the study period. Primary data were obtained from stool examination conducted at the Laboratory of Parasitology, Faculty of Medicine, University of North Sumatra by using the Kato-Katz method and questionnaire filled by students regarding personal habits, personal hygiene and home environmental sanitation. The collected data were processed using a computer by SPSS (Statistical Product and Service Solution) with Chi-Square test

The surveys were distributed with a cover letter, which explained the aim of the study and that participant was voluntary.

Results

A total of 80 children (45 boys and 35 girls) were enrolled in this study. There were a total of 42 (52.5%) school children aged 7 to 8 years and 38 (47.5%) school children aged 9 to 10 years with median age of 8 years. The present study showed that 40% (32/80) of the participants had STH infection, 52.5% (55/80) had good knowledge, 55 (68.75%) had good behavior, 60 (75%) good personal hygiene, and 54 (67.5%) had good sanitation and (Table 1).

Table1. Distribution of Respondents' Characteristic

Character	Frequency (n)	Percentage (%)
Sex		
Boys	45	56,25
Girls	35	43,75
Ages		
7	4	5,00
8	38	47,50
9	27	33,75
10	11	13,75
Knowledge		
good	50	62.5%
bad	30	37.5%
Behaviour		

Good	55	68.75
Bad	25	31.25
Personal Hygiene		
Good	60	75.00
Bad	20	25.00
Sanitation		
Good	54	67.5
Bad	26	32.5
STH Infection		
Positive	32	40
Negative	48	60

Table2. Distribution of Parasite infection

STH Infection	Frequency (n)	Percentage (%)
<i>Ascarislumbricoides</i>	20	62,50
<i>Trichuristrichiura</i>	7	21,87
Hookworm	0	0,00
Mixed:(<i>A.lumbricoides</i> + <i>T.trichiura</i>)	5	15,63

Table 2 shows the distribution of parasite infection. The prevalence of STH infection was 62.5% (20/32), *T.trichiura* 7 (21.87%), Hookworm 0 and mixed infection (*A.lumbricoides* and *T.trichiura*) 5 (15.63%), respectively.

Table 3 shows the prevalence of bad knowledge among students with STH infection was higher compared with good knowledge (73% vs 20%; RP 3.67; 95% CI: 2.023-6.647) and good behavior compared bad behavior (64% vs 29.1%; RP 2.20; 95% CI: 1.326 – 3.651). Whereas the prevalence of good personal hygiene among students with STH infection was higher compared with bad personal hygiene (65% vs 31.7%; RP 2.05; 95% CI 1.256 – 3.356) and bad environment compared with good environment (61.5% vs 29.6%; RP 2.077; 95% CI 1.246 – 3.463). All the four variables were risk factors for the STH infection. The knowledge and behavior were moderate correlation with STH infection, whereas the environment and personal hygiene were weak correlation.

Table 3.Univariate analysis of factors associated with Knowledge, Behaviour, Personal hygiene, Environment with STH infection

	STH		X ² *	r**	P***	RP****	CI*****
Knowledge							
Bad	22	73.0%	22.2	0.47	0.00	3.67	2.023 - 6.647
Good	10	20.0%					
Behaviour							
Bad	16	64.0%	8.7	0.31	0.003	2.20	1.326 - 3.651
Good	16	29.1%					
Personal Hygiene							
Bad	13	65.0%	6.9	0.28	0.008	2.05	1.256 - 3.356
Good	19	31.7%					
Sanitation							
Bad	16	61.5%	7.5	0.29	0.006	2.077	1.246 - 3.463
Good	16	29.6%					

*Chisquare test

** Contingency Coefficient correlation test

***Pvalue

****Ratio Prevalence

*****Confidence interval

Discussion

This study is an essential phase in the work to control STH infection in Medan. The result of the present study showed the knowledge about STH infection among the participant was generally poor with low awareness about the symptoms, ways of transmission and preventive measures. Our results showed that about 47.5% of the respondents had no prior knowledge of the STH infection. The respondents also had misconception about the indication for treatment with deworming medication. However, a recent Malaysian study reported 40% of the respondents had no prior knowledge of intestinal worms.[13] However, study in Zimbabwean reported that only 26.2% expressed a prior knowledge on intestinal helminths.[14] These are different with previous study in Nepal, which reported that almost all of their subjects had an excellent knowledge of intestinal helminths and this was associated to the active health promotion taking place in the study area.[15]

Conclusion

There is a significant association between level of knowledge, behavior, personal hygiene and home environment sanitation and soil transmitted infections, whereas The knowledge and behavior were moderate correlation with STH infection, whereas the environment and personal hygiene were weak correlation.

Suggestions for the city Department of Health are early and routine screening for soil transmitted helminthes infection. In addition, regular administration of anti-helminths medication is necessary in preventing worms infection in children. By doing so it is expected that the prevalence of worm infection will decrease and therefore a better quality of intelligence and child productivity. Schools should conduct a training programs on Healthy life style to prevent worm infection. Additionally, school environment sanitation and school facility such as toilets should be improved. Parents should play an important role in teaching personal hygiene to their children and maintaining the cleanliness of home environment.

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