

# Epidemiology of Intestinal Parasite Infection and Associated Risk Factors among the School Children in the Province of Manzini and Lubombo, Kingdom of Eswatini

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## INTRODUCTION

Base on previous intestinal parasitic infections (IPIs) survey of school-age children in four provinces of the Kingdom of Eswatini from 2010~2011, the overall infection rate among school children was as high as 42.5%. Although deworming program has been executed since 2009, the effectiveness of deworming programs in recent years remains unknown. In this study, we focus on two provinces- Manzini and Lubombo, one was the lowest and another was the highest prevalence in previous investigation.

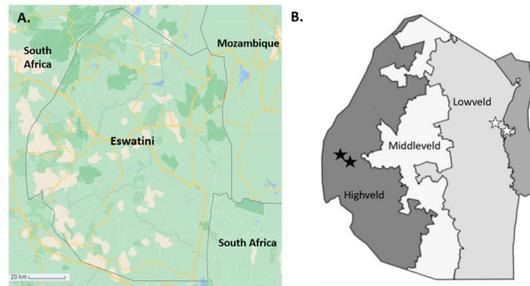
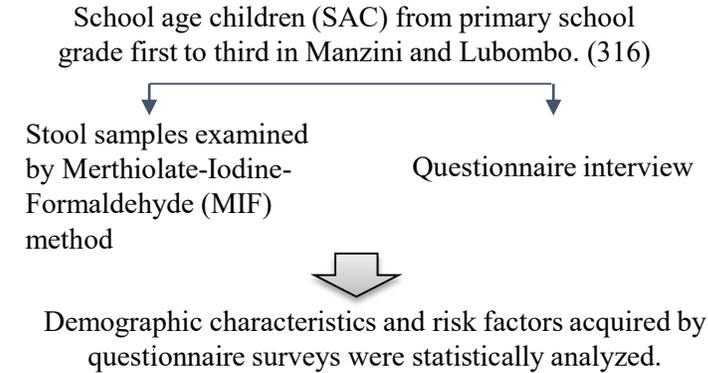
## AIM

To investigate the current IPIs status among Eswatini schoolchildren, an epidemiological investigation associated with the risk factors through the questionnaire interview was undertaken in two different regions.

## OUTCOMES OF THE STUDY

The overall prevalence rate was 40.5% (128/316), of which the infection rate in Manzini and Lubombo was 28.8%(19/66) and 58.3% (74/140), respectively. Infection rate of pathogenic protozoa was 20.6% (65/316), including *Entamoeba histolytica/dispar* 8.5% (27/316), *Giardia duodenalis* 14.6% (46/316), *Blastocystis hominis* 9.8% (31/316). It was 27.8% (88/316) of schoolchildren infected by more than one pathogenic parasite. In terms of helminth infection, four cases of *Hymenolepis nana* and one case of *Enterobius vermicularis* infection were found. Personal hygiene like washing hands before meal has a significant relevance in the infection rate Rain and type of water supply also showed a considerable risk.

## METHODS



## RESULTS

		Total (N=316)	Prevalence		
			Helminth (N=5)	Protozoan (N=126)	All (N=128)
AGE (years)	≤7	134	4(2.99)	52(38.81)	54(40.30)
	8-10	157	1(0.64)	68(43.31)	68(43.31)
	≥11	21	0(0)	5(23.81)	5(23.81)
	Unknown	4			
	Gender	Boys	201	2(1.0)	79(39.3)
	Girls	115	3(2.61)	46(40)	48(41.74)
Residence	Lowveld	169	3(1.78)	63(37.28)	63(37.28)
	Highveld	147	2(1.36)	63(42.86)	65(42.22)

Table 1.

Demographic characteristics of intestinal parasitic infection among primary school children from public school.

Figure 1: Protozoan cysts found in SAC stool sample examined by Merthiolate-Iodine-Formaldehyde (MIF) method.

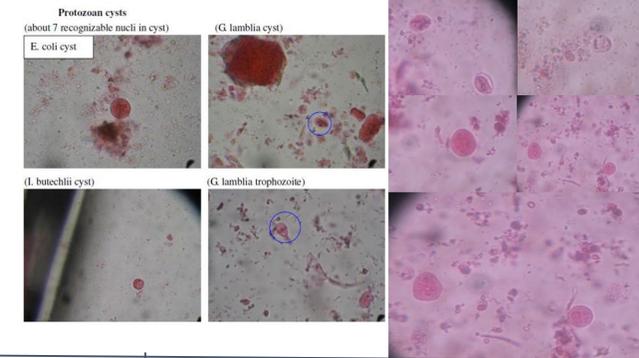


Table 2  
Polyparasitism status among schoolchildren

Area		Status of intestinal parasite infection			Sub-total(%)	
		Single (%)	Dual (%)	Multiple (%)		
Lowveld	Boys(N=107)	24(22.4)	12(11.2)	0(0)	36(33.6)	
	Girls(N=62)	22(35.5)	4(6.5)	1(1.6)	27(43.5)	
Highveld	Boys(N=94)	31(33.0)	8(8.5)	4(4.3)	43(45.7)	
	Girls(N=53)	13(24.5)	5(9.4)	4(7.5)	22(41.5)	
Residence	Lowveld(N=169)	46(27.2)	16(9.5)	1(0.6)	63(37.3)	
	Highveld(N=147)	44(29.9)	13(8.8)	8(5.4)	65(44.2)	
Helminth	<i>E.vermicularis</i>	0(0)	1(0.3)	0(0)	1(0.3)	
	<i>H.nana</i>	2(0.6)	2(0.6)	0(0)	4(1.3)	
	Pathogenic protozoa	<i>E. histolytica/ dispar</i>	10(3.2)	12(3.8)	5(1.6)	27(8.5)
		<i>G. intestinalis</i>	29(9.2)	11(3.5)	6(1.9)	46(14.6)
		<i>B. hominis</i>	15(4.7)	10(3.2)	6(1.9)	31(9.8)
Non-pathogenic protozoa	<i>E. coli</i>	32(10.1)	18(5.7)	9(2.8)	59(18.7)	
	<i>E. nana</i>	0(0)	1(0.3)	1(0.3)	2(0.6)	
	<i>I.butschlii</i>	2(0.6)	1(0.3)	2(0.6)	5(1.6)	
	<i>E. hartmanni</i>	0(0)	0(0)	3(0.9)	3(0.9)	
Total		90(28.5)	56(17.7)	32(10.1)	178(56.3)	

Table 3  
Logistic regression analysis of intestinal pathogenic parasitic infection among SAC

Variables	Prevalence			Pathogenic Parasites			
	ALL	95% CI	p-value	OR	95% CI	p-value	
Residence	Lowveld	1.00		1.00			
	Highveld	1.49	0.66-1.97	0.16	1.90	1.05-3.41	0.03
Water supply	Tap Water	1.00		1.00			
	Well	1.68	0.88-3.18	0.76	1.62	0.78-3.27	0.67
	Rain and others	2.37	1.19-4.66	0.04	2.01	0.97-4.17	0.16
Wash hand before meal	No	1.00		1.00			
	Yes	0.52	0.22-1.22	0.13	0.39	0.16-0.95	0.04

## FUTURE WORK:

Investigating the diarrhea-causing pathogenic protozoa genotyping: Genotyping of *Entamoeba histolytica*, *Giardia intestinalis*, *Cryptosporidium parvum*, *Blastocystis hominis*

## ACKNOWLEDGMENT

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