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Prevalence and risk factors of intestinal parasites in Cuban children

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Summary

OBJECTIVES To determine the prevalence of intestinal parasite infections and their risk factors in children in urban and rural settings in two Cuban municipalities.

METHODS A total of 1320 Cuban schoolchildren aged 4–14 were tested by stool examination for intestinal parasite infections and evaluated by parental questionnaire for a number of common environmental, sanitary, socioeconomic and behavioural risk factors. Multivariate regression was applied to examine the relationship between the respective parasite infections and the risk factors.

RESULTS Prevalences of intestinal parasite infections were 58% in Fomento and 45% in San Juan y Martínez; for helminth infections, these were 18% and 24% and for protozoa infections, 50% and 29%, respectively. Helminth infections were associated with high parental education (maternal: OR 0.68, CI 0.50–0.93; paternal: OR 0.71, CI 0.52–0.96), absence of toilet (OR 1.57, CI 1.12–2.19), consumption of water from a well or river (OR 0.56, CI 0.41–0.77) and eating unpeeled/unwashed fruit (OR 1.37, CI 1.01–1.87); protozoa infections were only associated with high maternal education (OR 0.72, CI 0.57–0.91).

CONCLUSIONS Paediatric intestinal parasite infections are still prevalent in certain areas in Cuba and associated with a number of common environmental, socioeconomic and sanitary risk factors.

keywords paediatric helminths, protozoa, prevalence, risk factors, Cuba

Introduction

Intestinal parasite infections are among the most prevalent and persistent of all childhood infections worldwide, and many individuals living in endemic areas are infected continuously from soon after birth to childhood (Cooper *et al.* 2003). Infections with intestinal parasites may have important health consequences, but morbidity – especially for school-aged children – is often underestimated (Bundy 1994).

Before the revolution in 1959, the situation in Cuba with regard to intestinal parasites was deplorable (Arocha Marino 2000), but since the 1960s the prevalence is assumed to have decreased as a consequence of the improvement in socioeconomic conditions and the implementation of various health programmes, sanitation and supply of drinking water (Valdés Valdés *et al.* 1997). Except for a few recent studies on intestinal parasitism in Havana, actual data on the present situation in Cuba are lacking, however (Mendoza *et al.* 2001; Núñez *et al.* 2003a,b).

We determined intestinal parasite infections and their risk factors in Cuban schoolchildren in two mountainous provinces where parasite prevalence is assumed to be relatively high (Garcia Gonzalez *et al.* 1991; Canete Villafranca 2001).

Methods

Study group

A cross-sectional study was performed in December 2003 in San Juan y Martínez in Pinar del Rio, a province in the west of Cuba, and in May 2004 in Fomento in Sancti Spiritus, a province in the centre of the island. In Pinar, 398 children from 2 urban (207 children, 52%) and 3 rural (191 children, 48%), and in Fomento, 922 children from 2 urban (482 children, 52%) and 12 rural (440 children, 48%) primary schools were included in the study. In Cuba, the classification for urban and rural is as follows: urban areas are those with a population of at least 2000 people,

or areas with a population between 500 and 2000 inhabitants, which have public street lights and three or more of the five following characteristics: water pipeline, paved roads, sewage system, medical services and educational centre. Furthermore, all areas with a population between 200 and 500 inhabitants, which have all six of the above-mentioned infrastructural characteristics are defined to be urban. Rural areas are those with less than 200 inhabitants, as well as areas with a population between 200 and 2000 without the above-mentioned criteria (Comité Estatal de Estadística 1983.

Using Survey select, SAS version 8.0 (SAS Institute Inc., Cary, NC, USA), the schools were selected randomly after double stratification for municipality (San Juan y Martínez or Fomento) and area (urban or rural), and all children from each school were included. Prevalence estimates for the target population (children who attended primary schools in the two municipalities in May 2002) were adjusted for the non-equiprobabilistic sampling design using the schools as primary sampling unit and using sampling weights to correct for the unequal selection probabilities of the schools in rural *vs.* urban areas.

Informed written consent was obtained from the parents of each child. The study was approved by the Ethical Committees of the Institute of Tropical Medicine in Antwerp, Belgium, the Pedro Kourí Institute of Tropical Medicine (IPK) and the National Institute for Hygiene, Epidemiology and Microbiology (INHEM) in Havana, Cuba.

Study design

Parents of the participating children answered a questionnaire on common risk factors for parasite infections, as described in literature (Herrström *et al.* 1997; Asaolu *et al.* 2002; Núñez *et al.* 2003a,b; Rai *et al.* 2005). Questions on environmental risk factors were related to living background (urban *vs.* rural); those on sanitary risk factors to water supply (piped water *vs.* well or river) and sanitary disposal (toilet *vs.* latrine or open-air defaecation); those on socioeconomic risk factor to household income (250 pesos/month or less *vs.* more than 250 pesos/month) and education level of the parents (less than 12 grades *vs.* grade 12 or higher). Behavioural factors were drinking unboiled water (yes or no), eating with unwashed hands (yes or no), eating unwashed/raw vegetables (yes or no), eating unpeeled/unwashed fruit (yes or no), biting fingernails/sucking thumb (yes or no) and walking barefoot (yes or no).

From each child, one fresh stool sample was collected and used for one direct smear and two Kato-Katz examinations (Katz *et al.* 1972). All parasites detected in the stool samples by either of the two methods were recorded. Children who tested positive for helminth infections during the study were treated with one dose of mebendazole, 500 mg (Núñez Fernández *et al.* 1989). Children with other parasites such as *Entamoeba histolytica/dispar* or *Giardia lamblia* were referred to their general practitioner for treatment.

For statistical computations, SPSS (Chicago, IL, USA) for Windows, version 12, and Stata Intercooled version 9 (Stata Corporation, College Station, TX, USA) were used. A P-value of $\leqslant 0.05$ was considered statistically significant.

Multivariate logistic regression models for association between parasite infections and risk factors included factors for the sampling strata (municipality and rural/urban setting), and consequently no sampling weights were used to account for unequal selection probabilities. Factors identified as statistically significant at the 5% level in univariate analysis were entered into a stepwise forward logistic regression model. The same criteria were used for every outcome variable. Multiple logistic regression was adjusted for age, sex, municipality, urban/rural background and interaction between municipality and urban/rural background irrespective of their significance level.

Results

A total of 1320 children from 19 schools were sampled. The age range of the participating children was 4–14 years (median 8 years), 51% boys and 49% girls. The response rate to the questionnaires was 100%. Seven children (1%) did not provide faecal samples for the laboratory examination. Table 1 shows the parasitological results in rural and urban areas of San Juan y Martínez and Fomento. Prevalence of intestinal parasite infections were 58% in Fomento and 45% in San Juan y Martínez; for helminth infections, these were 18% and 24% and for protozoa infections, 50% and 29%, respectively. For helminth infections, significant differences were found between rural and urban areas in both provinces ($P = 0.004$ in San Juan y Martínez, $P < 0.001$ in Fomento). Prevalence of *Ascaris lumbricoides* and *E. histolytica/dispar* significantly differed between the two municipalities ($P = 0.021$ and $P = 0.001$, respectively).

Table 2 shows the distribution of environmental, socioeconomic, sanitary and behavioural risk factors among the children in the respective areas and municipalities. Table 3 shows the risk factors and their associations with the respective intestinal parasite infections as analysed by univariate logistic regression. Table 4 shows those risk factors that were significantly associated with the respective intestinal parasite infections as analysed by multiple logistic regression. Factors related to intestinal parasitism were high maternal education level and the absence of sanitary toilet facilities. Helminth infections were

Table 1 Results of faeces examination in children in San Juan y Martínez and Fomento. Percentages of positives in rural and urban areas are shown. Total prevalence was calculated for San Juan y Martínez (SJyM) and Fomento based on weighing factors†

	SJyM ($n = 392$)				Fomento ($n = 921$)				
	Urban ($n = 201$)	Rural ($n = 191$)	*P*-value (urban *vs.* rural)	Adjusted total prevalence†	Urban ($n = 481$)	Rural ($n = 440$)	*P*-value (urban *vs.* rural)	Adjusted total prevalence†	*P*-value (total SjyM *vs.* total Fomento)
Ascaris lumbricoides	42 (21%)	15 (8%)	**<0.001**	11%	14 (3%)	11 (3%)	0.690	3%	**0.021**
Trichuris trichuria	39 (20%)	13 (7%)	**<0.001**	9%	30 (6%)	58 (13%)	**<0.001**	8%	0.856
Hookworm	6 (3%)	22 (12%)	**0.001**	9%	14 (3%)	79 (18%)	**<0.001**	10%	0.936
Any helminth	73 (35%)	42 (22%)	**0.004**	24%	45 (9%)	122 (28%)	**<0.001**	18%	0.410
Giardia lamblia	38 (19%)	35 (18%)	0.864	19%	68 (14%)	78 (18%)	0.148	16%	0.119
Entamoeba histolytica/dispar	4 (2%)	1 (<1%)	0.196	1%	22 (5%)	20 (5%)	0.967	5%	**0.001**
Any protozoa	62 (31%)	52 (27%)	0.739	29%	234 (49%)	225 (51%)	0.702	50%	**<0.001**
Any parasite	109 (57%)	98 (47%)	**0.041**	45%	252 (47%)	230 (59%)	**<0.001**	58%	**0.015**

Statistically significant differences are given in bold.
n, number of children.
†Sampling weights were used to correct for the unequal selection probabilities of urban *vs.* rural schools.

Table 2 Distribution of environmental, socioeconomic, sanitary and behavioural risk factors among the children in rural and urban areas in San Juan y Martínez (SJyM) and Fomento

	SjyM			Fomento			
	Urban ($n = 207$)	Rural ($n = 191$)	*P*-value (urban *vs.* rural)	Urban ($n = 482$)	Rural ($n = 440$)	*P*-value (urban *vs.* rural)	*P*-value (SJyM *vs.* Fomento)
Education level father ⩾12 grades	111 (56%)	92 (48%)	0.132	242 (51%)	128 (30%)	**<0.001**	**<0.001**
Education level mother ⩾12 grades	91 (44%)	90 (48%)	0.493	289 (60%)	141 (32%)	**<0.001**	0.696
Household income >250 pesos/month	82 (41%)	89 (47%)	0.213	270 (57%)	152 (35%)	**<0.001**	0.444
Water from well or river	36 (18%)	55 (29%)	**0.007**	329 (69%)	195 (45%)	**<0.001**	**<0.001**
Latrine or open-air defaecation	101 (49%)	127 (67%)	**<0.001**	211 (44%)	350 (80%)	**<0.001**	0.203
Biting fingernails/sucking thumb	82 (40%)	60 (31%)	0.088	173 (36%)	150 (34%)	0.567	0.822
Drinking unboiled water	200 (97%)	188 (98%)	0.249	476 (99%)	438 (100%)	0.196	**0.018**
Eating unwashed/raw vegetables	11 (5%)	46 (24%)	**<0.001**	5 (1%)	36 (8%)	**<0.001**	**<0.001**
Eating unpeeled/unwashed fruit	75 (36%)	145 (76%)	**<0.001**	229 (48%)	301 (68%)	**<0.001**	0.457
Eating with unwashed hands	94 (45%)	101 (53%)	0.136	238 (49%)	258 (59%)	**0.005**	0.109
Walking barefoot	181 (87%)	170 (89%)	0.629	458 (95%)	418 (95%)	0.988	**<0.001**

Statistically significant differences are given in bold.
n, number of children.

negatively associated with high parental education and consumption of water from a well or river and positively associated with the absence of toilet and eating unpeeled/unwashed fruit; protozoa infections were negatively related to high maternal education.

Discussion

The only recently published studies on intestinal parasite prevalence in Cuba are from Havana. These reported prevalence from 0.6% to 3.5% for helminth infections and from 0.3% to 55% for protozoa infections (Mendoza *et al.* 2001; Núñez *et al.* 2003a,b). Compared with these data, prevalence of paediatric intestinal helminth infections in our study populations in San Juan y Martínez and Fomento were relatively high. On the contrary, protozoan prevalence in our study population were lower, especially those of *G. lamblia*. The latter might be due to the fact that in the studies in Havana three stool samples were examined against only one in our study population, which can have a significant influence on the outcome, especially for this particular parasite (Cartwright 1999).

Table 3 Univariate analysis of all examined risk factors and their impact on the respective intestinal parasite infection in children in San Juan y Martínez and Fomento

	Univariate analysis: OR (95% CI)							
	Ascaris lumbricoides	*Trichuris trichuria*	Hookworm	*Giardia lamblia*	*Entamoeba histolytica/dispar*	Any helminth	Any protozoa	Any parasite
Age	0.92 (0.83–1.02)	1.06 (0.97–1.15)	1.06 (0.97–1.15)	0.96 (0.89–1.02)	1.13 (0.99–1.29)	1.03 (0.97–1.10)	0.96 (0.91–1.01)	0.98 (0.93–1.03)
Sex	0.70 (0.45–1.09)	0.75 (0.53–1.06)	0.56 (0.39–0.82)*	0.86 (0.64–1.14)	1.15 (0.67–1.98)	0.62 (0.47–0.81)**	1.00 (0.81–1.25)	0.79 (0.63–0.98)*
Urban background	2.35 (1.47–3.75)**	0.98 (0.69–1.38)	0.21 (0.14–0.33)**	0.91 (0.68–1.21)	1.46 (0.84–2.56)	0.54 (0.41–0.70)**	0.97 (0.78–1.20)	0.81 (0.65–1.01)
Municipality (coming from Fomento)	0.15 (0.10–0.25)**	0.62 (0.44–0.89)*	1.22 (0.81–1.83)	0.75 (0.56–1.02)	1.72 (0.88–3.38)	0.59 (0.44–0.77)**	2.44 (1.90–3.14)**	1.51 (1.19–1.91)**
Household income >250 pesos/month	0.62 (0.39–0.97)*	0.52 (0.36–0.75)**	0.50 (0.34–0.74)**	0.63 (0.47–0.85)*	0.79 (0.45–1.38)	0.54 (0.41–0.71)**	0.80 (0.65–1.00)	0.73 (0.59–0.91)*
Education level father ≥12 grades	0.71 (0.46–1.12)	0.62 (0.43–0.89)*	0.54 (0.36–0.80)*	1.08 (0.81–1.43)	1.13 (0.65–1.95)	0.61 (0.46–0.81)**	0.88 (0.71–1.10)	0.71 (0.57–0.89)*
Education level mother ≥12 grades	0.81 (0.53–1.26)	0.58 (0.41–0.83)*	0.34 (0.22–0.51)**	0.80 (0.60–1.07)	0.73 (0.42–1.27)	0.51 (0.38–0.67)**	0.73 (0.58–0.90)*	0.64 (0.51–0.80)**
Water from well or river	0.43 (0.26–0.69)**	0.75 (0.53–1.07)	0.76 (0.53–1.11)	0.96 (0.72–1.28)	2.73 (1.50–4.95)**	0.47 (0.36–0.63)**	1.39 (1.12–1.73)*	0.96 (0.80–1.24)
Latrine or open-air defaecation	1.08 (0.70–1.69)	1.77 (1.21–2.58)*	2.68 (1.72–4.16)**	1.50 (1.11–2.04)*	1.61 (0.89–2.92)	1.87 (1.40–2.50)**	1.31 (1.05–1.64)*	1.56 (1.25–1.95)**
Drinking unboiled water	0.23 (0.07–0.71)*	0.62 (0.18–2.18)	0.86 (0.19–3.77)	0.49 (0.17–1.41)	0.67 (0.09–5.22)	0.67 (0.24–1.91)	1.21 (0.47–3.15)	1.22 (0.48–3.09)
Eating with unwashed hands	0.76 (0.50–1.18)	1.37 (0.97–1.94)	0.93 (0.65–1.34)	0.87 (0.65–1.15)	0.84 (0.49–1.45)	1.06 (0.81–1.38)	1.04 (0.84–1.30)	1.06 (0.86–1.32)
Eating unwashed/raw vegetables	0.57 (0.20–1.58)	1.12 (0.58–2.11)	1.19 (0.62–2.30)	0.78 (0.44–1.42)	0.47 (0.11–1.95)	1.19 (0.73–1.94)	0.52 (0.33–0.82)*	0.65 (0.43–0.98)*
Eating unpeeled/unwashed fruit	1.02 (0.66–1.58)	1.15 (0.81–1.63)	1.69 (1.15–2.50)*	0.94 (0.70–1.25)	0.95 (0.55–1.64)	1.53 (1.16–2.01)*	1.00 (0.80–1.24)	1.17 (0.94–1.46)
Walking barefoot	0.75 (0.35–1.61)	1.34 (0.64–2.83)	1.00 (0.49–2.04)	0.69 (0.42–1.15)	0.95 (0.33–2.68)	1.09 (0.64–1.86)	1.24 (0.80–1.90)	1.32 (0.87–2.02)
Biting fingernails/sucking thumb	0.88 (0.56–1.40)	0.79 (0.55–1.14)	0.96 (0.65–1.41)	0.75 (0.55–1.02)	0.77 (0.42–1.39)	1.00 (0.75–1.32)	0.85 (0.67–1.06)	0.89 (0.71–1.11)

*Statistically significant at the 5% level.
**Statistically significant at the 1% level.

Table 4 Multivariate logistic regression models for associations between parasite infections and risk factors. Factors for the sampling strata (municipality and rural/urban setting) are included, and consequently no sampling weights were used to account for unequal selection probabilities. Factors identified as statistically significant at the 5% level in univariate analysis were entered into a stepwise forward logistic regression model. Multiple logistic regression was adjusted for age, sex, municipality, urban/rural background and interaction between municipality and urban/rural background irrespective of their significance level.

	OR (CI)	*P*-value
Infection with any helminth ($n = 1304$)		
Age	1.04 (0.97–1.12)	0.230
Sex	0.66 (0.50–0.89)	**0.006**
Municipality (Fomento)	1.19 (0.78–1.81)	0.412
Urban background	1.94 (1.19–3.14)	**0.007**
Interaction municipality/urban background	0.23 (0.12–0.42)	**<0.001**
Education level of mother ⩾12 grades	0.68 (0.50–0.93)	**0.015**
Education level of father ⩾12 grades	0.71 (0.52–0.96)	**0.026**
Water from well or river	0.56 (0.41–0.77)	**<0.001**
Latrine or open-air defaecation	1.57 (1.12–2.19)	**0.008**
Eating unpeeled/unwashed fruit	1.37 (1.01–1.87)	**0.045**
Infection with any protozoa ($n = 1304$)		
Age	0.93 (0.88–0.98)	**0.006**
Sex	1.06 (0.85–1.33)	0.603
Municipality (Fomento)	2.74 (1.88–4.00)	**<0.001**
Urban background	1.20 (0.77–1.87)	0.410
Interaction municipality/urban background	0.90 (0.54–1.52)	0.699
Education level of mother ⩾12 grades	0.72 (0.57–0.91)	**0.007**
Infection with any parasite ($n = 1312$)		
Age	0.98 (0.92–1.02)	0.230
Sex	0.84 (0.67–1.05)	0.124
Municipality (Fomento)	2.24 (1.58–3.19)	**<0.001**
Urban background	1.59 (1.06–2.38)	**0.024**
Interaction municipality/urban background	0.48 (0.30–0.79)	**0.003**
Education level mother ⩾12 grades	0.72 (0.57–0.91)	**0.005**
Latrine or open-air defaecation	1.36 (1.07–1.73)	**0.013**
Infection with *Ascaris lumbricoides* ($n = 1308$)		
Age	0.97 (0.87–1.09)	0.611
Sex	0.63 (0.40–1.0)	**0.050**
Municipality (Fomento)	0.29 (0.13–0.65)	**0.003**
Urban background	3.22 (1.72–6.02)	**<0.001**
Interaction municipality/urban background	0.47 (0.17–1.33)	0.155
Infection with hookworm ($n = 1312$)		
Age	1.05 (0.96–1.14)	0.331
Sex	0.62 (0.42–0.91)	**0.015**
Municipality (Fomento)	1.43 (0.85–2.39)	0.178
Urban background	0.46 (0.22–0.96)	**0.038**
Interaction municipality/urban background	0.39 (0.15–1.01)	0.053
Education level of mother ⩾12 grades	0.46 (0.29–0.70)	**<0.001**
Infection with *Trichuris trichuria* ($n = 1311$)		
Age	1.08 (0.99–1.17)	0.085
Sex	0.80 (0.56–1.14)	0.221
Municipality (Fomento)	1.80 (0.96–3.39)	0.069
Urban background	4.16 (2.14–8.09)	**<0.001**
Interaction municipality/urban background	0.14 (0.06–0.31)	**<0.001**
Household income >250 pesos/month	0.61 (0.42–0.90)	**0.012**
Latrine or open-air defaecation	1.60 (1.07–2.41)	**0.023**

Table 4 (*Continued*)

	OR (CI)	*P*-value
Infection with *Entamoeba histolytica/dispar* ($n = 1317$)		
Age	1.12 (0.98–1.28)	0.104
Sex	1.25 (0.71–2.19)	0.443
Municipality (Fomento)	7.56 (1.00–57.23)	**0.050**
Urban background	11.01 (1.39–87.21)	**0.023**
Interaction municipality/urban background	0.12 (0.01–1.07)	0.057
Infection with *Giardia lamblia* ($n = 1311$)		
Age	0.96 (0.89–1.03)	0.250
Sex	0.87 (0.65–1.17)	0.355
Municipality (Fomento)	0.90 (0.57–1.41)	0.641
Urban background	1.31 (0.79–2.17)	0.299
Interaction municipality/urban background	0.74 (0.40–1.38)	0.349
Household income >250 pesos/month	0.67 (0.49–0.91)	**0.012**
Latrine or open-air defaecation	1.43 (1.03–1.98)	**0.031**

Significant results are given in bold.
n, number of children.

Unpublished results from a study in San Juan y Martínez in 2001 showed prevalence of 41% for *A. lumbricoides*, 36% for *Trichuris trichuria*, 6% for hookworm, 25% for *G. lamblia* and 3% for *E. histolytica/dispar*; 91% of the children were infected with at least one parasite (Canete Villafranca 2001). Compared with these findings, prevalences of most intestinal parasite infections have considerably decreased in San Juan y Martínez and are relatively low in Fomento, as well. In addition, the difference in number of stool samples examined should be taken into account, but overall, our results indicate a decrease of intestinal parasite prevalence in mountainous areas.

In our study population in San Juan y Martínez, prevalences of helminth infections were higher in urban than in rural areas, whereas in Fomento it was the other way round; no significant differences were observed for intestinal protozoa. Some studies have reported higher prevalence of helminth infections in rural settings than in urban communities in the same country, while other studies have indicated the opposite (Phiri *et al.* 2000). Comparing our study findings in the relatively rural municipalities of San Juan and Fomento to those in Havana, urbanization seems to decrease the risk of infection with intestinal helminths. Our contradictory findings in Fomento and San Juan y Martínez may be attributed to the relatively small differences between urban and rural within these municipalities. In addition, between the municipalities, differences were observed for *E. histolytica/dispar* and *A. lumbricoides* prevalence. Geographical and environmental conditions are very similar in both areas, however. In addition, we have no reason to assume that possible seasonal climate differences because of different sample collection times would cause the observed differences in these particular parasites and not the others.

Although 92% of the Cuban population has been reported to have access to piped water (Aguiar Prieto *et al.* 2000), the percentage of children drinking water from wells or rivers in our study population was substantial, even in urban areas (69% in Fomento; 18% in San Juan y Martínez). However, children drinking water from wells or rivers had a significantly lower risk to be parasitized than children drinking piped water ($P < 0.001$). Similar results were found in a recent study in Nepal (Rai *et al.* 2005). In Colombia, piped water was associated with an increased risk of giardiasis (Lora Suarez *et al.* 2002). Poor quality of piped water has also been reported in Cuba (Aguiar Prieto *et al.* 2000).

Most common behavioural risk factors that have previously been described to have an impact on parasitism were not associated with parasite infections in our study population (Herrström *et al.* 1997; Núñez *et al.* 2003a,b), except for eating unpeeled/unwashed fruit.

Conclusions

Paediatric intestinal parasite infections may have decreased but are still prevalent in Cuba, at least in mountainous areas. They are associated with a number of common environmental, socioeconomic and sanitary risk factors. Programmes on the improvement of sanitary conditions are ongoing and will hopefully contribute to a further decrease of parasitism in Cuba (Plan Regional de Inversiones en Ambiente y Salud 2005).

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Prévalence et facteurs de risque pour l'infection parasitaire intestinale par les chez les enfants cubains

OBJECTIFS Déterminer les prévalences des infections parasitaires intestinales et les facteurs de risque associés chez les enfants dans les zones rurales et urbaines dans deux municipalités de Cuba.
MÉTHODES 1320 écoliers cubains de 4 à 14 ans ont été examinés par l'analyse des selles pour les infections parasitaires et ont été évalués par des questionnaires aux parents au sujet d'un certain nombre de facteur de risque courants: environnementaux, hygiéniques, socioéconomiques et comportementaux. Une régression multivariée a été employée pour analyser la relation entre les infections parasitaires respectives et les facteurs de risque.
RÉSULTATS Les prévalences des infections parasitaires intestinales étaient de 58% à Fomento et de 45% à San Juan y Martinez. Pour les infections aux helminthes elles étaient de 18% et 24% respectivement. Pour les infections aux protozoaires elles étaient de 50% et 29% respectivement. Les infections aux helminthes étaient associées avec le niveau d'éducation des parents (maternelle: OR = 0,68; IC95%: 0,50–0,93. paternelle: OR = 0,71; IC95%: 0,52–0,96), l'absence de toilettes (OR = 1,57, IC95%: 1,12–2,19), la consommation d'eau de puits ou de rivière (OR = 0,56, IC95%: 0,41–0,77), le fait de consommer de fruit non pelés ou lavés (OR = 1,37, IC95%: 1,01–1,87). L'infection aux protozoaires était seulement associée avec une éducation maternelle élevée (OR = 0,72; IC = 0,57–0,91).
CONCLUSION Les infections parasitaires intestinales pédiatriques sont toujours courantes à Cuba et sont associées avec certain nombre de facteur de risque courant, environnementaux, socioéconomiques et d'hygiène.

mots clés helminthes pédiatriques, protozoaires, prévalences, facteurs de risque, Cuba

Prevalencia y factores de riesgo de parásitos intestinales en niños cubanos

OBJETIVOS Determinar la prevalencia de infecciones por parásitos intestinales y sus factores de riesgo en niños de áreas urbanas o rurales de dos municipios cubanos.
MÉTODOS Se determinó la presencia de parásitos intestinales mediante examen coprológico en 1320 niños cubanos en edad escolar, con edades comprendidas entre los 4 y14 años. Mediante una encuesta a sus padres, se evaluó una serie de factores de riesgo ambientales, sanitarios, socioeconómicos y de comportamiento. Se aplicó una regresión multivariada con el fin de examinar la relación entre una infección parasitaria dada y los factores de riesgo.
RESULTADOS La prevalencia de infecciones parasitarias intestinales fue del 58% en Fomento y del 45% en San Juan y Martínez; para infecciones por helmintos fue del 18% y 24%, para infecciones por protozoos del 50% y 29%, respectivamente. Las infecciones por helmintos estaban asociadas con el nivel educativo de los padres (materno: OR 0.68, IC 0.50–0.93; paterno: OR 0.71, IC 0.52–0.96), la ausencia de inodoro (OR 1.57, IC 1.12–2.19), el consumo de agua de un pozo o río (OR 0.56, IC 0.41–0.77) y el comer fruta sin pelar/lavar (OR 1.37, IC 1.01–1.87); las infecciones por protozoos solo estaban relacionadas con un alta educación materna (OR 0.72, IC 0.57–0.91).
CONCLUSIONES Las infeccione pediátricas por parásitos intestinales aún son comunes en Cuba y están asociadas con un número de factores de riesgo ambientales, socioeconómicos y sanitarios.

palabras clave helmintos pediátricos, protozoos, prevalencias, factores de riesgo, Cuba