Universidad Tecnológica de Pereira

Facultad Ciencias de la Salud

Grupo y Semillero de Investigación Salud Pública e Infección

Comité de Zoonosis y Fiebres Hemorrágicas — ACIN — Capítulo Eje Cafetero

International Society of Chemotherapy for Infection and Cancer

ISC Working Group on Zoonoses

Estado de la Epidemiología e Investigación en Giardiasis en el Mundo, América Latina y Colombia

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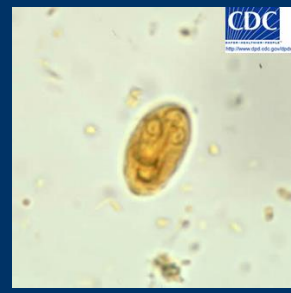

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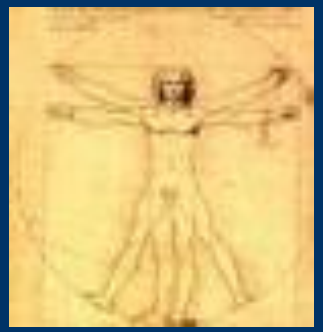
Giardiasis

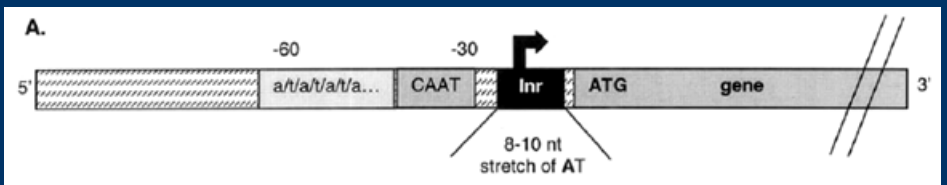
Historia

- Leeuwenhoek en 1681: **Observa los trofozoitos en sus propias heces**
- Vilèm Lambl en 1859: **realiza las primeras descripciones e ilustraciones de *Giardia spp.***
- Fantham y Porter 1916: **describen la expulsión de quistes en animales con diarrea**
- Clifford Dobell (1921) y Robert Rendtorff:
  Describen que *Giardia spp*. es un agente patógeno y lo relacionan íntimamente con la enfermedad
- Filice 1951: **describe 3 especies de *Giardia***

Especies de *Giardia*

- *Giardia duodenalis*: animales domésticos ganado, mamíferos salvajes y humanos.
- *Giardia agilis*: anfibios
- *Giardia muris*: roedores
- *Giardia psittaci*: aves
- *Giardia ardeae*: aves

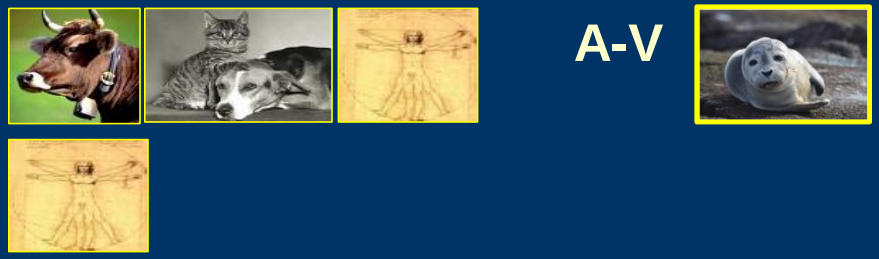




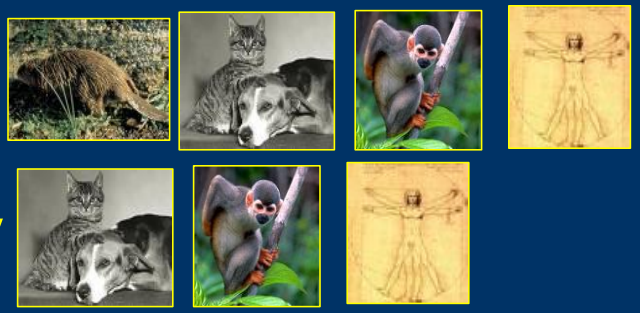
Genotipificación de *Giardia duodenalis*

- Los 8 genotipos de *Giardia duodenalis* son morfológicamente idénticos

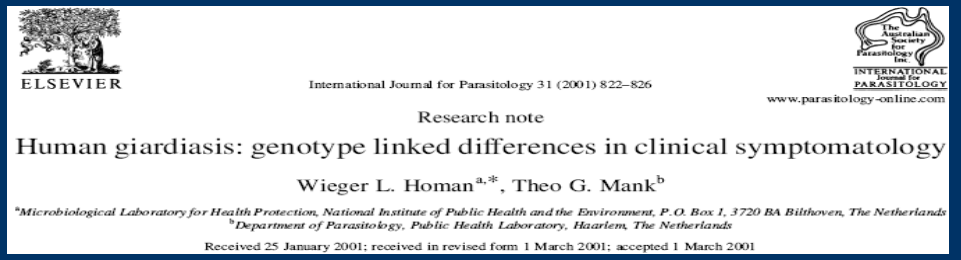
- **VARIANTE A**
  - **A-I**
  - **A-II**
  - **A-V**



- **VARIANTE B**
  - **B-III**
  - **B-IV**



- **VARIANTE C**
- **VARIANTE D**
- **VARIANTE E**
- **VARIANTE F**
- **VARIANTE G**
- **VARIANTE H**



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International Journal for Parasitology 31 (2001) 822–826

www.parasitology-online.com

Research note

Human giardiasis: genotype linked differences in clinical symptomatology

Wieger L. Homan[a,*], Theo G. Mank[b]

[a]Microbiological Laboratory for Health Protection, National Institute of Public Health and the Environment, P.O. Box 1, 3720 BA Bilthoven, The Netherlands
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Received 25 January 2001; received in revised form 1 March 2001; accepted 1 March 2001

Filogenética de *Giardia duodenalis*

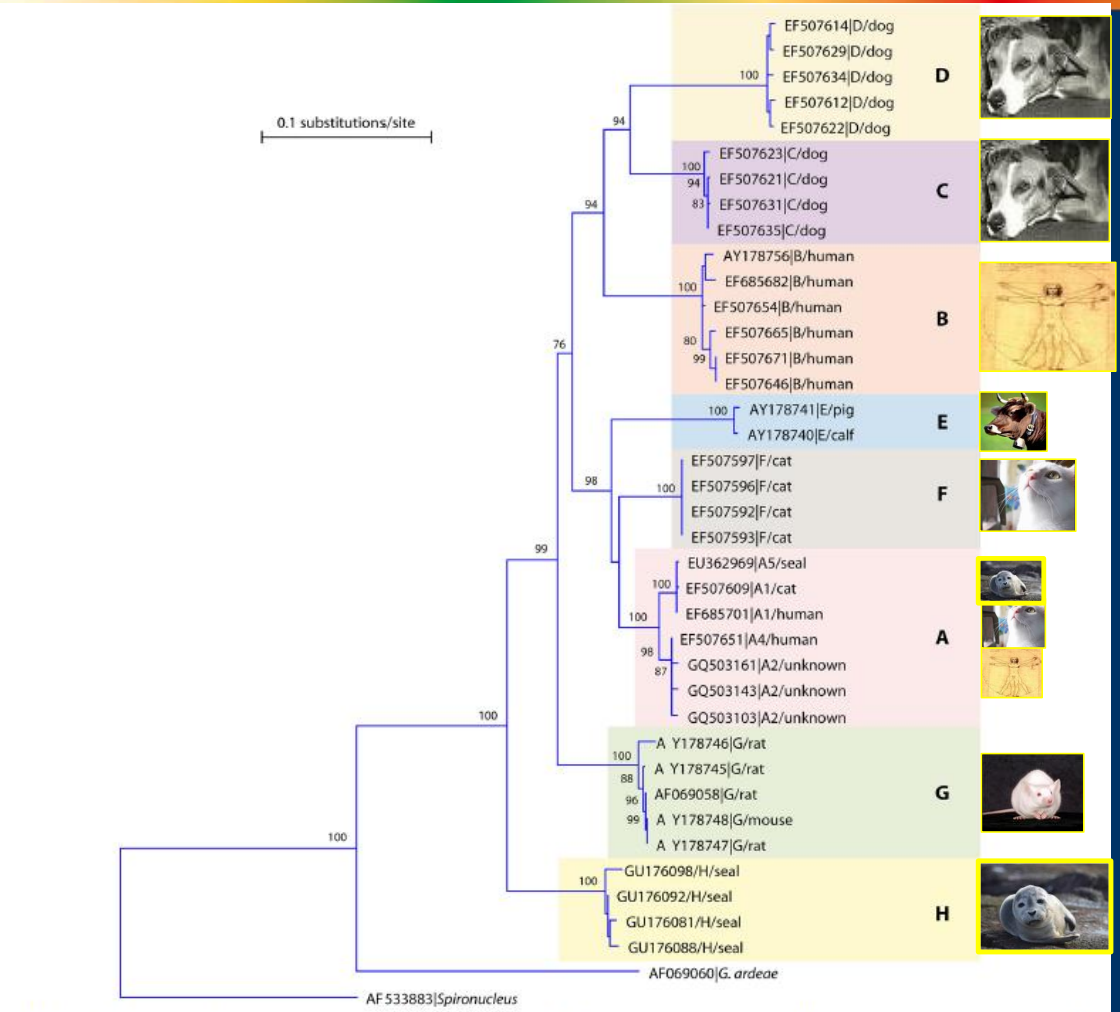

FIG. 1. Phylogenetic relationships among assemblages of *G. duodenalis* at the *gdh* locus as assessed by a neighbor-joining analysis of the nucleotide sequence covering a 709-bp region (positions 256 to 964 of GenBank accession number AY178740) of the gene, using distance calculated by the Kimura two-parameter model.

Clinical Microbiology Reviews, Jan. 2011, p. 110–140

Veterinary Parasitology 196 (2013) 31–36

Contents lists available at SciVerse ScienceDirect

Veterinary Parasitology

journal homepage: www.elsevier.com/locate/vetpar

A large scale molecular study of *Giardia duodenalis* in horses from Colombia

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[b] Laboratorio de Parasitología Veterinaria, Facultad de Medicina Veterinaria y de Zootecnia, Universidad Nacional de Colombia-Sede Bogotá, Bogotá D.C., Colombia

Table 2
Assemblages of *Giardia duodenalis* determined by sequence analysis of *ssurRNA*, *bg*, *gdh*, and *tpi* genes for each positive horse are presented.

Horse ID	Location	Sex	Age	Assemblages *ssurRNA*	*bg*	*gdh*	*tpi*
17A	Sabana de Bogotá	Male	7 months	Assemblage B			
47A	Sabana de Bogotá	Female	18 months	Assemblage B			
4B	Costa Atlántica	Male	5 months	Assemblage B	Assemblage A	Assemblage B (B1)	Assemblage B
5B	Costa Atlántica	Male	8 months	Assemblage A	Assemblage A	Assemblage A	
10B	Costa Atlántica	Female	4 years	Assemblage B			
14B	Costa Atlántica	Female	10 years	Assemblage B			
15B	Costa Atlántica	Female	12 months	Assemblage B			
19B	Costa Atlántica	Female	15 months	Assemblage B	Assemblage B (B1)	Assemblage B (B1)	Assemblage B
20B	Costa Atlántica	Female	7 months	Assemblage B	Assemblage B (B1)	Assemblage B (B1)	
21B	Costa Atlántica	Female	7 months	Assemblage B		Assemblage B (B1)	
22B	Costa Atlántica	Male	16 months	Assemblage B			
25B	Costa Atlántica	Female	13 years	Assemblage B			
30B	Costa Atlántica	Female	4 years	Assemblage B			
51B	Costa Atlántica	Male	3 months	Assemblage B			
53B	Costa Atlántica	Female	2 months	Assemblage B	Assemblage B (B1)	Assemblage B (B1)	
59B	Costa Atlántica	Male	8 months	Assemblage B			
1C	Bogotá D.C.	Female	6 years	Assemblage B			
3C	Bogotá D.C.	Female	10 years	Assemblage B	Assemblage B (B1)		
9C	Bogotá D.C.	Female	9 years	Assemblage B			
12C	Bogotá D.C.	Female	9 years	Assemblage B			
24C	Bogotá D.C.	Female	4 years	Assemblage B			
25C	Bogotá D.C.	Female	2 years	Assemblage B			
12D	Llanos Orientales	Female	9 months	Assemblage B	Assemblage B (B2)	Assemblage B (B1)	
20D	Llanos Orientales	Female	8 years	Assemblage B	Assemblage B (B1)	Assemblage B (B1)	
33D	Llanos Orientales	Male	11 months	Assemblage B	Assemblage B (B1)	Assemblage B (B2)	Assemblage B
34D	Llanos Orientales	Male	3 years	Assemblage B			
35D	Llanos Orientales	Female	8 years	Assemblage B			
37D	Llanos Orientales	Female	13 months	Assemblage B			
38D	Llanos Orientales	Female	10 months	Assemblage B	Assemblage B (B1)	Assemblage B (B2)	Assemblage B
39D	Llanos Orientales	Female	7 months	Assemblage B	Assemblage B (B1)	Assemblage B (B2)	Assemblage B
42D	Llanos Orientales	Male	3 months	Assemblage B		Assemblage B (B1)	Assemblage B
44D	Llanos Orientales	Male	2 months	Assemblage A	Assemblage A (B1)	Assemblage A	
46D	Llanos Orientales	Female	3 months	Assemblage B	Assemblage B (B1)	Assemblage B (B2)	Assemblage B
48D	Llanos Orientales	Male	5 months	Assemblage B			

Enferm Infecc Microbiol Clin. 2014;32(7):424–427

ELSEVIER DOYMA

Enfermedades Infecciosas y Microbiología Clínica

www.elsevier.es/eimc

Original

Caracterización genética por reacción en cadena de la polimerasa de *Giardia intestinalis* en muestras de humanos y perros del Caribe colombiano

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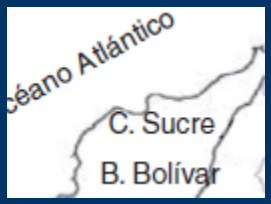

Cartagena
Sincelejo

	Perros	Niños
Evaluados	104	98
+Copro	13	98
% (+Copro)	12,5	100
+Genot A	0	5
% (+Genot A)	0	5,1
+Genot B	4	56
% (+Genot B)	30,8	57,1

Biomédica 2014;34:271-81
doi: http://dx.doi.org/10.7705/biomedica.v34i2.1713

ARTÍCULO ORIGINAL

Genotipos de *Giardia duodenalis* en muestras de niños de las guarderías del Instituto Colombiano de Bienestar Familiar y de perros en Ibagué, Colombia

Victoria Rodríguez[1,2], Oneida Espinosa[1], Julio César Carranza[1], Sofía Duque[3], Adriana Arévalo[3], Jairo Alfonso Clavijo[4], Daniel Alfonso Urrea[1], Gustavo Adolfo Vallejo[1]

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[2] Facultad de Medicina Veterinaria y Zootecnia, Universidad del Tolima, Ibagué, Colombia
[3] Grupo de Parasitología, Subdirección de Investigación Científica y Tecnológica, Dirección de Investigación en Salud Pública, Instituto Nacional de Salud, Bogotá, D.C., Colombia
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Cuadro 3. Genotipos de *Giardia duodenalis* determinados mediante PCR-RFLP de los genes de la beta giardina y la glutamato deshidrogenasa

Código aislado	Huésped	Sexo	Edad (años)	Genotipo *bg*	Genotipo *gdh*
H004	Humano	M	1	B	BIII-BIV
H018	Humano	F	2	B	BIII
H022	Humano	F	2	AII	AII
H033	Humano	F	2	B	BIII
H050	Humano	M	2	B	BIII-BIV
H055	Humano	M	2	B	B
H068	Humano	M	2	B	BIII
H101	Humano	F	3	AII	AII
H104	Humano	F	3	AII	AII
H159	Humano	M	3	B	BIII
H170	Humano	M	3	B	BIV
H186	Humano	M	3	AII	AII
H195	Humano	M	3	AII	AII
H227	Humano	F	4	B	BIII-BIV
H246	Humano	F	4	B	BIV
H275	Humano	M	4	B	BIII-BIV
H292	Humano	M	4	AII	AII
H308	Humano	M	4	AII	AII
H323	Humano	M	4	AII	AII
H326	Humano	M	4	AII	AII
H342	Humano	M	ND	AII	AII
H355	Humano	F	Adulto	B	BIII-BIV
Perro 16	Perro	ND	Cachorro	D	D
Perro 17	Perro	ND	Cachorro	D	D
Perro 20	Perro	ND	Cachorro	ND	C
Perro 113	Perro	ND	Adulto	C	C

ND: no determinado

ENTEROPARASITOSIS

Prevalencia Mundial

Ascaris lumbricoides	*1,300 millardos*
Trichuris trichiura	*1,049 millardos*
Anquilostomideos	*1 millardo*
Complejo E. histolytica/dispar	*500 millones*
Enterobius vermicularis	*400 millones*
Schistosoma mansoni	*200 millones*
Giardia lamblia/intestinalis/duodenalis	*200 millones*
Strongyloides stercoralis	*100 millones*
Taenia sp	*70 millones*

Sergio Cimmerman 2005.

Giardiasis

Prevalencia Mundial

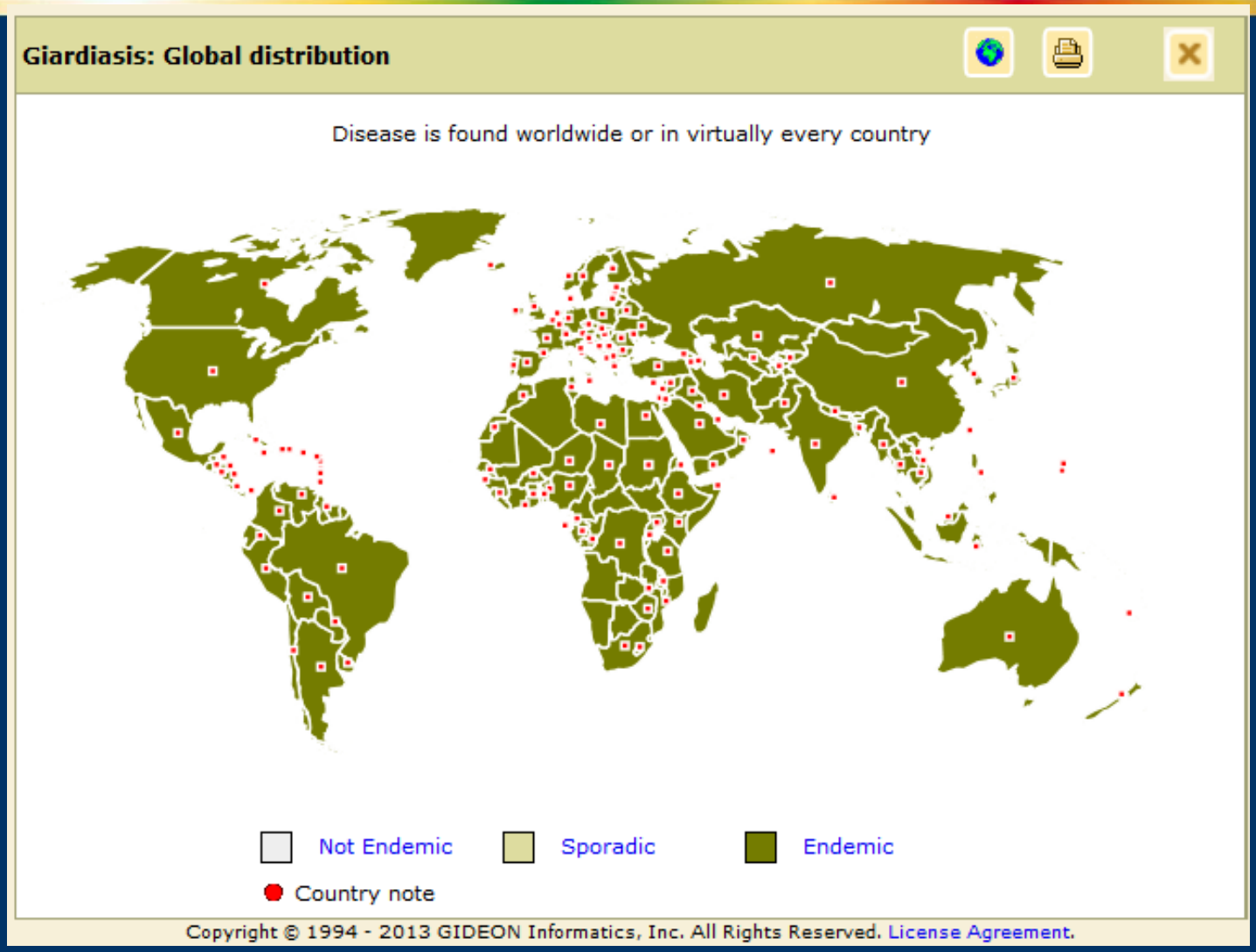
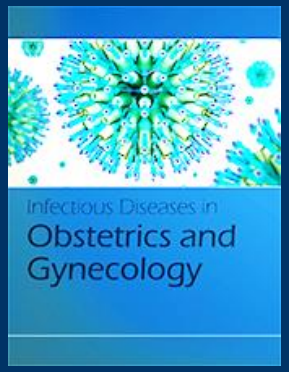


Table 2. Estimated Prevalence of Neglected Infections of Poverty in the US.

Neglected Disease Category	Disease	Estimated Number of Cases	Major Regions or Populations at Risk	References
Soil-transmitted helminth infections	Ascariasis	<4 million	Appalachia, American South	[29]
	Toxocariasis	1.3–2.8 million	Inner cities, American South, Appalachia	[14,79,84]
	Strongyloidiasis	68,000–100,000	Appalachia, African refugees	[14,19,25,35]
	Trichinellosis	16 (insufficient data)	Arctic Alaska	[149]
Platyhelminth Infections	Cysticercosis	41,400–169,000	US–Mexico borderlands	[19,96,113]
	Schistosomiasis	8,000	African refugees	[89,90]
	Echinococcosis	Insufficient data	Tribal Lands and Arctic Alaska	—
Protozoan Infections	Giardiasis	2.0–2.5 million	All regions	[123,147]
	Trichomoniasis	880,000 (black women)	American South, inner cities	[14,66]
	Cryptosporidiosis	300,000	All regions	[123]
	Chagas disease	3,000 to >1 million	US–Mexico borderlands, American South	[11,102,103,105,109]
	Cyclosporiasis	16,624	All regions	[123]
	Congenital toxoplasmosis	≤4,000 annually	American South, inner cities, US–Mexico borderlands, Arctic Alaska	[65]
	Leishmaniasis	Insufficient data	US–Mexico borderlands	—
	Amebiasis	Insufficient data	US–Mexico borderlands	—
Bacterial Infections	Congenital syphilis	1,528 between 2000 and 2002	American South, inner cities	[62]
	Brucellosis	1,554	US–Mexico borderlands	[122,123]
	Bovine tuberculosis	129 cases between 1994 and 2000	US–Mexico borderlands	[124]
	Leprosy	166	US–Mexico borderlands	[148]
	Trench fever	Insufficient data	Inner cities	—
	Leptospirosis	Insufficient data	Inner cities	—

Hotez PJ (2008) Neglected Infections of Poverty in the United States of America. PLoS Negl Trop Dis 2(6): e256. doi:10.1371/journal.pntd.0000256

¿Nuevos efectos de las protozoosis?



Rodríguez-Morales AJ, Barbella RA, Case C, Arria M, Ravelo M, Perez H, Urdaneta O, Gervasio G, Rubio N, Maldonado A, Aguilera Y, Viloria A, Blanco JJ, Colina M, Hernández E, Araujo E, Cabaniel G, Benitez J, Rifakis P. **Intestinal parasitic infections among pregnant women in Venezuela**. *Infect Dis Obstet Gynecol*. 2006;2006:23125.

Table 1: Parasite positivity in stool specimens examined from pregnant women studied.

	Number	(%)
Protozoans		
Nonpathogenic		
Entamoeba coli	44	5.7
Endolimax nana	30	3.9
Pathogenic		
Giardia lamblia	108	14.1
Entamoeba histolytica/dispar	92	12.0
Cryptosporidium spp	2	0.3
Helminths		
Ascaris lumbricoides	437	57.0
Trichuris trichiura	276	36.0
Necator americanus	62	8.1
Enterobius vermicularis	48	6.3
Strongyloides stercoralis	25	3.3

Table 2: Relative risk for anemia at pregnancy according to the presence of intestinal parasitosis.

Variable (risk for anemia)	Anemia	Normal Hb	RR	χ^2_{Yates}	P
Intestinal parasitosis at pregnancy					
Present	594	173	2.56	194.24	< .0001
Absent	82	189	—	—	—
Helminth infection at pregnancy					
Present	322	61	1.56	94.63	< .0001
Absent	354	301	—	—	—
Protozoan infection at pregnancy					
Present	179	23	1.49	59.65	< .0001
Absent	497	339	—	—	—

Enteropatógenos Crónicos en Viajeros

The NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

CURRENT CONCEPTS

Enteropathogens and Chronic Illness in Returning Travelers

Allen G.P. Ross, M.D., Ph.D., G. Richard Olds, M.D., Allan W. Cripps, Ph.D., Jeremy J. Farrar, M.D., Ph.D., and Donald P. McManus, Ph.D., D.Sc.

Table 1. Enteropathogens Causing Chronic Illness in the Returning Traveler.*

Enteropathogen		Areas of High Risk	Mode of Transmission	Amount of Inoculum Required for Infection	Incubation Period	Common Symptoms	Diagnostic Method	Adult Treatment	Pediatric Treatment
Giardia		South Asia, Middle East, South America	Drinking water, human contact	Low (<100 CFU/ml)	7–10 Days	Abdominal pain, nausea, persistent watery diarrhea	Stool microscopical examination and stool giardia antigen assay	Metronidazole, 250 mg, 3 times/day for 7–10 days or 500 mg twice a day for 5–7 days	Metronidazole, 5 mg/kg of body weight, 3 times/day for 7–10 days (maximum of 250 mg/dose)
Entamoeba histolytica		South Asia, Southeast Asia, Middle East, South America	Human contact, drinking water	Low (<100 CFU/ml)	11–21 Days	Abdominal pain, fever, persistent watery diarrhea	Stool *E. histolytica* antigen assay	Metronidazole, 500–750 mg, 3 times/day for 7–10 days; plus paromomycin, 500 mg, 3 times/day for 7 days	Metronidazole, 50 mg/kg, in 3 divided doses/day for 7–10 days (maximum of 750 mg/dose)
Strongyloides		Caribbean, Latin America, South America, Africa, Asia, Oceania	Contaminated soil	Low (third-stage larvae)	11–21 Days	Larva currens, abdominal pain, persistent diarrhea	Stool microscopical examination	Ivermectin, 200 μg/kg of body weight/day for 2 days	Ivermectin, 200 μg/kg/day for 2 days (for weight >15 kg)
Schistosoma		Africa, Asia, South America	Fresh-water contact where schistosoma is endemic	Low (few cercariae)	14–84 Days	Katayama syndrome, abdominal pain, persistent diarrhea, hematuria	Kato–Katz stool examination, urine microscopical examination	Praziquantel, 40 mg/kg twice a day for 1 day for *S. hematobium* and *S. mansoni*, and 60 mg/kg 3 times/day for 1 day for *S. japonicum*	Praziquantel (for patients ≥4 yr of age), 40 mg/kg twice a day for 1 day for *S. hematobium* and *S. mansoni*, and 60 mg/kg 3 times a day for 1 day for *S. japonicum*

N Engl J Med 2013;368:1817-25.

EPIDEMIC GIARDIASIS AT A SKI RESORT*

GORDON T. MOORE, M.D., W. MICHAEL CROSS, M.D., DAVID MCGUIRE, PH.D.,
CECIL S. MOLLOHAN, M.D., M.P.H., NEVA N. GLEASON, M.S.,
GEORGE R. HEALY, PH.D., AND LADENE H. NEWTON, M.S.

Abstract An outbreak of protracted, intermittent diarrhea, often associated with symptoms suggesting malabsorption, occurred in persons who vacationed in Aspen, Colorado, during the 1965-66 ski season. A survey of 1094 skiers showed that the characteristic illness had developed in at least 11.3 per cent. The association of *Giardia lamblia* with the illness, the absence of other pathogens, and the response to treatment suggest that *G. lamblia* was the agent responsible for the illness. Environmental studies carried out after the epidemic demonstrated contamination of well water by sewage leaking from defective pipes passing near wells. *G. lamblia* cysts were found in the sewage from the defective pipes and in stools from 6.9 per cent of the permanent residents of the city living in the area served by the defective sewage lines. The findings are consistent with a hypothesis of water-borne spread of giardiasis.

N Engl J Med. 1969 Aug 21;281(8):402-7.
Epidemic giardiasis at a ski resort.
Moore GT, Cross WM, McGuire D, Mollohan CS, Gleason NN, Healy GR, Newton LH.

Travelers' Diarrhea Etiology

- Bacterial agents 60%–80%
  - *E. coli, Campylobacter, Salmonella, Shigella*
- Viral agents 10%–20%
  - Rotavirus, noroviruses
- Parasitic agents 5%–10%
  - *Giardia, Cryptosporidium, Cyclospora*

Travel Medicine and Infectious Disease (2014) 12, 208–218

Available online at www.sciencedirect.com

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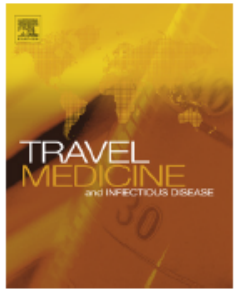
journal homepage: www.elsevierhealth.com/journals/tmid



REVIEW

The 2014 FIFA World Cup: Communicable disease risks and advice for visitors to Brazil — A review from the Latin American Society for Travel Medicine (SLAMVI)

Viviana Gallego [a], Griselda Berberian [a], Susana Lloveras [a,b], Sergio Verbanaz [a], Tania S.S. Chaves [c], Tomas Orduna [b], Alfonso J. Rodriguez-Morales [b,d,*]

[a] *Panel of Sports and Travel, Latin American Society for Travel Medicine (SLAMVI), Buenos Aires, Argentina*
[b] *Panel of Scientific Publications and Teaching, Latin American Society for Travel Medicine (SLAMVI), Buenos Aires, Argentina*
[c] *Latin American Society for Travel Medicine (SLAMVI), Pará, Brazil*
[d] *Faculty of Health Sciences, Universidad Tecnologica de Pereira, Pereira, Colombia*

Gallego V, Berberian G, Lloveras S, Verbanaz S, Chaves TS, Orduna T, Rodriguez-Morales AJ. The 2014 FIFA World Cup: communicable disease risks and advice for visitors to Brazil--a review from the Latin American Society for Travel Medicine (SLAMVI). Travel Med Infect Dis. 2014 May-Jun;12(3):208-18. doi: 10.1016/j.tmaid.2014.04.004. Epub 2014 Apr 25.

Giardiasis

Epidemiología

Table 1

Prevalence of intestinal helminths and protozoa in individuals from North Central Venezuela (May 2007 to December 2008)

Parasite	n[a]	% (95% CI)
Helminths	209 845	4.49 (4.47–4.51)
Ascaris lumbricoides	174 257	3.73 (3.71–3.74)
Trichuris trichiura	53 031	1.13 (1.12–1.14)
Enterobius vermicularis	18 177	0.39 (0.38–0.40)
Strongyloides stercoralis	15 743	0.34 (0.33–0.35)
Hookworms	7 817	0.17 (0.16–0.18)
Hymenolepis nana	2 979	0.06 (0.05–0.07)
Protozoa	2 675 384	57.22 (57.18–57.27)
Blastocystis hominis	2 176 703	46.56 (46.51–46.60)
Giardia duodenalis	358 538	7.67 (7.64–7.69)
Iodamoeba bütschlii	150 032	3.21 (3.19–3.23)
Dientamoeba fragilis	76 086	1.63 (1.62–1.64)
Entamoeba histolytica/dispar	42 396	0.91 (0.90–0.92)
Trichomonas hominis	8 416	0.18 (0.17–0.19)
Chilomastix mesnili	4 675	0.10 (0.09–0.11)

[a] n = number of positives in the population.

Quintero K, Durán C, Duri D, Medina F, Garcia J, Hidalgo G, Nakal S, Echeverria-Ortega M, Albano C, Incani RN, Cortez J, Jiménez S, Díaz M, Maldonado C, Matute F, Rodriguez-Morales AJ. Household social determinants of ascariasis and trichuriasis in North Central Venezuela. Int Health. 2012 Jun;4(2):103-10. doi: 10.1016/j.inhe.2012.03.002.

Giardiasis

Epidemiología

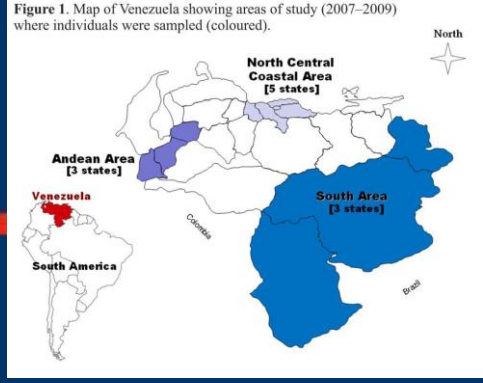


Figure 1. Map of Venezuela showing areas of study (2007–2009) where individuals were sampled (coloured).

Epidemiology of intestinal parasitosis in eleven states of Venezuela: partial results of an ongoing national survey (N=7.120.744)

Parasite	Prevalence (%)	95%CI	Parasite	Prevalence (%)	95%CI
B. hominis	45.632	45.596-45.669	*T. trichiura*	1.569	1.560-1.578
E. nana	12.573	12.548-12.597	*Hookworms*	0.664	0.658-0.670
E. coli	11.745	11.722-11.769	*S. stercoralis*	0.381	0.376-0.385
G. intestinalis	7.426	7.406-7.445	*E. vermicularis*	0.264	0.260-0.268
A. lumbricoides	3.974	3.959-3.988	*H. nana*	0.257	0.253-0.261
I. bütschlii	3.211	3.198-3.224	*C. mesnili*	0.246	0.242-0.249
E. histolytica	1.632	1.623-1.642	*T. hominis*	0.118	0.116-0.121

Salazar-Labori E. et al.
Clinical Microbiology and Infection 2011 May; 17(Supplement S4):S213.

Giardiasis

Malnutrición

***Giardia lamblia* infection is associated with lower body mass index values**

Carmen Durán[1], Glida Hidalgo[2], William Aguilera[3], Alfonso J. Rodriguez-Morales[4,7], Carlos Albano[5], Jackeline Cortez[6], Sara Jiménez[6], Marietta Díaz[6], Renzo Nino Incani[6]

[1]*Coordination of Coproparasitology,* [2]*Direction of Biological Sciences,* [3]*Coordination of Statistics,* [4]*Direction of Population Studies,* [5]*General Direction of Research, Foundation Center for Studies on Growth and Development of the Venezuelan Population (FUNDACREDESA), Ministerio del Poder Popular para las Comunas y Protección Social, Caracas, Venezuela*
[6]*Department of Parasitology, Faculty of Health Sciences, Universidad de Carabobo, Valencia, Venezuela*
[7]*Department of Social and Preventive Medicine, Razetti Medical School, Faculty of Medicine, Universidad Central de Venezuela, Caracas, Venezuela*

Keywords: Giardia lamblia, body mass index, nutritional status

J Infect Dev Ctries 2010; 4(6):417-418.

Figure 1. Comparative values of Body Mass Index (kg/m^2) in individuals from north central Venezuela considering their status regarding *G. lamblia* infection.

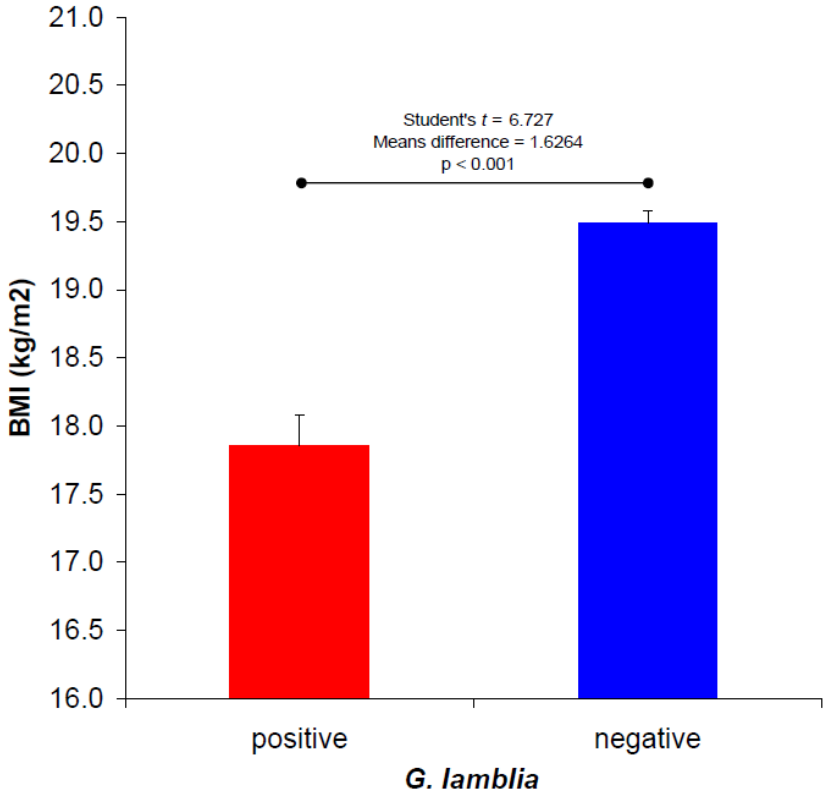
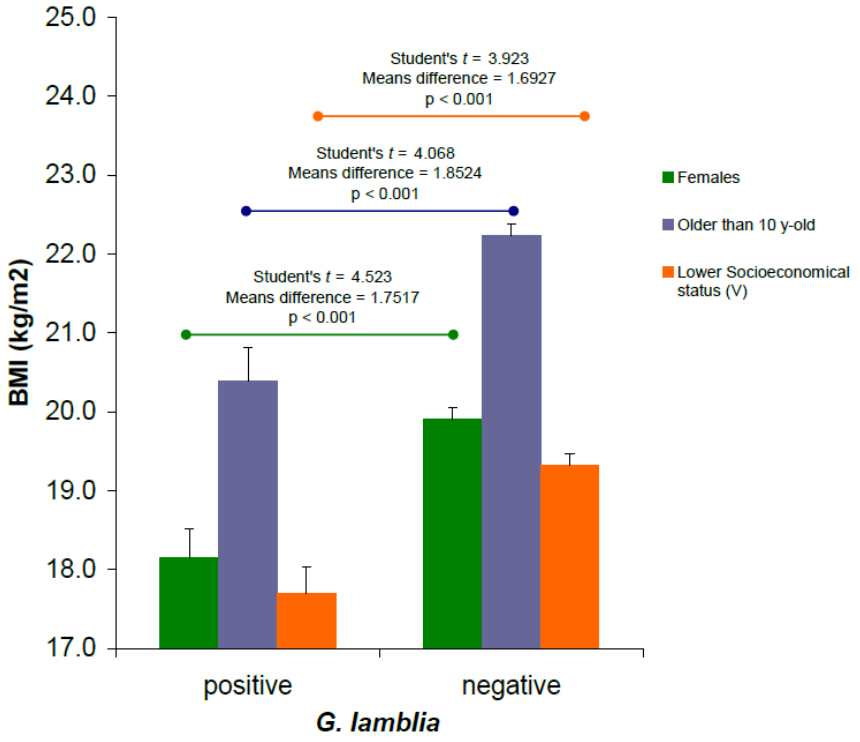


Figure 2. Comparative values of Body Mass Index (kg/m^2) in individuals from north central Venezuela according to the status of *G. lamblia* infection among females, persons older than 10 years old, and individuals from lower socioeconomic status (V).



Durán C, Hidalgo G, Aguilera W, Rodriguez-Morales AJ, Albano C, Cortez J, Jiménez S, Díaz M, Incani RN. *Giardia lamblia* infection is associated with lower body mass index values. J Infect Dev Ctries. 2010 Jun 30;4(6):417-8.

Giardiasis

Epidemiología

International Journal of Health Geographics 2003, **2** http://www.ij-healthgeographics.com/content/2/1/5

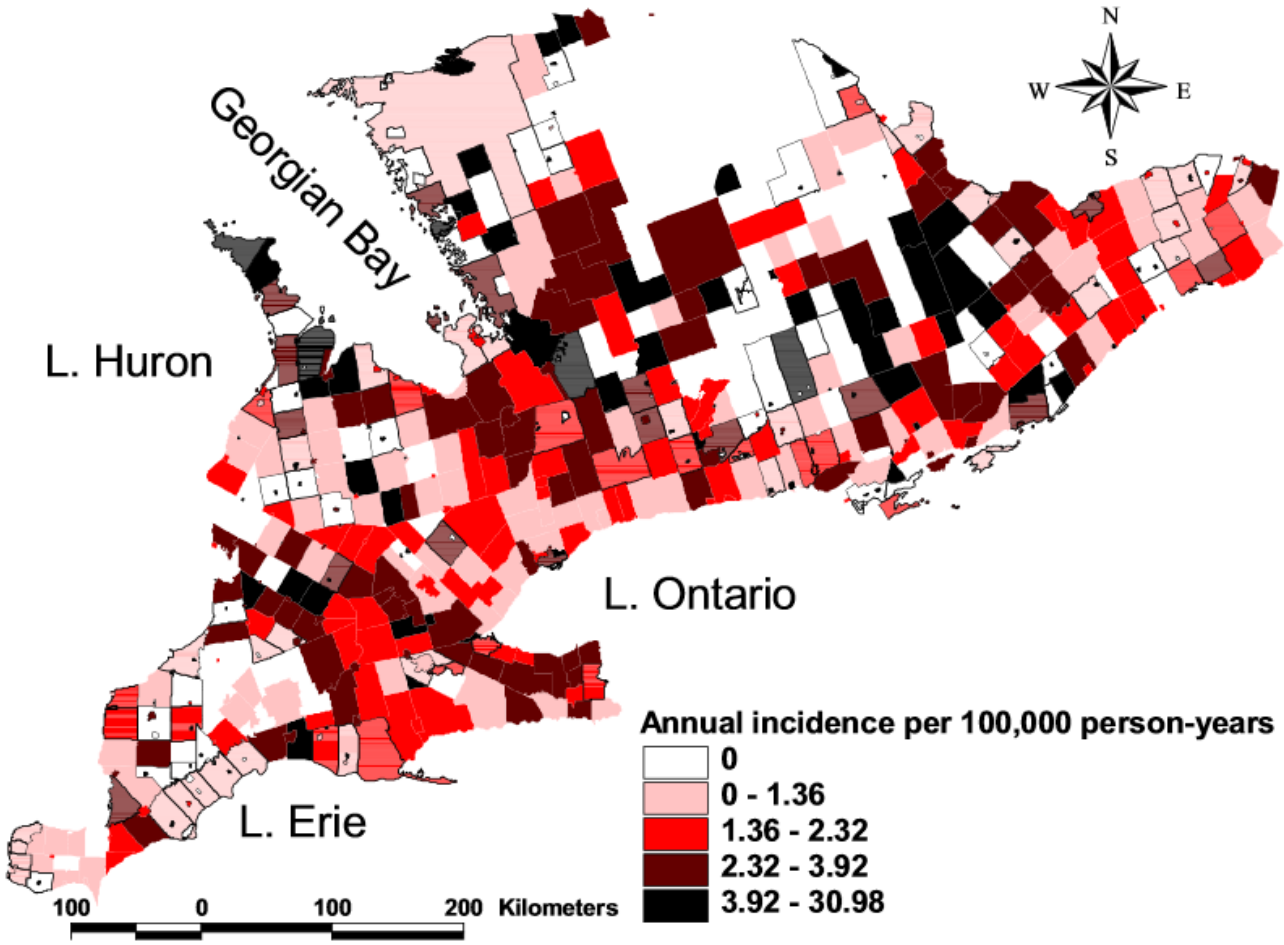


Figure 4
Distribution of standardized unsmoothed giardiasis rates at Census Sub-division Spatial Scale in southern Ontario. The dark areas represent areas with highest rates while the light colored areas had the lowest rates.

Giardiasis

Epidemiología

Giardiasis Surveillance --- United States, 2006—2008. Surveillance Summaries June 11, 2010 / 59(SS06);15-25

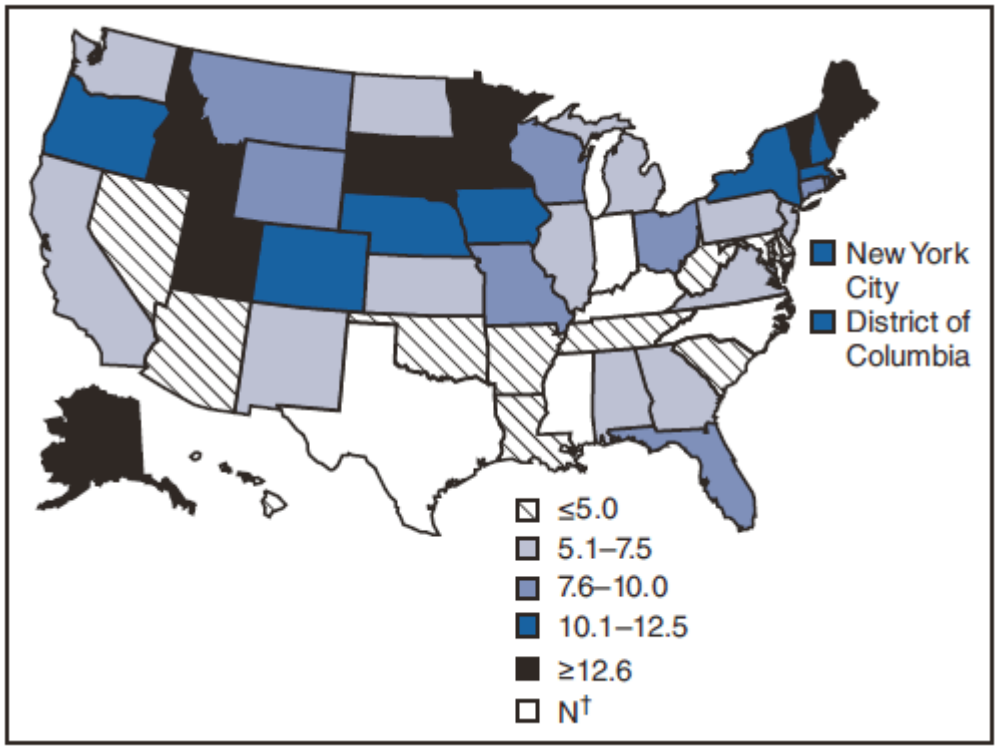
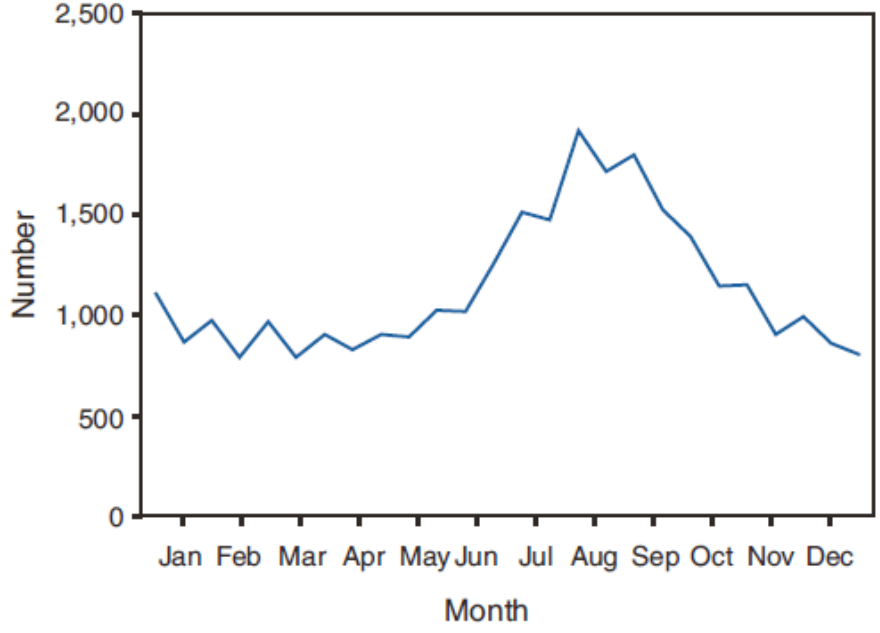


FIGURE 1. Incidence* of giardiasis, by state/area --- National Notifiable Disease Surveillance System, United States, 2008

FIGURE 3. Number* of giardiasis case reports, by date of illness onset --- National Notifiable Disease Surveillance System, United States, 2006--2008



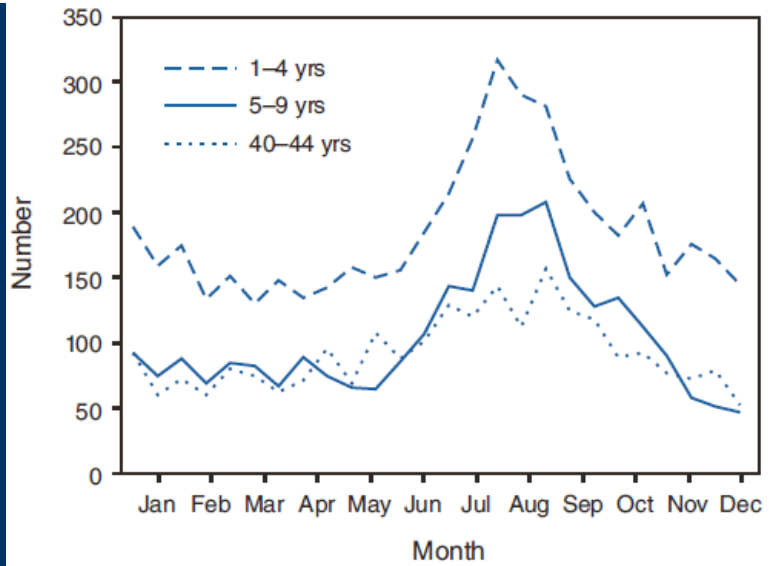


FIGURE 4. Number* of giardiasis case reports, by selected age group† and date of illness onset --- National Notifiable Disease Surveillance System, United States, 2006--2008

Journal of Infection and Public Health (2015) 8, 80—89

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http://www.elsevier.com/locate/jiph

Potential impact of macroclimatic variability on the epidemiology of giardiasis in three provinces of Cuba, 2010—2012

Angel A. Escobedo[a,b,c], Pedro Almirall[d], Raisa Rumbaut[e], Alfonso J. Rodríguez-Morales[b,f,g,*]

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Escobedo AA, Almirall P, Rumbaut R, Rodríguez-Morales AJ. Potential impact of macroclimatic variability on the epidemiology of giardiasis in three provinces of Cuba, 2010-2012. J Infect Public Health. 2015 Jan-Feb;8(1):80-9.

Figure 1 Study locations in Cuba during the period of January 2010—December 2012: the provinces of Havana (3), Ciego de Ávila (9) and Guantánamo (15).

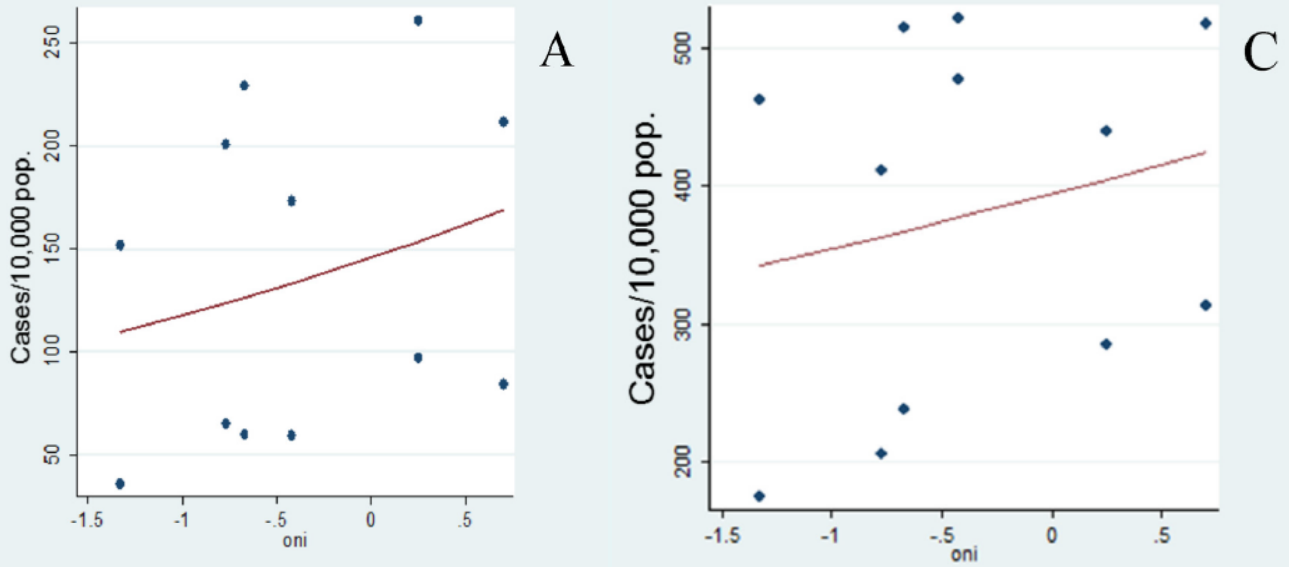

Figure 4 Regression models for Havana (A), Ciego de Ávila (B) and Guantánamo (C).

Giardiasis

Epidemiología en Pacientes con VIH+

Table 2. Prevalence of intestinal parasitic infections (%)

Agent	Acute diarrhoea ($n=104$)	Chronic diarrhoea ($n=113$)	Control group ($n=87$)	Total population ($n=304$)
Blastocystis hominis	25	26	31	27
C. parvum	16	19	7	15
E. histolytica/E. dispar	16	15	5	13
I. belli	12	17	1	11
S. stercoralis	10	17	3	11
G. intestinalis (lamblia)	2	4	2	3

Arenas-Pinto A. et al.
International Journal of STD & AIDS 2003; 14: 487– 492

Table 3. Parasitic agents associated with acute and chronic diarrhoea

	Univariate analysis			Multivariate analysis		
Associate factor	OR	*P*	95% CI	OR	*P*	95% CI
Acute diarrhoea						
I. belli	11.22	0.022	1.43–88.1	10.2	0.035	1.17–88.79
E. histolytica/E. dispar	4.05	0.015	1.31–12.55	11.48	0.023	1.4–94.06
C. parvum	2.64	0.052*	0.99–7.02	2.6	0.07	0.93–7.26
Chronic diarrhoea						
I. belli	17.38	0.0003	2.1–143.24	16.43	0.01	1.95–138.42
S. stercoralis	5.66	0.003	1.57–20.46	4.29	0.043	1.04–17.66
E. histolytica/E. dispar	3.67	0.017	1.17–11.57	8.6	0.001	2.55–29.07
C. parvum	3.08	0.017	1.17–8.14	3.39	0.029	1.13–10.19

*Marginally associated: *P* value slightly over the significance level

Diarrhea in HIV

- Very common, more frequent with advanced disease, up to 50%
- Considerable geographic variation in the frequency and etiology of diarrhea
  - In earlier series high proportion of patients had identified infection
  - More recent series fail to document pathogens in a significant proportion
  - Simultaneous infections are common in advanced disease

Etiology of diarrhea in HIV

- Bacteria
  - *Salmonella* spp.
  - *Shigella* spp.
  - *Escherichia coli*
  - *Vibrio* spp.
  - Small bowel bacterial overgrowth
  - TB
  - MAC
- Protozoa & Helminths
  - *Cryptosporidium parvum*
  - *Isospora belli*
  - *Leishmania donovani*
  - *Microsporidium*
  - *Giardia*
  - *Cyclospora*
  - *Entamoeba histolytica*
  - *Strongyloides stercoralis*

Etiology of diarrhea in HIV

- Fungi
  - Histoplasmosis
- Virus
  - CMV
  - HSV
  - Adenovirus
- HIV
  - AIDS enteropathy
- Malignancies
  - KS
  - Lymphoma
- Drugs
  - HAART (more common with protease inhibitors), antibiotics

Giardiasis

Epidemiología en Colombia

Tabla 1. Prevalencia de parásitos intestinales en población general del corregimiento de Loma Arena Santa Catalina. 2004

Especie parasitaria	N°	%
Entamoeba coli	210	60
Entamoeba histolityca/dispar	191	54
Endolimax nana	125	36
Blastocystis hominis	103	29
Iodamoeba butschlii	72	21
Giardia duodenalis	61	17
Trichomona hominis	3	0,9
Ciclospora sp	2	0,6
Ascaris lumbricoides	196	56
Trichuris trichiura	185	53
Uncinaria	21	6
Hymenolepis nana	14	4
Strongyloides stercolaris	11	3
Taenia sp	3	0,9
Enterobius vermicularis	2	0,6

Agudelo-Lopez S. et al. Prevalencia de Parasitosis Intestinales y Factores Asociados en un Corregimiento de la Costa Atlántica Colombiana. Rev. salud pública. 10 (4):633-642, 2008

Giardiasis

Epidemiología en Colombia

Tabla 3. Prevalencia de agentes etiológicos por edad

		<6 meses	6-12 meses	12-36 meses	>36 meses	Total
Rotavirus	No.	36	18	6	2	62
	Prev	0,73	0,54	0,22	0,1	0,48
Shigella	No.	0	0	0	1	1
	Prev	-	-	-	0	0
E. Coli	No.	1	4	5	8	18
	Prev	0,02	0,12	0,18	0,4	0,14
Campylobacter	No.	2	0	1	0	3
	Prev	0.04	0	0.03	0	0,02
Giardia	No.	1	3	5	7	16
	Prev	0,02	0,09	0,18	0,35	0,12
E. Histolytica	No.	0	3	4	2	9
	Prev	0	0,09	0,14	0,1	0,07
Desconocido	No.	9	5	6	0	20
	Prev	0,18	0,15	0,22	0	0,15

Manrique-Abril FG, Tigne y Diane B, Bello SE, Ospina JM. Agentes causantes de Diarrea en Niños Menores de 5 Años en Tunja, Colombia. Rev Salud Publica (Bogota). 2006 Jan-Apr;8(1):88-97.

Tabla 1. Prevalencia de parásitos intestinales en 328 niños de 1 a 7 años de 35 hogares de ICBF de la ciudad de Armenia. 2003- 2004

Parásito	Frecuencias	%
Levaduras	93	28,9
Entamoeba coli	51	15,5
Endolimax nana	43	13,1
*Giardia lamblia**	42	12,8
Comp. E. histolytica/dispar	30	9,1
*Blastocystis hominis**	20	6,1
Iodamoeba butschlii	20	6,1
*Ascaris lumbricoides**	8	2,4
*Trichuris trichura**	7	2,1
*Hymenolepis nana**	2	0,6

*= Parásito patógeno

Giraldo-Gómez, Jorge M, Lora, Fabiana, Henao, Luz H, Mejía, Shirley, & Gómez-Marín, Jorge E. (2005). Prevalencia de Giardiasis y Parásitos Intestinales en Preescolares de Hogares atendidos en un programa estatal en Armenia, Colombia. Revista de Salud Pública, 7(3), 327-338.

Giardiasis

Epidemiología en Colombia

Tabla 1

Protozoos intestinales patógenos identificados según regiones.
Encuesta Nacional de Morbilidad, 1980

Protozoos patógenos	*Región del Atlántico	*Región Central	*Región del Pacífico	*Región Oriental	Santa fé de Bogotá
Entamoeba histolytica	16,4%	10,4%	14,3%	10%	10%
Giardia lamblia	15,7%	13,3%	13,3%	15%	10,8%
Balantidium coli	0,2%	-	0,2%	-	-
Tricomonas intestinalis	0,2-1%	0,2-1%	-	-	0,2-1%

* Departamentos en: *Región del Atlántico* (Atlántico, Bolívar, Cesar, Córdoba, Guajira, Magdalena, Sucre). *Región Central* (Antioquia, Caldas, Huila, Tolima, Armenia, Quindío, Risaralda). *Región Pacífica* (Chocó, Cauca, Valle del Cauca, Nariño). *Región Oriental* (Boyacá, Norte de Santander, Santander, Casanare, Cundinamarca y Meta).

\- No se mostró la prevalencia de estos parásitos en estas regiones, pues donde se obtuvo no fue significativa.

Fuente: Elaboración propia de los autores con datos de Parasitismo Intestinal. Bogotá: Instituto Nacional de Salud, 2000.

Salud Uninorte. Barranquilla (Col.) 2008; 24, (2): 294-302.

Giardiasis

Prevalencia en Colombia

Giardiasis in Colombia

Prevalence surveys:

- 4% of infants and children with diarrhea in Sincelejo and Cartagena (1998 to 2000) [1]
- 13% of preschool children in Armenia (2005 publication) [2]
- 13.6% of pre-school and school age children in 1995, 12.8% in 2001 and 15.2% in 2005 (Quipile, Cundinamarca) [3]
- 27.6% of children participating in a nutrition program (Antioquia, 2006) [4]
- 6.3% of children ages 5 to 12 with gastrointestinal symptomatology (Bogota, 2006) [5]
- 17% of individuals in Loma Arena village, Santa Catalina (2004) [6]
- 37.7% of calves on dairy farms in the Bogota Savanna (2012 publication) [7]
- 6.5% of cats in Bogota (2006 publication) [8]
- 18.9% of female and 15.1% of male horses (2013 publication) [9]

Seroprevalence surveys:

- 83.3% of persons in the Andean region (1996 to 1998)
- 53.3% of cattle in the Andean region (2001 publication) [10]

List of all references

Giardiasis

Epidemiología en el Eje Cafetero, Colombia

Tabla 1. Prevalencia de protozoos intestinales en un seguimiento que consistió en una muestra mensual de 79 niños de 2 a 5 años de edad, de un hogar infantil, Circasia, Quindío, 2008

Parásito	Muestra 1		Muestra 2		Muestra 3	
	n	%	n	%	n	%
Giardia lamblia	13/79	16,5	18/79	22,8	12/79	15,2
Blastocystis sp.	39/79	49,4	45/79	57	51/79	64.6
Complejo *Entamoeba histolytica*/dispar	4/79	5,1	4/79	5,1	1/79	1,3

n: frecuencia relativa sobre el total de niños con muestra

Infectio. 2010; 14(1): 31-38

Giardiasis

Epidemiología en el Eje Cafetero, Colombia

In the first sample, prevalence of *Giardia* cysts was 60.4% (131 children) and *Giardia* trophozoite forms 4.6%.

BMC Public Health 2002, **2** http://www.biomedcentral.com/1471-2458/2/5

Table 2: Association between epidemiological and laboratory findings with the presence *Giardia* cysts in stool samples from children living in temporary housing after the 1999 earthquake disaster in Armenia.

Risk factor	With factor	Without factor	OR	95% Confidence Intervals	P
Communal toilet (versus individual toilet)	21/25	110/192	3.9	1.2–16	**0.01**
Municipal water service versus individual water tank	27/58	104/159	3.5	1.1–14	**0.02**
Mucus in fecal sample	20/26	111/191	2.39	0.9–6.7	**0.049**
Leukocytes in stool	16/22	115/195	1.85	0.70–5.35	0.15
Plastic stock of food versus carton stock of food	49/93	82/124	1.7	0.9–3.1	0.06
Yeast in stool	57/93	74/124	1.06	0.61–1.82	0.46
Diarrhea	23/42	108/175	0.75	0.4–1.4	0.84
Flu symptoms	79/136	52/81	0.7	0.4–1.4	0.45
Lipids in stool	120/201	11/16	0.67	0.18–2.2	0.65
Clean lodgment	62/118	69/99	0.48	0.27–0.84	**0.014**

BMC Public Health. 2002 Mar 14;2:5.

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Infection, Genetics and Evolution xxx (2015) xxx–xxx

Contents lists available at ScienceDirect

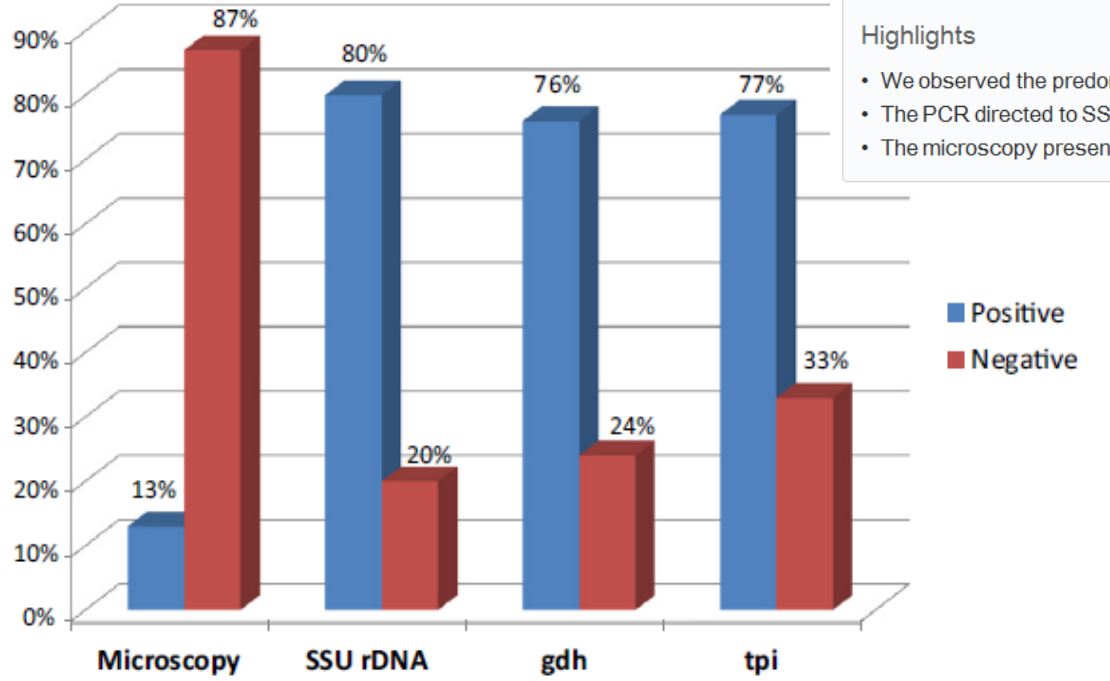
Infection, Genetics and Evolution

journal homepage: www.elsevier.com/locate/meegid

Molecular diagnosis and genotype analysis of *Giardia duodenalis* in asymptomatic children from a rural area in central Colombia

Juan David Ramírez [a,*], Rubén Darío Heredia [b], Carolina Hernández [a], Cielo M. León [a], Ligia Inés Moncada [b], Patricia Reyes [b], Análida Elizabeth Pinilla [c], Myriam Consuelo Lopez [b]

[a] Grupo de Investigaciones Microbiológicas – UR (GIMUR), Facultad de Ciencias Naturales y Matemáticas, Universidad del Rosario, Bogotá, Colombia
[b] Departamento de Salud Pública, Facultad de Medicina, Universidad Nacional de Colombia, Bogotá, Colombia
[c] Departamento de Medicina, Facultad de Medicina, Universidad Nacional de Colombia, Bogotá, Colombia



Highlights

- We observed the predominance of assemblage B in children from a rural area in central Colombia.
- The PCR directed to SSU rDNA is more sensitive than *tpi* and *gdh*.
- The microscopy presents flaws for the diagnosis of *Giardia*.

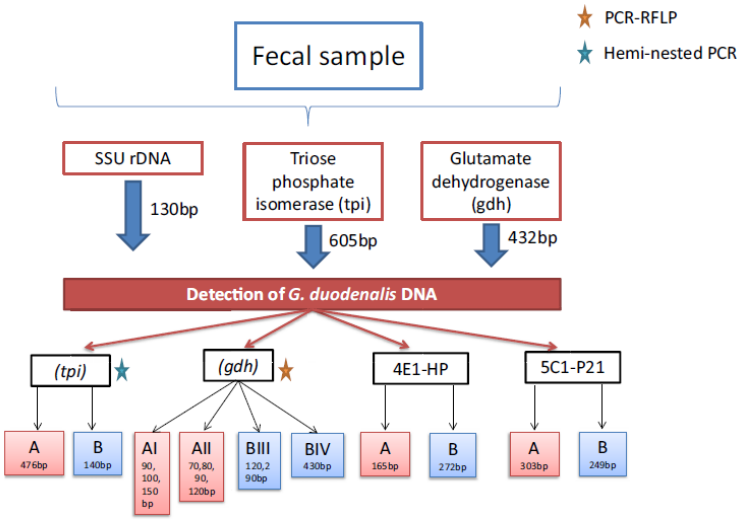


Fig. 2. Prevalence of detection via microscopy and PCR targeting SSU rDNA, *tpi* and *gdh* loci.

Giardiasis

Aspectos Epidemiológicos de Importancia

- **Epidemias en guarderías infantiles y asilos.**
- **Agua Fuente de diseminación (en EEUU es la causa más frecuente de diarrea por agua contaminada).**
- **Alimentos no bien cocidos.**
- **Reservorios animales contribuyen en la contaminación del agua.**
- **Diarrea del viajero.**
- **Incubación 7 a 21 días.**
- **Diagnóstico diferencial: *Escherichia coli***

Dra. Nathalie Chacòn, 2007

Giardiasis

Epidemiología - Transmisión

- **TRANSMISION FECAL–ORAL:** **problema de salud pública, guarderías, HSH, alimentos contaminados (food-borne transmission).**

- **TRANSMISION POR EL AGUA:** **diarrea del viajero, agua no tratada, sin filtrar o contaminada con heces humanas, filtración es necesaria, cloración no es suficiente. Participación de reservorios en la contaminación de las aguas es controversial.**

- **TRANSMISION ZOONÓTICA: los aislados de *Giardia* no son hospedador-específicos. Perros y gatos demuestran diferente tasas de infección, algunos recomienda tratarlos por ser un riesgo para la infección zoonótica. La demostración zoonótica fuera del laboratorio no ha sido demostrada.**

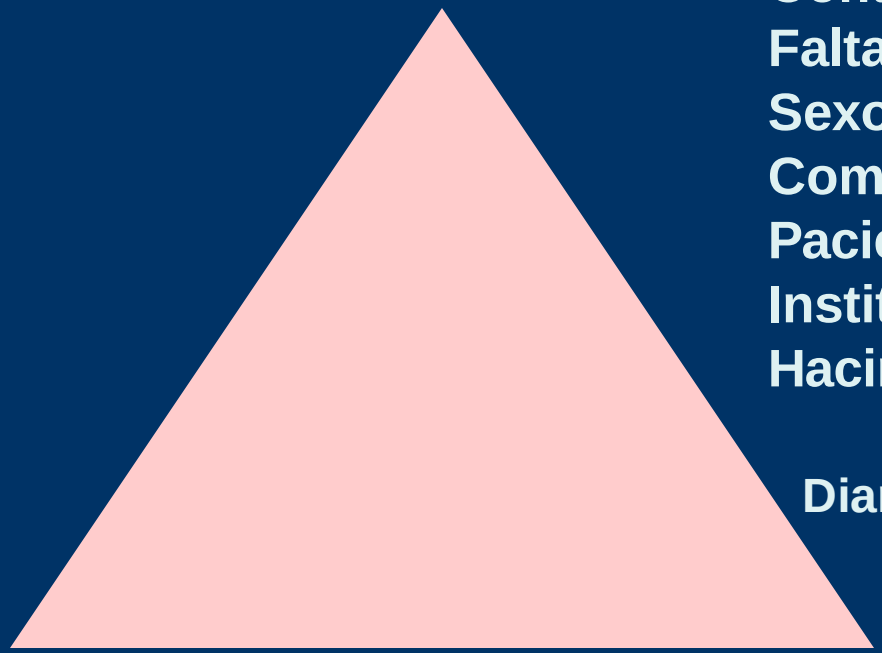
Rodriguez-Morales AJ. Waterborne Diseases. In: Ogunseitan O (General Editor). Green Health – An A-toZ Guide [Encyclopedia]. ISBN 9781412996884. Robbins P (Series Editor). The SAGE Reference Series on Green Society Toward a Sustainable Future. SAGE Publications, California, USA, 2011: 489-494. Available at: http://sage-ereference.com/abstract/greenhealth/n151.xml.

Franco-Paredes C, Jones D, Rodriguez-Morales AJ, Santos-Preciado JI. Commentary: Improving the health of neglected populations in Latin America. BMC Public Health 2007 Jan 23;7:11

Texto: Dra. Nathalie Chacòn, 2007

Giardiasis

Espectro de la transmisión



Contacto persona a persona
Falta de hábitos higiénicos
Sexo anal-oral (HSH)
Comunidades pobres
Pacientes inmunosuprimidos
Instituciones de reclusión
Hacinamiento en niños

Diarrea del *viajero* en Adultos

Falta de cloacas
Falta de agua potable

Transmisión zoonótica

Dra. Nathalie Chacòn, 2007

Giardiasis (CIE-10, A07.1)

Riesgo de la transmisión

Table 3. Multivariable analysis of risk factors for giardiasis

Exposure	Odds ratio (95% CI)[a]	p value
Swallowed water while swimming	6.2 (2.3 to 16.6)	<0.0001
Recreational fresh water contact	5.5 (1.9 to 15.9)	0.001
Each additional glass of tap water consumed per day	1.3 (1.1 to 1.5)	<0.0001
Ate lettuce	2.2 (1.2 to 4.3)	0.01
Ate ice cream	0.4 (0.2 to 0.7)	0.002

[a]CI, confidence intervals.

Risk Factors for Sporadic Giardiasis: A Case-Control Study in Southwestern England

James M. Stuart,* Hilary J. Orr,* Fiona G. Warburton,† Suganthiny Jeyakanth,† Carolyn Pugh,‡ Ian Morris,‡ Joyshri Sarangi,§ and Gordon Nichols¶

Emerging Infectious Diseases • Vol. 9, No. 2, February 2003

Giardiasis

Riesgo

Am. J. Trop. Med. Hyg., 78(4), 2008, pp. 611–615

Multiple Modes of Transmission of Giardiasis in Primary Schoolchildren of a Rural Community, Thailand

Supawat Ratanapo, Mathirut Mungthin, Suthipong Soontrapa, Chakri Faithed, Suradej Siripattanapipong, Ram Rangsin, Tawee Naaglor, Phunlerd Piyaraj, Paanjit Taamasri, and Saovanee Leelayoova*

TABLE 4

Multivariate analysis of risk factors of *Giardia duodenalis* infection*

Characteristics	Adjusted odds ratio	95% CI	*P* value
Age group (years)			
> 9	1		
5–9	1.3	1.0–1.6	0.045
Close contact to dog(s)			
< 1/week	1		
≥ 1/week	2.3	1.1–4.9	0.025
No. of children of age < 12 years in home			
< 3	1		
≥ 3	2.5	1.2–5.2	0.017
Washing hands before meal			
Occasionally	1		
Every time	0.3	0.09–0.8	0.022
Parent education			
At least primary school	1		
No education	2.4	1.0–5.6	0.041
Drinking bottled water			
No	1		
Yes	2.5	1.2–5.5	0.016

* Adjusted for sex, parent income, and parent occupation(s).

Giardiasis

Riesgo de la transmisión

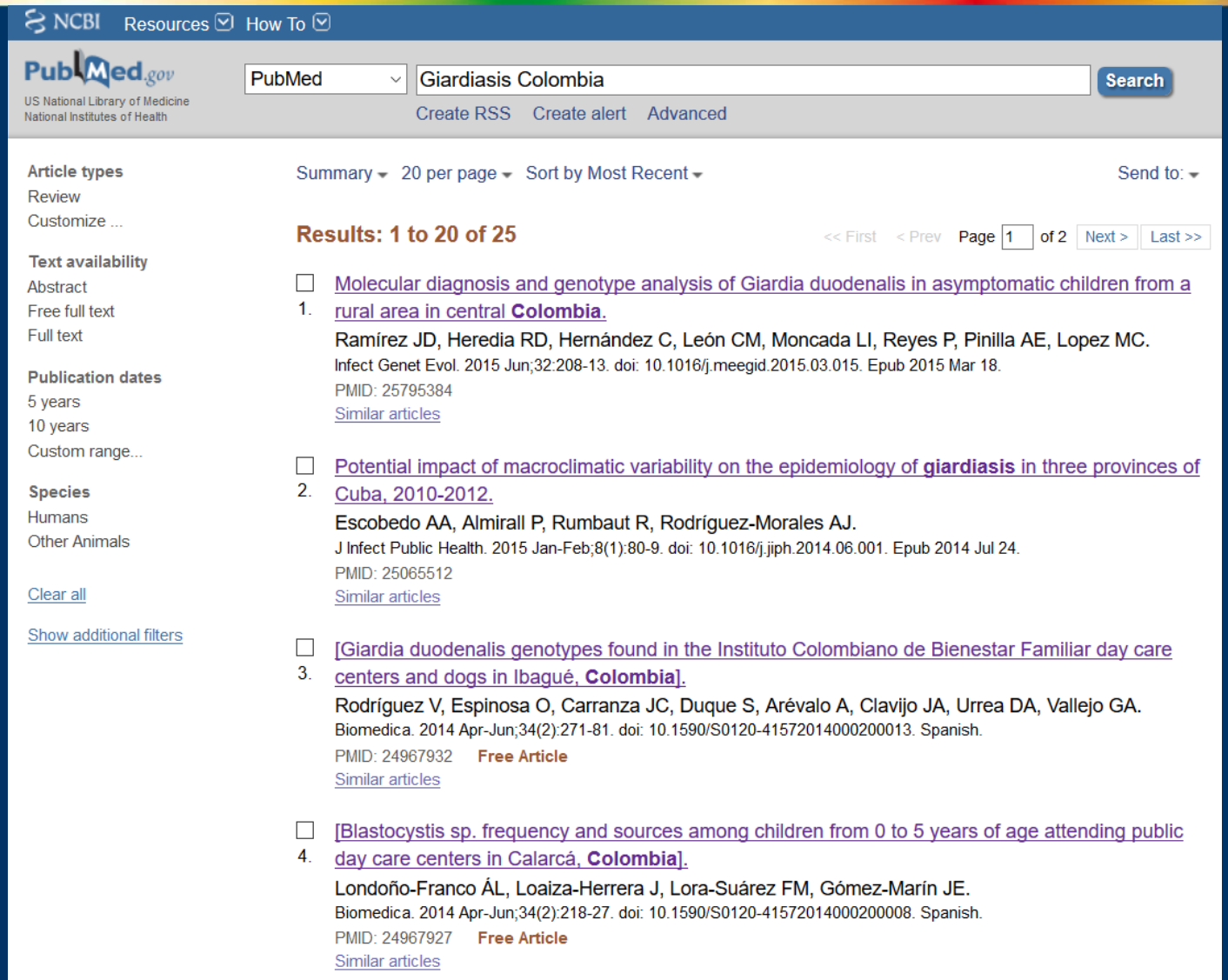
Table 3 Final multivariate model (conditional logistic regression) for autochthonous *Giardia* infections, Germany, 2007-2008, N = 299

	Cases	Controls			
	n (%)*	n (%)*	p-value	aOR***	95%CI
Male sex	71 (66.4)	78 (40.6)	0.001	2.5	1.4 - 4.4
Host factors					
Impaired Immunity	12 (11.2)	4 (2.1)	0.012	15.3	1.8 - 127.0
Eating					
Green salad, daily	24 (22.4)	17 (8.9)	0.017	2.9	1.2 - 7.2
Outdoor activities					
Gardening	24 (22.4)	80 (41.7)	< 0.001	0.26	0.12 - 0.55

*The percentage refers to the proportion among participants who either answered yes or no (i.e. missing and don't-know answers excluded).
***adjusted odds ratio

Giardiasis

Estudios publicados de Colombia en Medline



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1. Molecular diagnosis and genotype analysis of Giardia duodenalis in asymptomatic children from a rural area in central **Colombia**.
Ramírez JD, Heredia RD, Hernández C, León CM, Moncada LI, Reyes P, Pinilla AE, Lopez MC.
Infect Genet Evol. 2015 Jun;32:208-13. doi: 10.1016/j.meegid.2015.03.015. Epub 2015 Mar 18.
PMID: 25795384
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2. Potential impact of macroclimatic variability on the epidemiology of **giardiasis** in three provinces of Cuba, 2010-2012.
Escobedo AA, Almirall P, Rumbaut R, Rodríguez-Morales AJ.
J Infect Public Health. 2015 Jan-Feb;8(1):80-9. doi: 10.1016/j.jiph.2014.06.001. Epub 2014 Jul 24.
PMID: 25065512
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3. [Giardia duodenalis genotypes found in the Instituto Colombiano de Bienestar Familiar day care centers and dogs in Ibagué, **Colombia**].
Rodríguez V, Espinosa O, Carranza JC, Duque S, Arévalo A, Clavijo JA, Urrea DA, Vallejo GA.
Biomedica. 2014 Apr-Jun;34(2):271-81. doi: 10.1590/S0120-41572014000200013. Spanish.
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4. [Blastocystis sp. frequency and sources among children from 0 to 5 years of age attending public day care centers in Calarcá, **Colombia**].
Londoño-Franco ÁL, Loaiza-Herrera J, Lora-Suárez FM, Gómez-Marín JE.
Biomedica. 2014 Apr-Jun;34(2):218-27. doi: 10.1590/S0120-41572014000200008. Spanish.
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Giardiasis

Estimación de incidencia nacional

ICAAC ICC2015
San Diego, California | September 17-21

Giardiasis morbidity estimates for Colombia, 2009-2013

Alfonso J. Rodriguez-Morales, Alvaro Mondragon-Cardona, Harold Escudero-Quintero, Felipe Vera-Polania, Santiago Granados-Álvarez, Angel A. Escobedo

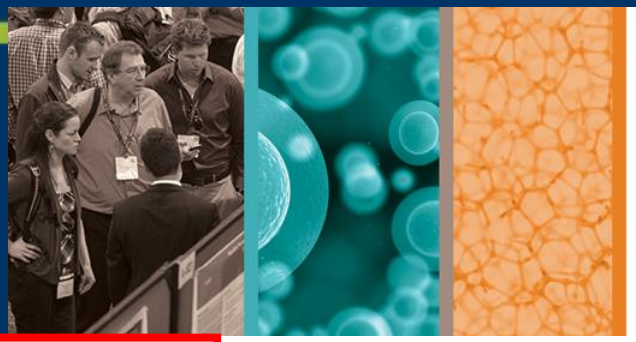
Public Health and Infection Research Group, Faculty of Health Sciences, Universidad Tecnológica de Pereira, Pereira, Risaralda, Colombia. Academic Paediatric Hospital Pedro Borrás, La Habana, Cuba.

Introduction: Giardiasis is among the most frequent intestinal infection in world. However, in Colombia there are not national studies about the morbidity of giardiasis. The purpose of this study was to estimate incidence rates of giardiasis between 2009 and 2013.

Methods: Observational, retrospective study in which the incidence of giardiasis (ICD-10 code A07.1) in Colombia for the years 2009-2013 was estimated based on data extracted from the so-called personal health records system (*Registro Individual de Prestación de Servicios*, RIPS). Using official population estimates of National Department of Statistics (DANE), crude and adjusted incidence rates were estimated (cases/100,000pop).

Giardiasis

Estimación de incidencia nacional



ICAAC ICC2015
San Diego, California | September 17-21

Results: During the period, 15,851 cases were reported (median 3,233/year), for a cumulated crude national rate of 33.97 cases/100,000pop; 50.3% corresponded to male; 58.4% were 0-9.999 year-old and 14.8% 10-19.999 year-old. From the total, 17.7% were from Bogota (10.07 cases/100,000pop 2009), followed by Antioquia with 10.9% (9.42 in 2009), Atlántico with 8.6% (15.67 in 2009) and Risaralda with 6.5% (33.38 in 2009). Cases were reported in all the departments of the country (even insular areas). At Guanía department (with extended rural areas), age-rate in 0-9.999 year-old group was 132.75 cases/100,000pop in 2009.

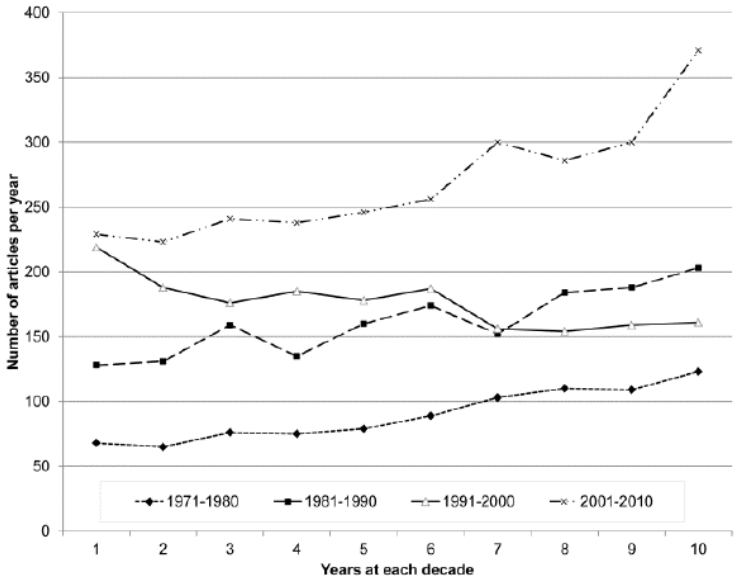
Conclusions: Giardiasis is neglected in many countries in the region. Surveillance is not regularly done. Despite the limitations of this study, this is the first attempt to provide estimates of national giardiasis incidence in the country, with consistent findings regard affected age groups and geographical distribution. More studies, including GIS-based mapping are expected and deserved for this protozoan disease.

Original Article

A bibliometric study of international scientific productivity in giardiasis covering the period 1971–2010

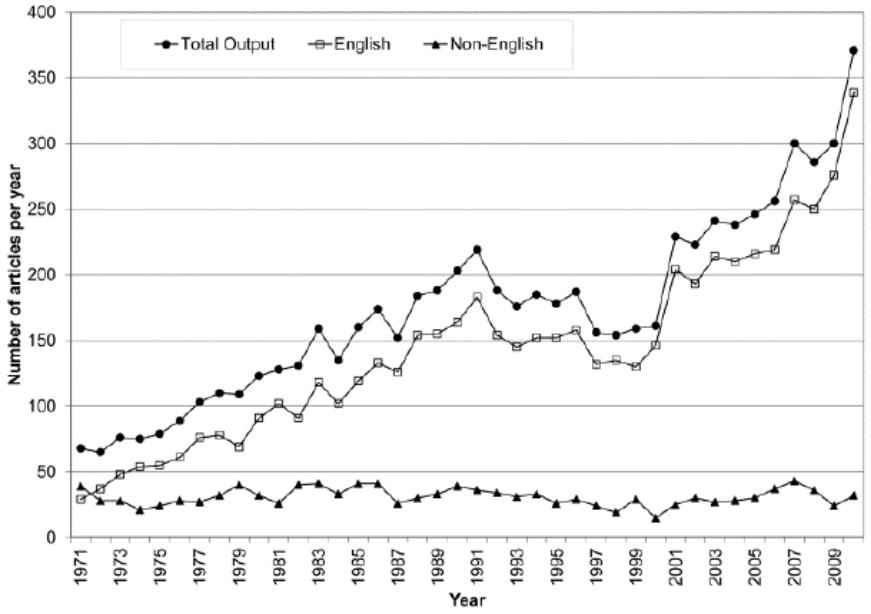
Angel A Escobedo[1,2,3], Ricardo Arencibia[4], Rosa L Vega[5], Alfonso J Rodríguez-Morales[2,6,7], Pedro Almirall[3,8], Maydel Alfonso[8,9]

Figure 1. Scientific output per year during four decades on *Giardia* and giardiasis in PubMed, 1971–2010*



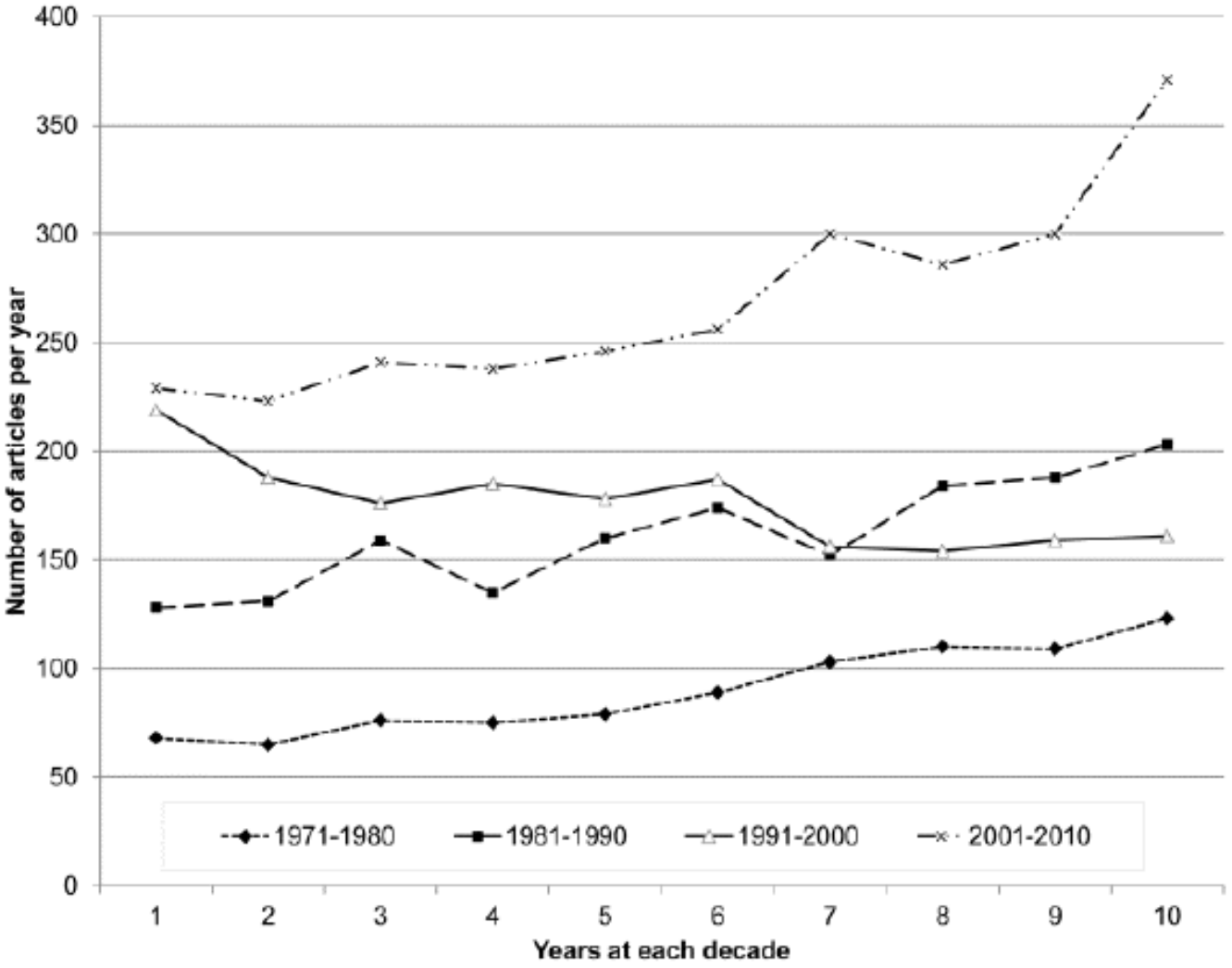
*1971–1980: 897 articles; 1981–1990: 1,614 articles; 1991–2000: 1,763 articles; 2001–2010: 2,690 articles

Figure 2. Total number of giardiasis research publications in PubMed in any language (black circles), in English (squares), and in non-English languages (black triangles) between 1971 and 2010



Escobedo AA, Arencibia R, Vega RL, Rodríguez-Morales AJ, Almirall P, Alfonso M. A bibliometric study of international scientific productivity in giardiasis covering the period 1971-2010. J Infect Dev Ctries. 2015 Jan 15;9(1):76-86.

Figure 1. Scientific output per year during four decades on *Giardia* and giardiasis in PubMed, 1971–2010*



*1971–1980: 897 articles; 1981–1990: 1,614 articles; 1991–2000: 1,763 articles; 2001–2010: 2,690 articles

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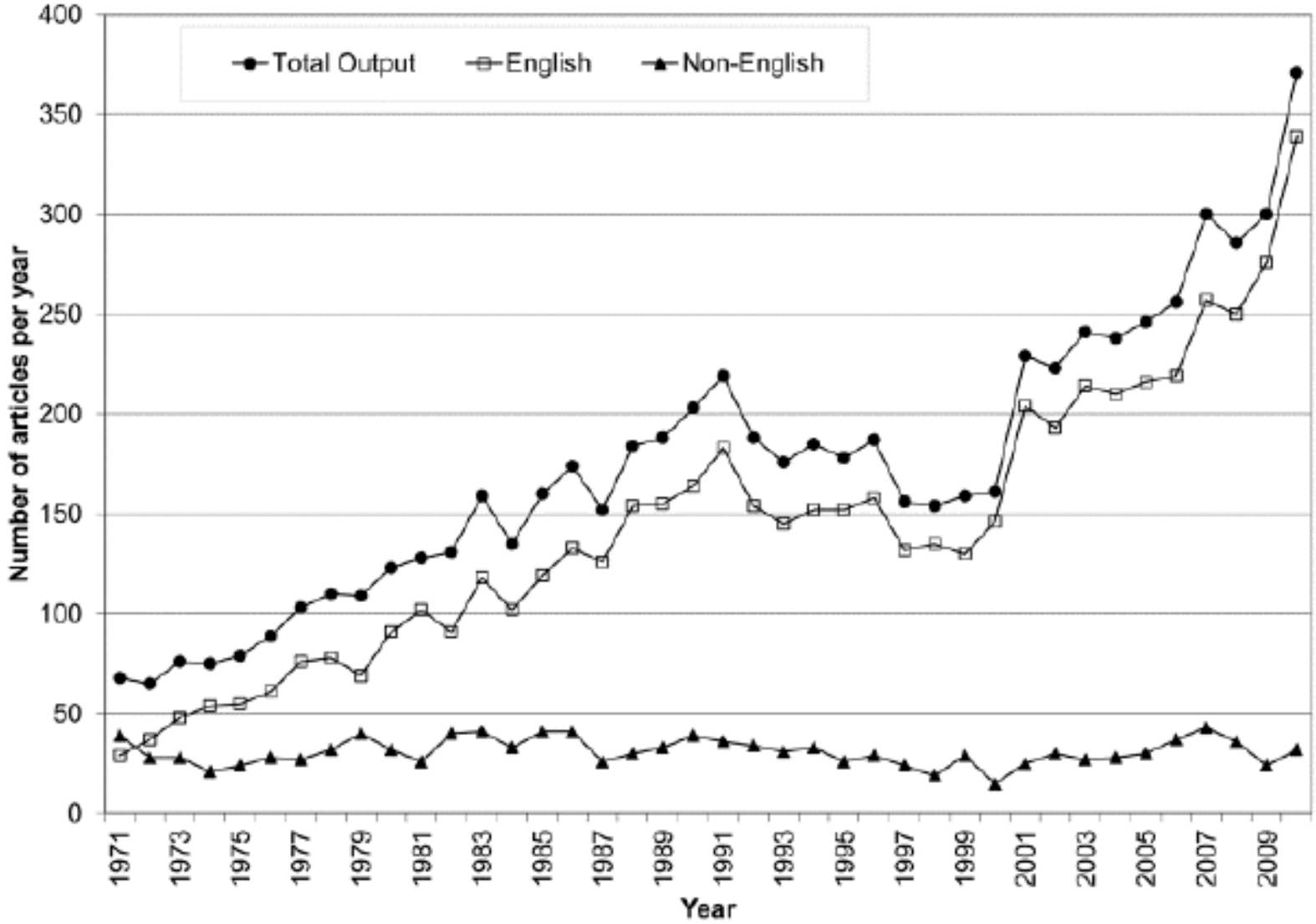


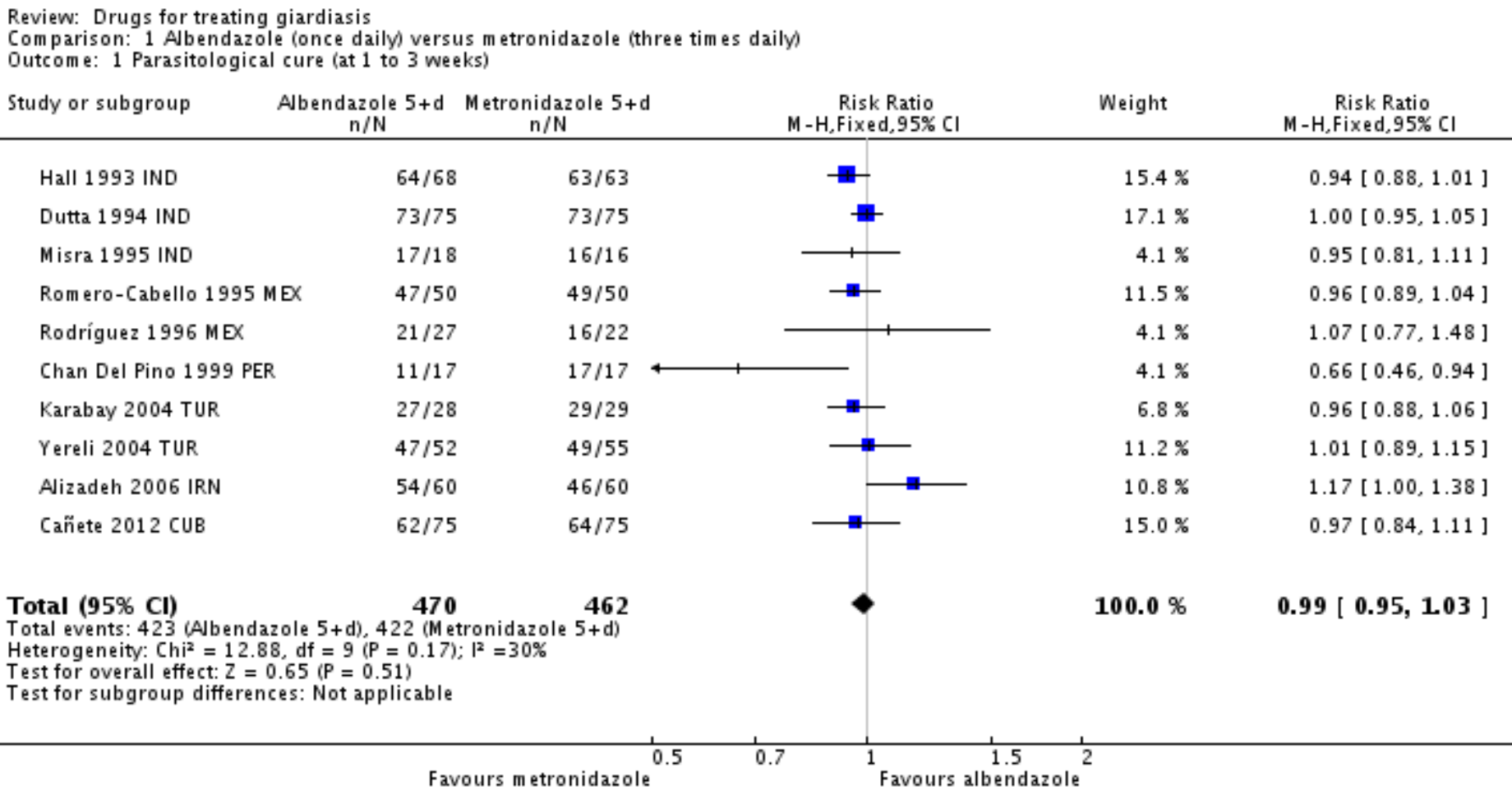
Table 1. Characterization of the scientific output on giardiasis covered by PubMed 1971–2010 (type of articles and clinical research)

Type of articles	n	%	Clinical research	n	%
Original article	5,466	78.49	Total of clinical research	1,102	15.82
Review	601	8.63	Comparative study	719	10.32
Case report	474	6.81	Clinical trial	127	1.82
Letter	251	3.60	Evaluation study	103	1.48
Comment	66	0.95	Randomized controlled trial	79	1.13
Editorial	30	0.43	Controlled clinical trial	37	0.53
Historical article	18	0.26	Multicenter study	27	0.39
News	16	0.23	Validation study	9	0.13
Others*	42	0.60	Clinical trial, phase II	1	0.01

*Biography, congress, meta-analysis, book chapter, clinical conference, guideline, portrait, address, corrected and republished article, duplicate publication, newspaper article, patient education handout, retracted publication, bibliography, interview, introductory journal article, retraction of publication

Giardiasis

Meta-Análisis



Granados CE, Reveiz L, Uribe LG, Criollo CP. Drugs for treating giardiasis. Cochrane Database Syst Rev. 2012 Dec 12;12:CD007787

Table 2. Evolution per decade of the different languages involved in the scientific output on giardiasis covered by PubMed, 1971–2010

Language	1971–1980	%	1981–1990	%	1991–2000	%	2001–2010	%
English	598	66.67	1,264	78.31	1,487	84.34	2,378	88.40
Russian	58	6.47	26	1.61	15	0.85	33	1.23
Polish	46	5.13	58	3.59	33	1.87	23	0.86
German	43	4.79	39	2.42	33	1.87	23	0.86
Spanish	29	3.23	81	5.02	73	4.14	62	2.30
French	26	2.90	51	3.16	34	1.93	34	1.26
Romanian	15	1.67	11	0.68	1	0.06	3	0.11
Italian	12	1.34	24	1.49	15	0.85	18	0.67
Slovak	12	1.34	10	0.62	3	0.17	1	0.04
Portuguese	10	1.11	3	0.19	24	1.36	16	0.59
Danish	8	0.89	1	0.06	3	0.17	0	0
Czech	7	0.78	4	0.25	6	0.34	2	0.07
Swedish	6	0.67	4	0.25	2	0.11	1	0.04
Dutch	5	0.56	3	0.19	6	0.34	6	0.22
Turkish	5	0.56	5	0.31	3	0.17	52	1.93
Japanese	4	0.45	6	0.37	12	0.68	13	0.48

Table 3. The top 30 journals with a large coverage on giardiasis research during the period 1971–2010

Journal	Country	n	%	Output per decade			
				1971–1980	1981–1990	1991–2000	2001–2010
Parasitol Res	GER	137	1.97	0	5	29	103
Trans R Soc Trop Med Hyg	UK	133	1.91	22	55	30	26
Vet Parasitol	NED	130	1.87	0	6	18	106
J Egypt Soc Parasitol	EGY	121	1.74	0	38	30	53
Appl Environ Microbiol	USA	116	1.67	1	27	38	50
Am J Trop Med Hyg	USA	113	1.62	23	24	27	39
Mol Biochem Parasitol	NED	107	1.54	1	21	62	23
Exp Parasitol	USA	102	1.46	2	23	31	46
Int J Parasitol	UK	101	1.45	0	10	41	50
J Parasitol	USA	99	1.42	5	25	30	39
J Clin Microbiol	USA	95	1.36	2	32	38	23
Southeast Asian J Trop Med Public Health	THA	95	1.36	28	13	16	38
Infect Immun	USA	77	1.11	1	29	23	24
Med Parazitol (Mosk)	RUS	68	0.98	19	14	10	25
Lancet	UK	64	0.92	21	29	10	4
J Infect Dis	USA	63	0.90	11	30	13	9
Turkiye Parazitol Derg	TUR	58	0.83	0	0	0	58
Wiad Parazytol	POL	56	0.80	11	18	14	13
Parasitology	UK	55	0.79	0	10	20	25
Water Res	UK	54	0.78	0	0	0	54
J Biol Chem	USA	53	0.76	0	4	17	32
J Eukaryot Microbiol	USA	49	0.70	0	0	25	24
Ann Trop Med Parasitol	UK	46	0.66	7	16	12	11
J Water Health	UK	38	0.55	0	0	0	38
J Pediatr Gastroenterol Nutr	USA	37	0.53	0	20	11	6
Gut	UK	36	0.52	13	10	8	5

Table 4. The top ten of most productive journals on giardiasis by decade, 1971–2010

Journal	1971–1980	%	Journal	1981–1990	%
Southeast Asian J Trop Med Public Health (THA)	28	3.12	Trans R Soc Trop Med Hyg (UK)	55	3.41
Am J Trop Med Hyg (USA)	23	2.56	J Egypt Soc Parasitol (EGY)	38	2.35
Trans R Soc Trop Med Hyg (UK)	22	2.45	J Clin Microbiol (USA)	32	1.98
Lancet (UK)	21	2.34	J Infect Dis (USA)	30	1.86
Br Med J (UK)	21	2.34	Lancet (UK)	29	1.80
Med Parazitol (Mosk) (USSR)	19	2.12	Infect Immun (USA)	29	1.80
Med J Aust (AUS)	18	2.01	Appl Environ Microbiol (USA)	27	1.67
Gastroenterology (USA)	15	1.67	J Parasitol (USA)	25	1.55
N Engl J Med (UK)	14	1.56	Am J Trop Med Hyg (USA)	24	1.49
Ann Intern Med (USA)	13	1.45	Am J Public Health (USA)	23	1.43
Journal	**1991–2000**	**%**	**Journal**	**2001–2010**	**%**
Mol Biochem Parasitol (NED)	62	3.52	Vet Parasitol (NED)	106	3.94
Int J Parasitol (UK)	41	2.33	Parasitol Res (GER)	103	3.83
Appl Environ Microbiol (USA)	38	2.16	Turkiye Parazitol Derg (TUR)	58	2.16
J Clin Microbiol (USA)	38	2.16	Water Res (UK)	54	2.01
Exp Parasitol (USA)	31	1.76	J Egypt Soc Parasitol (EGY)	53	1.97
J Egypt Soc Parasitol (EGY)	30	1.70	Appl Environ Microbiol (USA)	50	1.86
Trans R Soc Trop Med Hyg (UK)	30	1.70	Int J Parasitol (UK)	50	1.86
J Parasitol (USA)	30	1.70	Exp Parasitol (USA)	46	1.71
Parasitol Res (GER)	29	1.64	Am J Trop Med Hyg (USA)	39	1.45
Am J Trop Med Hyg (USA)	27	1.53	J Parasitol (USA)	39	1.45

Table 5. Samples, gender, age groups, and animal models most frequently studied in articles on giardiasis covered by PubMed, 1971–2010

	n	%	1971–1980	1981–1990	1991–2000	2001–2010
Humans	4,619	66.33	794	1,189	1,115	1,521
Animals	4,064	58.36	162	708	1,213	1,981
Gender						
Male	2,215	31.81	368	567	532	748
Female	2,149	30.86	315	528	524	782
Age groups						
Child	1,510	21.68	288	395	350	477
Child, preschool	1,370	19.67	238	402	325	405
Adult	1,370	19.67	275	354	322	419
Infant	1,076	15.45	188	329	258	301
Adolescent	1,075	15.44	203	273	254	345
Middle aged	809	11.62	161	174	201	273
Aged	423	6.07	65	88	120	150
Infant, newborn	276	3.96	28	73	72	103
Older adult, 80 and over	99	1.42	0	9	33	57
Young adult	80	1.15	0	0	0	80
Adult, Pregnant	59	0.85	7	18	18	16
Student	22	0.32	1	4	7	10
Youth	19	0.27	0	5	14	0

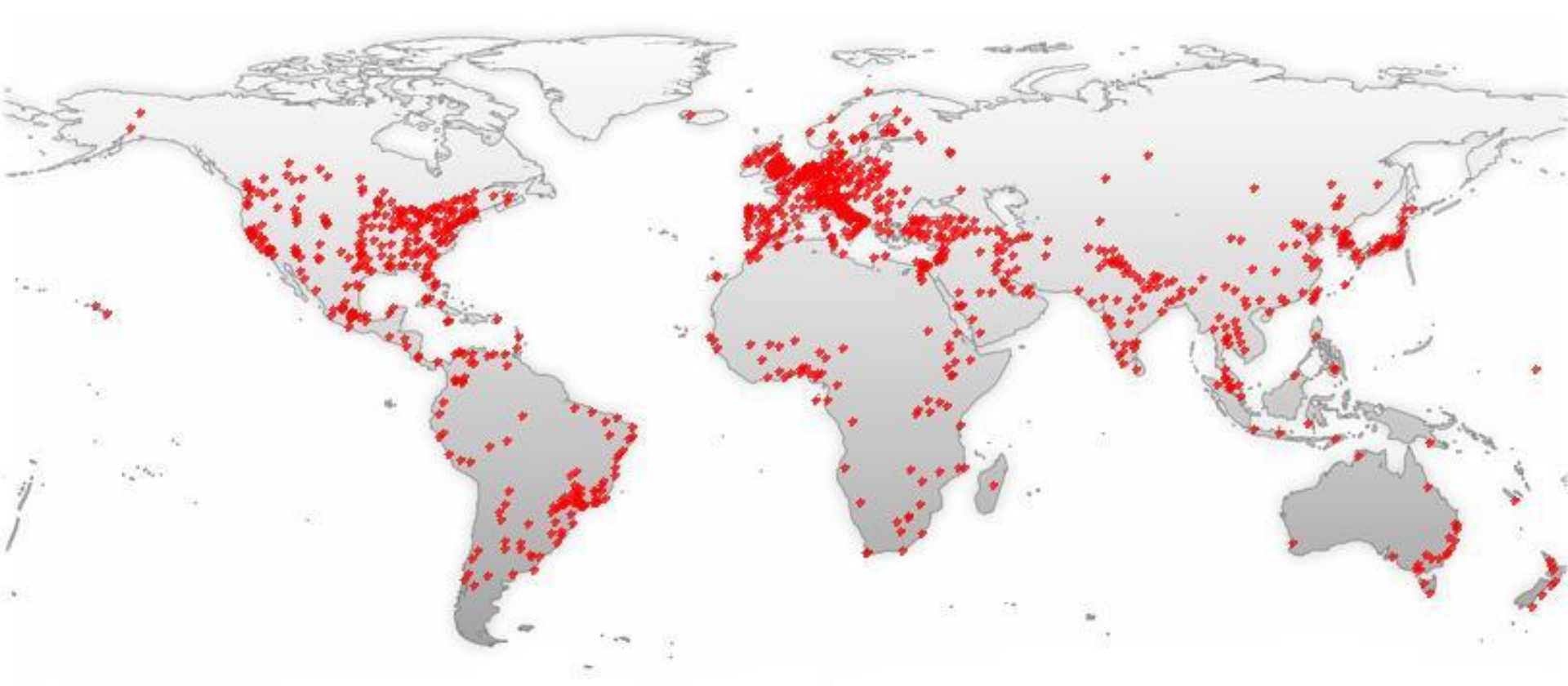
Table 6. List of the keywords (MeSH terms) most frequently used in articles on giardiasis covered by PubMed, 1971–2010

Key words	n	%	1971–1980	%	1981–1990	%	1991–2000	%	2001–2010	%
Parasitology	2,773	39.8	172	19.2	536	33.2	701	39.8	1,364	50.7
Isolation & purification	1,970	28.3	181	20.2	301	18.6	490	27.8	998	37.1
Epidemiology	1,919	27.6	209	23.3	389	24.1	463	26.3	858	31.9
Feces	1,610	23.1	176	19.6	361	22.4	368	20.9	705	26.2
Diagnosis	1,141	16.4	176	19.6	293	18.2	276	15.7	396	14.7
Intestinal diseases, parasitic	1,088	15.6	200	22.3	326	20.2	228	12.9	334	12.4
Genetics	1,038	14.9	16	1.8	75	4.6	294	16.7	653	24.3
Immunology	924	13.3	96	10.7	299	18.5	279	15.8	250	9.3
Drug therapy	917	13.2	248	27.6	210	13.0	202	11.5	257	9.6
Metabolism	889	12.8	67	7.5	139	8.6	236	13.4	447	16.6
Complications	881	12.7	212	23.6	237	14.7	213	12.1	219	8.1
Etiology	855	12.3	201	22.4	301	18.6	170	9.6	183	6.8
Therapeutic use	837	12.0	238	26.5	179	11.1	193	10.9	227	8.4
Analysis	822	11.8	75	8.4	243	15.1	199	11.3	305	11.3
Diarrhea	794	11.4	120	13.4	217	13.4	211	12.0	246	9.1
Microbiology	750	10.8	128	14.3	164	10.2	148	8.4	310	11.5
Methods	692	9.9	45	5.0	65	4.0	131	7.4	451	16.8
Prevalence	648	9.3	0	0	32	2.0	204	11.6	412	15.3
Chemistry	563	8.1	2	0.2	7	0.4	151	8.6	403	15.0
Pharmacology	528	7.6	29	3.2	106	6.6	158	9.0	235	8.7
Veterinary	526	7.6	21	2.3	77	4.8	117	6.6	311	11.6

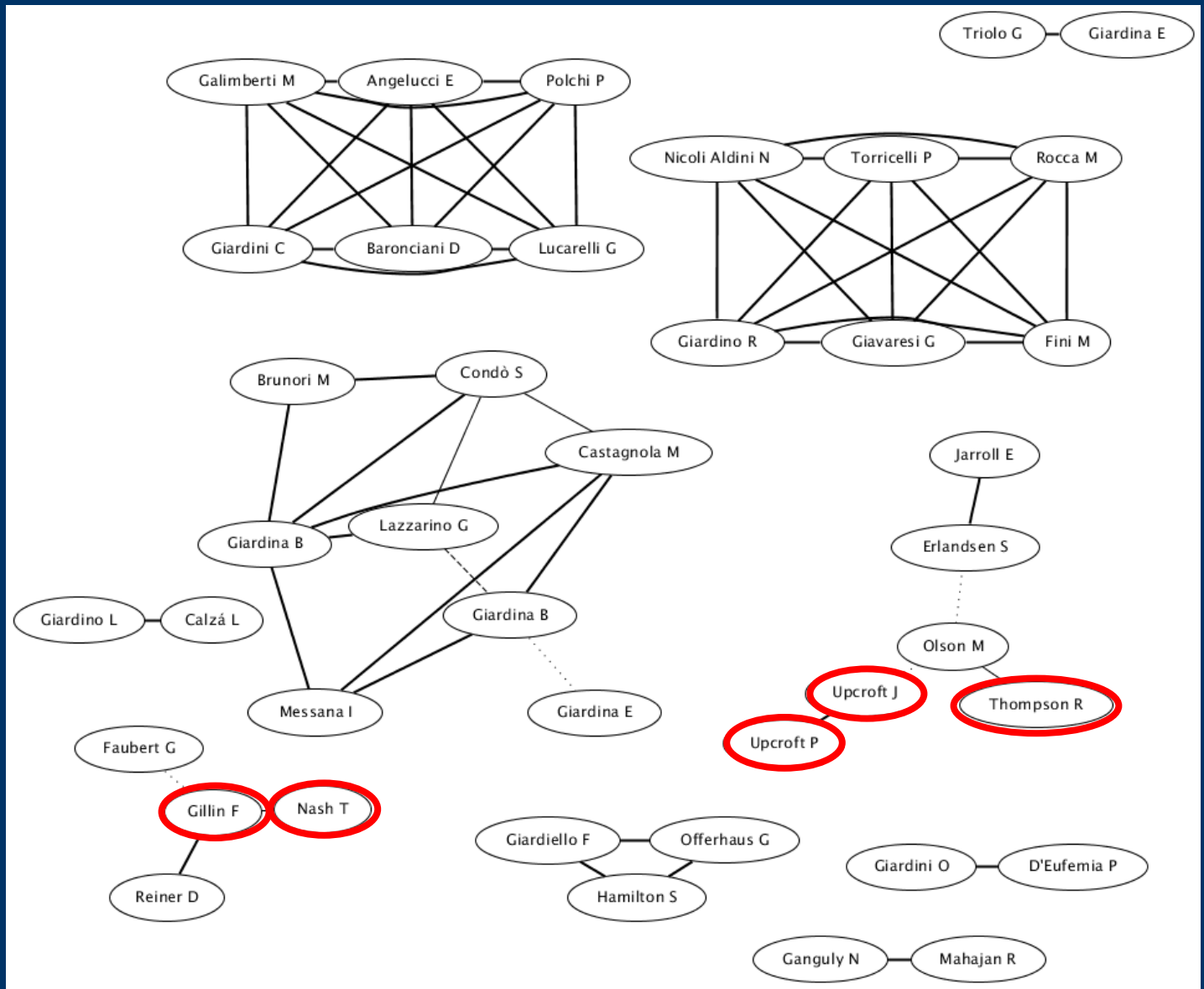
Table 7. Authors with 30 or more papers on *Giardia* or giardiasis during the period 1971–2010

Author	Country	n	%	Output per decade			
				1971–1980	1981–1990	1991–2000	2001–2010
Gillin, FD	USA	97	1.39	1	32	34	30
Nash, TE	USA	89	1.28	0	28	37	24
Thompson, RC	AUS	89	1.28	0	10	35	44
Upcroft, P	AUS	61	0.88	0	8	37	16
Upcroft, JA	AUS	55	0.79	0	7	35	13
Wang, CC	USA	50	0.72	0	12	23	15
Farthing, MJ	UK	45	0.65	0	20	23	2
Ganguly, NK	IND	44	0.63	0	27	12	5
Jarroll, EL	USA	44	0.63	2	13	20	9
Reiner, DS	USA	43	0.62	0	18	13	12
Mahajan, RC	IND	43	0.62	0	27	14	2
Olson, ME	CAN	40	0.57	0	2	20	18
Erlandsen, SL	USA	39	0.56	1	22	12	4
Vinayak, VK	IND	38	0.55	8	17	11	2
Graczyk, TK	USA	38	0.55	0	0	11	27
Svard, SG	SUE	37	0.53	0	0	9	28
Faubert, GM	CAN	36	0.52	0	18	13	5
Edwards, MR	AUS	34	0.49	0	3	20	11
Boreham, PF	AUS	33	0.47	0	24	9	0
Dupont, HL	USA	33	0.47	6	13	6	8
Belosevic, M	CAN	32	0.46	0	16	10	6
Lujan, HD	ARG	31	0.45	0	0	13	18
Adam, RD	USA	31	0.45	0	4	15	12
Fayer, R	USA	30	0.43	0	0	8	22
Cedillo-Rivera, R	MEX	30	0.43	0	2	8	20
Robertson, LJ	NOR	30	0.43	0	0	3	27

Scientific production on *Giardia* by place



Scientific cooperation on *Giardia*



Giardiasis

Conclusiones

- Patología intestinal de gran importancia
- Es cosmopolita, ocurre tanto en países tropicales como en no tropicales, más frecuente en los primeros
- Pocos estudios en Colombia (<40 en Medline)
- Transmisión oral-fecal pero existen otras formas
- Parasitosis transmitidas frecuentemente por alimentos, contaminación de vegetales
- Zoonosis

Giardiasis

Conclusiones

- Necesidad de estudio e investigación, control y vigilancia
- Tratamiento con albendazol o metronidazol
- Epidemiología muy poco conocida en Risaralda