

ORIGINAL ARTICLE

Intestinal Parasitic Infestation in Children at Three Kindergartens in Medan, North Sumatera

by

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Abstract

A descriptive cross sectional study on intestinal parasitic infestation was carried out among children of three kindergartens (Methodist, Dharma Wanita and Aisyiah) in Medan.

*Of 162 samples of feces examined mixed infestations with *Ascaris lumbricoides* and *Trichuris trichiura* was found in 14,25%, single infestations of *Trichuris trichiura* in 14,2% , *Ascaris lumbricoides* in 13,0% , *H. nana* in 1,2% and *G. lamblia* in 0,6% .*

Hookworm infestation was not found among preschool children in all of those three kindergartens.

Introduction

In developing countries, including Indonesia, parasitic diseases still remain a public health problem, next to malnutrition. Many studies have reported the data on parasitic infestation; and they have, in general, showed a high incidence of intestinal parasitic infestation (1,2,3).

The Department of Child Health, School of Medicine, University of North Sumatera/Dr. Pirngadi Hospital, Medan, have conducted several studies on parasitic infestations in hospitalized children and outpatients. Some field surveys in Deli Tua (4), in school children in Samosir (1), among children in 4 villages in South Tapanuli (5) and children of Perwanis kindergarten in Medan (2) demonstrated a high incidence of intestinal parasitic infestations. Other studies on Primary School Children on Desa Sleman and Desa Sewon

in Jogjakarta (6), in under-five children in Desa Berta of Susukan Banjarnegara (7), also demonstrated a high incidence of intestinal parasitic infestations.

Three kinds of intestinal parasites commonly found in human, are *Ascaris Lumbricoides*, *Trichuris trichiura* and hookworms. The types of infestation are single or mixed; but most of them are the mixed type consisting of *Ascaris lumbricoides* and *Trichuris trichiura* (8,9,10).

The purposes of this study are :

1. To assess the incidence of intestinal parasitic infestation in children of three kindergarten in Medan.
2. To find out the relationship between intestinal parasitic infestation and nutritional status in children.

Materials and Methods

This descriptive cross-sectional study was conducted from January 1990 to February 1990, in three kindergartens in Medan; they were :

1. Methodist Kindergarten : 82 children
2. Dharma Wanita-USU Kindergarten : 40 children
3. Aisyiah Kindergarten : 40 children

The data recorded in questionnaires consisted of name, body weight, height, and parent's education. Body weight was measured using a Detecto Beam Balance with 0,1 kg in sensitivity; and body height was measured with a Microtoise with the sensitivity of 0,1 cm. The nutritional status was classified-BW/age; BW/BL; BL/Age according to the Antrophom-

etry and Classification of Nutritional Status Seminar of 1979 (Lokakarya Antropometrik dan Klasifikasi Status Gizi 1979).

Collection of faeces

- Feces was collected in small plastic containers, and preserved with 10% formalin.
- Feces was then transported to the Department of Parasitology, School of Medicine, University of North Sumatera, Medan, for qualitative analysis using Kato's method.

Chi Square test was used in statistical analysis assessing relationship between qualitatives data.

Table I. *Distribution of sex by age group of preschool children in three kindergartens*

Age (year)	Schools											
	Methodist				Dharma Wanita				Aisyiah			
	M	%	F	%	M	%	F	%	M	%	F	%
3 -	1	2,27	1	2,63	2	14,28	1	3,84	-	-	2	8
4 -	14	31,81	13	34,21	10	71,42	8	30,76	5	33,33	8	32
5 -	26	59,09	22	57,89	2	14,28	17	65,38	9	60,6	11	44
> 6	3	6,81	2	4,54	-	-	-	-	1	6,66	4	16
Total	44	100	38	100	14	100	26	100	15	100	25	100

Table II. *Parent's educations*

Schools kindergartens	Educations						Number
	Elementary school	Junior High school	Senior High school	Bachelor Degree	University Graduate		
Methodist	-	14	40	4	19	82	
Dharma Wanita	-	-	7	4	29	40	
Aisyiah	6	8	23	-	3	40	
Total	6	22	70	8	51	162	

Table III. *Prevalence of intestinal parasitic in preschool children of three kindergartens according to age groups*

Age (year)	Samples	Ascaris		Trichuris		Ascaris+ Trichuris		Hookworm		H. nana		Giardia lamblia	
		+	%	+	%	+	%	+	%	+	%	+	%
		3 -	8	2	25	-	-	1	12,5	-	-	-	-
4 -	56	5	6,52	12	21,42	16	26,57	-	-	1	1,78	-	-
> 5	88	14	14,28	11	11,22	32	35,22	-	-	1	1,02	1	1,02
Total	162	21	12,96	23	14,19	54	33,33	-	-	2	1,23	1	0,61

Table IV. *Nutritional status in preschool children of three kindergartens*

Kindergarten	Nutritional status				Number
	Wellnourished		Well and Moderate malnutrition		
	N	%	N	%	
Methodist	78	48,15	4	2,47	82
Dharma Wanita	30	18,51	10	6,17	40
Aisyiah	25	15,43	15	9,26	40
Total	133	82,09	29	17,91	162

$$X^2 = 22,804 \quad Df = 2 \quad P < 0.001$$

$$\text{Methodist} > < \text{Aisyiah} \quad P < 0.001$$

$$\text{Methodist} > < \text{Dharma Wanita} \quad P > 0.05$$

$$\text{Dharma Wanita} > < \text{Aisyiah} \quad P > 0.05$$

Table V. *Relationship between nutritional status and intestinal parasitic infestation in children of three kindergartens in Medan, North Sumatera*

Infestation	Nutritional status				Number
	Wellnourished		Moderate malnutrition		
	N	%	N	%	
(+)	78	58,64	23	79,31	101
(-)	55	41,36	6	20,68	61
Total	133	100,00	29	100,00	162

Discussion

In this study, the infestation rate of *Ascaris lumbricoides* is 46,29% (75 cases), *Trichuris trichiura* 47% (77 cases); and mixed infestation of *Ascaris lumbricoides* and *Trichuris trichiura* 33,33 % (54 cases).

The infestation of *Trichuris trichiura* is slightly higher than that of *Ascaris lumbricoides*; whereas previous studies by others reported that the infestation rate of *Ascaris lumbricoides* was higher than that of *Trichuris trichiura* (Table VI).

Table VI. *Infestation of intestinal parasites reported from several studies*

Author	Year	Infestation					
		Ascaris	T.T.	Hookworm	Oxyuris	H.Nana	Giardia lamblia
A.H. Sutanto	1976	89,55	79,01	72,84	-	-	-
Justin S.	1978	84,38	64,06	32,81	-	-	-
Chairuddin	1979	64,90	20,20	4,33	4,33	-	-
P. LUBIS							
Helmi LUBIS	1982	62,40	53,50	13,60	2,80	2,30	-
Syahril Pasaribu	1984	64,04	34,38	10,41	0,32	0,32	-
Maria Ulfah	1987	33,00	28,00	-	-	-	-
LUBIS							
This study	1990	64,29	47,53	-	-	1,23	0,61

This study showed no infestation of hookworm; this is similar to the report from a study done in Perwanis Kindergartens children in Medan but different from other previous studies.

Among the three kindergartens there was a significant difference in nutritional status (<0.001) between children of Methodist and Aisyiah whereas between

Methodist and Dharma Wanita the difference was not significant ($p>0.05$).

In children without parasitic infestation wellnourished children was found in 41,36%; and in those with parasitic infestation wellnourished children was found in 58,64%. No significant difference was found in the relationship ($p>0.05$).

Conclusions

1. Intestinal parasitic infestation remains a big health problem.

2. Infestation of *Trichuris trichiura* is slightly higher than *Ascaris lumbricoides*.

3. No significant relation was found between parasitic infestation and nutritional status.

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