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Short Article

Prevalence of Intestinal Parasites in Patients Referred to Medical Centers of Shahid Sadoughi University of Medical Sciences in Yazd 2015-2016

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ABSTRACT

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Key words
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Aims and Background: For a long time, intestinal parasite infections are among the major problems of Public health in Iran. Our aim was epidemiological studies on the frequency of intestinal parasites in patients referred to medical centers of Shahid Sadoughi University in Yazd during 2015-2016.

Materials and Methods: In a two years cross-sectional study in the medical centers of Shahid Sadoughi University of Medical Science, 31000 stool samples were evaluated for parasitic infections by direct smear and formalin-ether concentration methods.

Results and Conclusions: The results showed that Incidence was 3.8%. Protozoan infection were *Blastocystis hominis* (1.75%), *Giardia lambelia* (1.45%), *Chilomastix mesnili* (0.35%), *Trichomonas hominis* (0.05%) and helmints in infections were *Hymenolepis nana* (0.11%), *Enterobius vermicularis* (0.08%) and *Ascaris lumbricoides* (0.01%). There was a significant difference in parasite prevalence between age categories. However, no significant difference was found with gender. The intestinal parasites, especially helminthic infections have been decreased during recent years.

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Introduction

Intestinal parasitic infections are among the major problems of public health in the developing countries. It is estimated that 450 million people, the majority of whom are children, are now diseased as a result of these infections [1]. The prevalence of intestinal parasitic infections in each community is considered as an indicator for the health status of the area. Some personal factors including safety conditions, nutrition, health status, literacy, cultural habits as well as environmental factors such as climate, geographical location, poverty and economic situation, inadequate health conditions, high density of population and failure to observe health regulations in people working in the preparation and distribution of food may help the prevalence of intestinal parasitic infections [2]. These infection are associated with restricted linear growth, physical weakness and low educational achievement in patients, especially children [1]. Furthermore, chronic intestinal parasitic infections have become the subject of speculation and investigation in relation to spread and severity of other infectious diseases including viral infection, tuberculosis and malaria [3]. In the developed countries, intestinal protozoan parasites are known as an important cause of gastrointestinal disorders, enteric protozoa are one cause of diarrheal disease in children.

Intestinal parasitic infections are mainly transmitted through the fecal-oral route [4]. Common intestinal parasites such as *Giardia intestinalis* and *Blastocystis hominis* are still health challenges of economically developed and developing countries [4-5]. *Blastocystis hominis* is the most common human intestinal protozoa worldwide. It was associated with diarrhea in the tropics and subtropics since it was found in patients throughout the world. The reported prevalence rates of intestinal protozoa varied from 1.5% to 10% in the developed countries with much higher rates of 30% to 50% in the developing countries [6]. At present, parasitic diseases are among the hygienic problems in Iran. With regard to social, economic, and geographical conditions and population changes of Iran, this country is an appropriate arena for growth and reproduction of all kinds of parasites [2]. The aim of this study was to determine the frequency of intestinal parasites in the population who had referred to medical centers of Shahid Sadoughi University of Medical Sciences in Yazd.

Materials and Methods

This is a clinical-based retrospective study that lasted for a period of two years (2015-2016) and was conducted in the medical centers of Shahid Sadoughi University of Medical Sciences in Yazd. Patients in all age groups, both genders with or without gastrointestinal disturbance, were included in this study. The study was approved by the Ethics Committee of Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

First, to check the consistency of the stool, the presence of blood, mucus and the adult worm parasites were evaluated microscopically.

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Finally, using the direct and formalin-ether concentration methods, the stool samples were checked by optical microscope to assess the presence of parasite eggs, cysts and trophozoites. All the parasitic cases (protozoa and worms) were reported separately. All data (age, sex) were obtained from the main registry at the medical centers of Shahid Sadoughi University of Medical Sciences. The frequency data were compared using the Chi square (X^2) test. Odd ratios were calculated for gender and age. The SPSS20 software (SPSS Inc., Chicago, IL, USA) was used for statistical analysis.

Results and Discussion

A total of 31000 patients with suspected intestinal parasites were referred to the medical centers of Shahid Sadoughi University including 15,686 males (50.6%) and 15,314 females (49.4%) the majority of whom aged between 1 and 11 years (34.6%). The patients were then diagnosed with one or more intestinal parasites over the study period (Table 1). Also from all of the screened samples, 3.8% (N=1154) were positive for intestinal parasites. In general, protozoan infections (3.60%) showed a higher prevalence pattern compared to the helminthic infections (0.20%) (Table 2). Among the parasites identified, *Blastocystis hominis* (1.75%) and *Giardia lamblia* (1.45%) were found to be the commonest, followed by *Chilomastix mesnilii* (0.35%) and *Hymenolepis nana* egg (0.11%). Other uncommon parasites encountered were *Trichomonas hominis* (0.05%), *Enterobius vermicularis* egg (0.08%) and *Ascaris lumbricoides* egg (0.01%) (Table 2). No statistically significant difference was found between intestinal parasites and sex ($p> 0.05$). Distribution of intestinal parasites in terms of age groups is shown in figure 1. Prevalence of *Blastocystis hominis and Giardia lamblia* was higher in the younger than the older population. The prevalence of other parasites was relatively equal across all age groups. Although the frequency of intestinal parasites in different age groups did not differ significantly in 1-11 years age-group, the highest rate of infection was observed ($p>0.05$). In addition, a statistically significant difference was found in patients infected with *Giardia lamblia and Hymenolepis nana* ($p< 0.05$). In contrary, no statistically significant difference was identified among age-groups infected with other parasites ($p> 0.05$) (Fig. 1). Intestinal parasitic infection of humans is a major health problem in many tropical and sub-tropical parts of the worldespecially in the developing countries such as Iran. Several epidemiological studies have been conducted to determine the prevalence rate of intestinal parasite infections in Iran [4]. Patterns of intestinal parasitic infections in the population, may have changed because of socio-demographic characteristic, life style, human behavior, nutritional habituate and sanitary/ hygienic improvements [4-6].

The present study showed that about 3.8 % of the study population were carriers of one or more of intestinal parasites. Prevalence of intestinal parasites vary in different parts of Iran with 10.7 % reported from Tehran (Capital of Iran) [5], 4.7 % in Karaj [6], 6.1 % and 8.6% in Yazd (Central of Iran) [10] and 5.92 % in Qazvin (North of Iran) [1]. Socioeconomic, geographic, sanitary/hygienic,

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cultural, and nutritional factors may contribute to this fact.

Table 1. Prevalence of intestinal parasitic infections in patients referred to medical centers of Shahid Sadoughi University of Medical Sciences in Yazd in 2015-2016

Sex	Total No.	Infestation No.	P-value
Male	15988	584	p>0.05
Female	15012	570	
Total	31000	1154	

Table 2. The parasites distribution of the study population in patients referred to medical centers of Shahid Sadoughi University of Medical Sciences in Yazd in 2015-2016

Protozoan	Male No (%)	Female No (%)	Overall prevalence No (%)
Blastocystis hominis	255 (0.82)	289 (0.93)	544 (1.75)
Giardia lamblia	260 (0.69)	199 (0.76)	459 (1.45)
Chilomastix mesnilii	37 (0.14)	55 (0.21)	92 (0.35)
Trichomonas hominis	7 (0.02)	9 (0.03)	16 (0.05)
Total	559 (1.67)	552 (1.93)	1111 (3.60)
Hymenolepis nana	21 (0.06)	18 (0.05)	39 (0.11)
Enterobius vermicularis	3 (0.08)	0 (0.00)	3 (0.08)
Ascaris lumbricoides	1 (0.01)	0 (0.00)	1 (0.01)
Total	25 (0.11)	18 (0.09)	43 (0.20)

P-value=0.00 (<0.5)

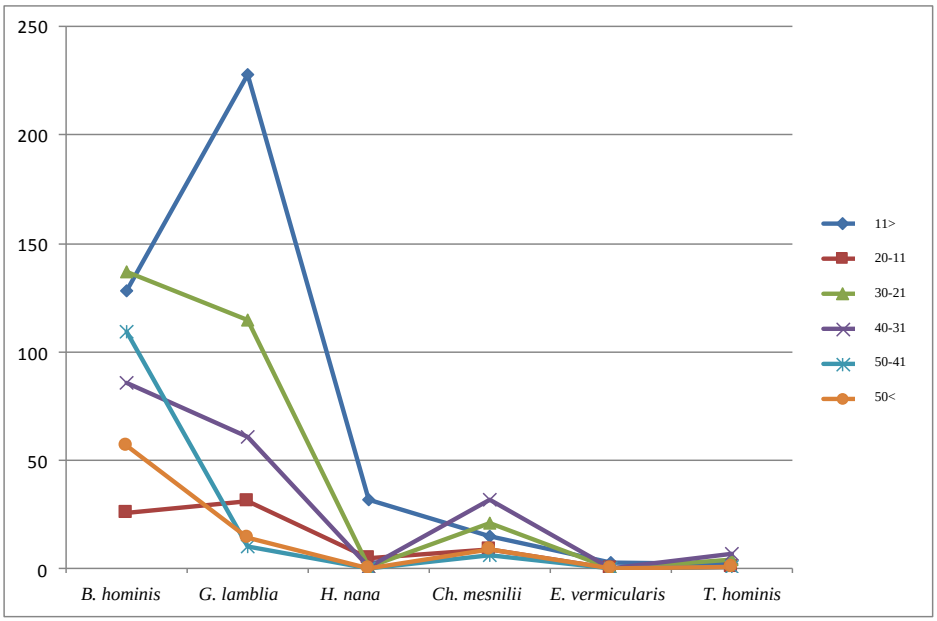


Fig. 1. The parasites distribution of the study population by age in patients referred to medical centers of Shahid Sadoughi University in Yazd in 2015-2016

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In this study, the most frequent protozoan infection was identified as *Giardia intestinalis.* The pathogenicity of *Blastocystis hominis* is unclear. A recent study observed acute and chronic digestive disorders such as irritable bowel syndrome [8]. In general, the problem with protozoan infection is a chronic disease and most people appear asymptomatic, therefore people have no awareness and t can, therefor, cause chronic diarrhea. [4].

Out of 31000 patients who were studied, 1111 (3.60%) were infected with at least one species of intestinal protozoa and 43 (0.20%) infected with helmints. Relatively, low incidences of helminthic infections obtained in this study, is in accordance with the fact that the prevalence of intestinal helmints appear generally rare in Iran as we only found *Hymenolepis nana* in 39 (0.11%), *Enterobius vermicularis* in 3 (0.08%) and *Ascaris lumbricoides* in 1 (0.01%) of the examined samples [8]. This contradiction is due to this fact that intestinal protozoa cysts are more easily transmissible in human beings than in helmints. Intestinal protozoa cysts are more resistant to disinfectant agents and unfavorable conditions than helmints eggs and larva. In this study, 4 species of intestinal pathogenic and non-pathogenic protozoa were detected which were as follows: *Blastocystis hominis* 544 (1.75%), *Giardia intestinalis* 459 (1.45%), *Chilomastix mesnilii* 92 (0.35%), and *Trichomonas hominis* 16 (0.05). They are major public health concern in both populations. *Giardia intestinalis* is the most common infection in the countries with temperate and tropical climate. The prevalence rate of Giardiasis was 2-5% in the developed countries and 20-30% in the undeveloped ones [9]. A similar study carried out by Anvari et al. (2014) indicated the prevalence of intestinal parasites in children attending Day-care centers in Yazd, Iran being 10%. The most prevalent parasites were *Blastocystis hominis* (2.8%) and *Giardia intestinalis* (2.8%) [10].

The low rate of intestinal protozoan infection and intestinal worms in the present study may be due to the hot weather, dry season, particular climatic conditions, and improved environmental health. Awareness raising and increasing the level of individual and public health cares in recent years may be reasons for reduction of intestinal parasitic infections [10].

In the present study, the highest infection rate was found in children between 0-11 years old compared to other age groups while there was a reduction in infection as age increased. This could be due to higher awareness in observing personal hygiene measures between older age group. Some studies proved that the infection rate in children (under 12) increases with age and there is no statistical significance between genders [11]. Difference due to gender was not observed in this study although male (50.6%) had slightly higher prevalence rate compared with female (49.4%) which is in line with reports of another study [10]. This could be the result of the more active and outdoor wandering nature of the males than females [11]. In Iran, due to the significant improvement in the level of public health arising from modern agricultural development, improved household economy as well as public health sanitation, the

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incidence of transmission of parasitic diseases and their prevalence is declining compared with the past [2-4]. Effective reasons for reducing the incidence of intestinal parasites in Yazd city could be the result of development of the universities with more students leading to increased awareness, improvement of the environment, increase of the ease of access to health care centers, increase of advertising in provincial mass media on health training, increased health culture, and disposing of wastes properly. These reasons are in accordance with the results obtained in a number of other studies conducted in Iran [6,7].

Conclusion

According to the results, it is recommended that more studies on the distribution and epidemiological properties of parasites be conducted in other Iranian provinces on the basis of their own unique weather conditions. Finally, the necessary measures to prevent, control and minimize parasitic infections should be taken place under the supervision of the Ministry of Health and collaboration of the medical universities.

Conflict of Interest

There is no conflict of interest.

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References

[1]. Sadeghi H, Borji H. A survey of intestinal parasites in a population in Qazvin, north of Iran. Asian Pacific Journal of Tropical Disease 2015; 5(3): 231-33.
[2]. Abedi M, Dabirzadeh M, Zohoor A, Biranvand L, Vatanparast A. Prevalence study of intestinal parasitic infections among health card applicants Zabol City in 2012. J Zabol Univ Med Sci. 2013; 5(2): 53-9.
[3]. Moshira M, Helmy F, Hisham S, Fattah A, Rashed L. Real-time PCR/RFLP assay to detect Giardia intestinalis genotypes in human isolates with diarrhea in Egypt. J Parasitol. 2009; 95(4): 1-5.
[4]. Daryani A, Sharif M, Nasrolahei M, Khalilian A, Mohammadi A, Barzegar G. Epidemiological survey of the prevalence of intestinal parasites among schoolchildren in Sari, northern Iran. Trans R Soc Trop Med Hyg. 2012; 106(8): 455-59.
[5]. Arani AS, Alaghehbandan R, Akhlaghi L, Shahi M, Lari AR. Prevalence of intestinal parasites in a population in south of Tehran, Iran. Revista do Instituto de Medicina Tropical de São Paulo 2008; 50(3): 145-49.
[6]. Nasiri V, Esmailnia K, Karim G, Nasir M, Akhavan O. Intestinal parasitic infections among inhabitants of Karaj City, Tehran province, Iran in 2006-2008. Korean J Parasitol. 2009; 47(3): 265-68.
[7]. Firoozabadi A, Azizi M. Prevalence of intestinal parasitic infections among fast-food restaurant workers in Yazd. J Shahid Sadoughi Univ Med Sci. 2003; 12(1): 29-33.
[8]. Poirier P, Wawrzyniak I, Vivarès CP, Delbac F, El Alaoui H. New insights into Blastocystis spp.: a potential link with irritable bowel syndrome. PLoS pathogens. 2012; 8(3): e1002545.
[9]. Ali IKM, Clark CG, Petri WA. Molecular epidemiology of amebiasis. Infection, Genetics and Evolution. 2008; 8(5): 698-707.
[10]. Anvari TMH, Mirjalili MM, Aghabagheri M. Prevalence of intestinal parasitic infections in childern attending day-care centers in Yazd city, Iran. J Community Health Res. 2014; 3(2): 96-102.
[11]. Missaye A, Dagnew M, Alemu A, Alemu A. Prevalence of intestinal parasites and associated risk factors among HIV/AIDS patients with pre-ART and on-ART attending dessie hospital ART clinic, Northeast Ethiopia. AIDS Res Ther. 2013; 10(1): 7.

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