Letter to the editor

Giardia lamblia infection is associated with lower body mass index values

Carmen Durán¹, Glida Hidalgo², William Aguilera³, Alfonso J. Rodríguez-Morales⁴,⁷, Carlos Albano⁵, Jackeline Cortez⁶, Sara Jiménez⁶, Marietta Díaz⁶, Renzo Nino Incani⁶

¹Coordination of Coproparasitology, ²Direction of Biological Sciences, ³Coordination of Statistics, ⁴Direction of Population Studies, ⁵General 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 ⁶Department of Parasitology, Faculty of Health Sciences, Universidad de Carabobo, Valencia, Venezuela ⁷Department 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


(Received 4 October 2009 – Accepted 27 April 2010)

Copyright © 2010 Duran et al. This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

While low and poor food intake are the major recognized causes of protein-energy malnutrition in children worldwide the only parasitic infection implicated in influencing the condition is Giardia lamblia [1-3]. Some studies have suggested this association with different anthropometric variables (e.g., height for age, weight for age) [1-4], while others have reported higher G. lamblia infection rates in undernourished children [5,6] (classified according to a body mass index [BMI] < 14 kg/m² or below percentile 10 according to the national reference value [Venezuelan Growth and Development Foundation, 1996]). Furthermore, these studies have not reported mean lower BMI values in those individuals infected with G. lamblia [1-6]. Based on these observations, we have evaluated the relationship between BMI values and G. lamblia infection in a cohort of children and adults, from 6 months to 59 years old, in a population living in areas of north central Venezuela.

We studied randomly selected 3,388 apparently asymptomatic individuals (1,656 male, 1,732 female; mean age 13.05 ± 0.22 years old), in the context of a probabilistic national study on growth and development. Of these, 97.7%, were from similar geographical areas and socioeconomic status (national stratification III/V, IV/V and V/V [Venezuelan Growth and Development Foundation, 1996], poorest levels). Body mass index (kg/m²) was calculated from measurements of weight (kg) and the height (m) obtained by trained anthropometrists.

Giardia lamblia was microscopically determined in freshly collected stool samples which were preserved in merthiolate-iodine formaldehyde (MIF) media.

Most individuals (68.8%) had normal BMI values while 21.8% had values above normal and 9.4% below normal. Giardia lamblia was detected in 10.3% of the individuals with a higher prevalence in people with a deficit in weight in relationship to age (below 10%) compared with those with a normal or excess in weight for age (above 10%): 9.5% (32/338) versus 5.9% (177/2976) (OR = 1.65, CI 95% 1.15 –

Figure 1. Comparative values of Body Mass Index (kg/m²) in individuals from north central Venezuela considering their status regarding G. lamblia infection.
These preliminary findings, which should be confirmed in further studies, suggest that *G. lamblia* infection may influence nutritional status in children, teenagers and adults (particularly women and individuals older than 10 years-old); previous studies have examined these potential associations only in children [2-4,6]. Considering the prevalence of *G. lamblia* infection detected in the individuals included in this study and its influence on nutritional status, detection of this parasite would be of importance in the integral evaluation of individuals under nutritional assessment.

**Acknowledgment:** The authors are grateful for funding received from FUNDACREDESA, Ministerio del Poder Popular para las Comunidades y Protección Social, Caracas, Venezuela.

**References**


**Conflicts of interest:** The authors declare no conflicts of interest.

**Corresponding author**

Alfonso I. Rodriguez-Morales  
Department of Population Studies  
Foundation Center for Studies on Growth and Development of the Venezuelan Population (FUNDACREDESA)  
Ministerio del Poder Popular para las Comunidades y Protección Social  
Caracas, Venezuela  
Email: alfonso.rodriguez@fundacredesa.gob.ve