



## Intestinal parasitic infections among intellectual disability children in rehabilitation centers of northern Iran

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### ABSTRACT

Parasitic infection is highly prevalent throughout the developing countries of the world. These infections are the major problem in rehabilitation centers for the mentally retarded. There have been many reports about the prevalence of parasitic infection among different groups of people in Iran; however, the epidemiological data in intellectual disability (ID) individuals are rare and there are no such data from northern Iran. The aim of the present study was to determine the incidence of intestinal parasitic infections among the inhabitants of rehabilitation centers of Mazandaran province, northern Iran. A triple fecal specimens was collected from each of the 362 participants (183 males, 179 females) residing in six rehabilitation centers of Behshahr, Sari, Amol, Nowshahr and Ramsar. Each specimen was examined by direct wet mounting, formol-ether concentration, Ziehl-Neelsen and trichrome permanent staining. The overall infection rate of intestinal parasite was 26.2% (95 out of 362 subjects; 22.4% in males and 30.2% in females). *Giardia lamblia* was the most commonly found protozoan parasite (8.0%) followed by *Entamoeba coli* (5.5%), *Blastocystis hominis* (3.3%), *Endolimax nana* (2.8%) and *Entamoeba histolytica* (1.7%). Double infections were *E. coli* and *B. hominis* (1.1%), *G. lamblia* and *Chilomastix mesnili* (1.1%), *G. lamblia* and *B. hominis* (0.5%), *G. lamblia* and *E. coli* (0.5%), *E. histolytica* and *E. coli* (0.5%), *E. nana* and *E. coli* (0.5%) and *E. nana* and *B. hominis* (0.5%). No egg-positive case was found. These helminthic parasites were found to be not common among the participants, 75% of whom had been treated with mebendazole by guardians as a tradition, every 6 months. Nevertheless, our data in rehabilitation centers in northern Iran suggest that infection is not higher than that in community population in recent years in this geographical area.

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### 1. Introduction

Intestinal parasitic infections are still a serious public health problem in the world, especially in developing countries (Quihua et al., 2006). The fecal oral route is significant in the transmission of parasite infections to humans via poor personal hygiene (Okey, Ertug, Gultekin, Onen, & Baser, 2004), environmental conditions like contamination of soil and water sources with human feces (Muttalib, Huq, Huq, & Suzuki, 1983). Infection with intestinal parasite as a major problem has been recognized to spread within institutions for the mentally retarded because of inadequate personal hygiene and lack of toilet training (Naiman, Sekla, & Albritton, 1980). Mentally retarded individuals are usually placed in institutions during childhood

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or adolescent and are highly debilitated patients who require care and treatment specially for infectious diseases (Geller, Eyman, & Dingman, 1964). Several surveys of institutions for the mentally retarded in the world have reported a wide range of prevalence (20–60%) of intestinal parasitism (Yoeli, Most, Hammond, & Scheinesson, 1972). A prevalence rate of 7.3% was found among individuals with mental retardation in New York State (Schupf, Ortiz, Kapell, Kiely, & Rudelli, 1995). Few epidemiological surveys performed in mentally retarded centers in Iran revealed a different prevalence of intestinal parasitic infection (Mahyar, Daneshi, Saghafi, & Rezaei, 2000; Rohanni, 1994). An investigation was undertaken to determine the prevalence of parasitic diseases in intellectual disability persons in rehabilitation centers of Mazandaran province, northern Iran.

## 2. Methods and materials

This descriptive study was carried out between March and October 2008 in six rehabilitation centers located in Behshahr, Sari, Amol, Nowshahr and Ramsar cities of Mazandaran province. The province is the biggest among three in northern Iran and is located on the South coast of the Caspian Sea. In the study year, there were 12 rehabilitation centers designated in different geographical areas of Mazandaran province. These centers had a total residential population of 721. The sample size was calculated as 383 participants on a prevalence of 50%,  $d = 0.05$  at a confidence level of 95%. All of the inhabitants of each center were included in the study, making a total of 362 subjects aged between 1 and 55 years (mean =  $25.48 \pm 11.41$  years). A triple stool sample of each individual in three consecutive days was collected in P.V.A. and 10% formaline preservative and submitted to parasitology laboratory of Sari Medical School. The diagnosis was made on direct wet mount, formol-ether concentration, and with confirmation of positive stool specimens on Ziehl-Neelsen and trichrome stained slides. Statistical analysis was carried out using Chi square test.

## 3. Results

Stool examination of 362 mentally retarded inhabitants of six rehabilitation centers with an age of 1–55 years old, revealed that 26.2% of them were parasitized. Of the study population, 21.3% were infected with a single and 4.7% with double infections. The prevalence of the intestinal parasites detected in the study was shown in Table 1. The most common intestinal parasite species were *Giardia lamblia* with 29 (8%) pure and 8 (2.1%) with double infection, *Entamoeba coli* with 20 (5.5%) pure and 10 (2.6%) with double infection, and *Blastocystis hominis* with 12 (3.3%) pure and 8 (2.1%) with double infection. Helminth eggs were not observed in any of the stool samples. As presented in Table 2, the positive rates among males and females were 22.4% (41/183) and 30.2% (54/179). However there was no significant difference between the genders ( $\chi^2 = 2.81$ ,  $df = 1$ ,  $P = 0.09$ ). There was significant difference between prevalence of infection and age groups; the

**Table 1**  
Prevalence of intestinal parasitic infection among 362 individuals, 1–55 years of age, residing in rehabilitation centers of northern Iran.

Intestinal parasites	Number	Prevalence (%)
Single	<i>Giardia lamblia</i>	29
	<i>Entamoeba coli</i>	20
	<i>Entamoeba histolytica</i>	6
	<i>Blastocystis hominis</i>	12
	<i>Endolimax nana</i>	10
Double	<i>Giardia lamblia</i> + <i>Chilomastix mesnili</i>	4
	<i>Giardia lamblia</i> + <i>Blastocystis hominis</i>	2
	<i>Giardia lamblia</i> + <i>Entamoeba coli</i>	2
	<i>Entamoeba histolytica</i> + <i>Entamoeba coli</i>	2
	<i>Endolimax nana</i> + <i>Entamoeba coli</i>	2
	<i>Blastocystis hominis</i> + <i>Entamoeba coli</i>	4
	<i>Blastocystis hominis</i> + <i>Endolimax nana</i>	2

**Table 2**  
Age and sex distribution of intestinal parasitic infection in survey population ( $n = 362$ ).

	Number examined (%)	Number infected (%)	P
Age group (years)			
<9	26 (7.2)	2 (7.7)	0.01
10–19	85 (23.5)	16 (18.8)	
20–29	121 (33.4)	33 (27.3)	
30–39	86 (23.8)	26 (30.2)	
>40	44 (12.2)	18 (40.9)	
Sex			
Male	183 (50.5)	41 (22.4)	0.09
Female	179 (49.5)	54 (30.2)	

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