

# Intestinal parasitic infection among students of special needs centers in Dhamar Governorate.

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## Intestinal Parasitic Infection among Students of Special Needs Centers in Dhamar Governorate

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### Abstract

**Background:** Intestinal parasitic infections are still common in low-income countries, particularly in children due to low-quality drinking water, poor personal and environmental sanitation. This study aimed to diagnose, prevent and control intestinal parasites for people with special needs in Dhamar Governorate.

**Method:** Stool samples collected from 232 students aged between 1 and 18 old; 143 were males and 89 females. Data collected via pretested standard questionnaire. Fecal samples were processed and examined using a wet mount preparation after standing concentration technique.

**Results:** The overall prevalence of intestinal parasitic infection was 83.6 %. *E. histolytica* (76.7 %), *G. lamblia* (8.6 %), *A.lumbricoides* (0.4 %), *H. nana* (6.5 %), *S. mansoni* (0.4 %), *Ent. Vermicularis* (6.5 %), *S. stercoralis* (2.2 %).

**Conclusions:** The most common intestinal parasitic infection in children was *E. histolytica*). Method of transmission and protection among special needs students are limited

**Keywords:** Special needs, parasitic infection, Dhamar.

**Introduction:** Parasites are defined as organisms that get food and shelter from other organisms or the host and often harm it. For a parasitic to be outlined as intestinal, it must have an intestinal life cycle stage. Additionally, it may have a life cycle stage in the heart, circulation,

lung, tissue, and other animals on the surrounding (Ali, 2016). The intestinal parasitic infections in developing countries are considered the main cause of public health problems (Savioli et al., 1992). The recent studies revealed that around 30% of the total

population in the world is infected with intestinal parasite (Keiser and Utzinger, 2010). The prevalence of intestinal parasitic infections in considerably varied in the different regions of the world. It depends on many factors such as geographical and socioeconomic factors, relatively humid areas, poverty, malnutrition, personal and community hygiene, high population density, unavailability of potable water and low health status, and poor sanitary facilities these factors give the optimum conditions for the growth and transmission and increase the probability of exposure to intestinal parasites (Brooker et al., 2009).

Also the distribution of such infections is influenced by other several factors such as suitable climatic conditions, environmental sanitation and human activities including population movements as well as poor sanitation. Intestinal parasitic infection can be transmitted throughout the year in temperate regions. The major tracks for transmission of intestinal parasites are the contamination of food or water or personal contact via fecal-oral route (Raza and Sami, 2009, Amer et al., 2016). Soil-transmitted helminths (STHs) infections caused by *Ascaris lumbricoides*, *Trichuris trichiura* and hookworms usually prevail in areas

## Study area

The study will be conducted the special needs in Dhammar Governorate. Two hundred thirty-two (232) samples were collected from students at the district school Al- Bardouni, Al- Zubairi, Al- Amal and Al-Salah school.

## Methods

### A) Sample collection

1- Two hundred thirty-two (232) were collected from students.

2- Collect sample of stool on a wide-clean container.

B) Labeled number of sample on the container then asked all student selected with some questions to our study.

C) Laboratory examination of sample.

## Concentration Technique (-Sedimentation Technique)

### Standing method:

1- Approximately 1 g of feces are emulsified in 5 times their volume physiological saline.

2- Emulsify is allowed to stand in a conical flask for 20-30 minutes.

3- Two layers are formed. Top layer consists is a clear layer of saline and the other is the sediment and the saline is removed from the tube.

4- With a pipette take a sample of sediment & examination microscopically at low and high dry magnifications lens (10X) & (40X).

### Sample size determination

Sample size was determined by taking Two hundred thirty-two (232) samples from students at the district school Al- Bardouni, Al- Zubairi, Al-Amal and Al-Salah school randomly who are fulfilling the explained criteria and who are volunteers to participate by giving their informed consent.

### Data analysis

Data was analyzed using SPSS Version 25. To conduct analysis, Quantitative variables were expressed Percentage as well as Mean  $\pm$  standard deviation (SD),

### Ethical Consideration

Approval for this study was taken from the ethic committee in Faculty of Medical Sciences at Al-Saeeda University.

## Results

In this study, a total of 232 students with special needs were included in Dhamar City School, of whom 143 were males and 89 were females.

**Table1: Frequency of Gender among students of special needs:**

Gender	Frequency	Percent %
M	143	61.4
F	89	38.2
Total	232	100

The study showed that the percentage of Intestinal parasites were highest in male (61.4%) while the female was the lowest percentage (38.2 %).

**Table 2: Frequency of age among students of special needs.**

Age	Frequency	Percent%
3-9	67	28.8
10-13	114	48.9
14-18	51	21.9
total	232	100

The study showed that the percentage of Intestinal parasites were highest in age groups **10-13** years (48.9%) and then in age group **3-9**

years (28.8%) while the age group **14-18** years was the lowest percentage (21.9 %).

**Table 3: Frequency of water among students of special needs**

Source of water	Frequency	Percent
Main source	194	83.6
External source	38	16.4
Total	232	100

The study showed that the highest using of source of water was the main source where the percentage was (83.6 %) and then the external source (16.4 %).

**Table 4: Frequency of water sources that used by students with special needs**

Source of food	Frequency	Percent
At home	231	99.1
At restaurant	1	0.4
Total	232	100%

The study showed that the main source of food was the home where the percentage was (99.1%).

**Table 5: Prevalence of Intestinal parasites among student of special needs according to age**

Age yrs.			Total
<b>3-9</b>	Positive	58 86.6 %	67 100 %
	Negative	9 13.4 %	
<b>10-13</b>	Positive	94 82.5 %	114 100 %
	Negative	20 17.5 %	
<b>14-18</b>	Positive	42 82.4 %	51 100 %
	Negative	9 17.6 %	

**Table 6: Prevalence of Intestinal parasites among students of special needs according to gender**

<b>Gender</b>			
			<b>Total</b>
<b>M</b> <b>N= 138</b>	Positive	116 84.1 %	138 100 %
	Negative	22 15.9 %	
<b>F</b> <b>N= 94</b>	Positive	78 83 %	94 100 %
	Negative	16 17 %	

**Table 7: Prevalence of Intestinal parasites among students of special needs according to Water in the school**

<b>Water in the school</b>	<b>Positive</b>	<b>Negative</b>	<b>Total</b>
<b>Main Source</b> <b>N=123</b>	103 83.7 %	20 16.3 %	123 100 %
<b>External Source</b> <b>N=109</b>	91 83.5 %	18 16.5 %	109 100 %

**Table 8: Prevalence of Intestinal parasites among students of special needs according to Source of food**

<b>Source of food</b>	<b>Positive</b>	<b>Negative</b>	<b>Total</b>
<b>At home</b> <b>N=231</b>	193 83.5 %	38 16.5 %	231 100 %
<b>At restaurant</b> <b>N=1</b>	1 100 %	0 00 %	1 100 %

**Table 9: Prevalence of Intestinal parasites among students of special needs according to consistency**

Consistency	Positive	Negative	Total
<b>Diarrhea</b> <b>N= 11</b>	9 81.8 %	2 18.2 %	179 100 %
<b>Soft</b> <b>N= 56</b>	45 80.4 %	11 19.6 %	56 100 %
<b>Formed</b> <b>N= 89</b>	77 86.5 %	12 13.5 %	89 100 %
<b>Semi solid</b> <b>N= 76</b>	63 82.9 %	13 17.1 %	76 100 %

**Table 10: Percentage of Intestinal parasites among student of special needs**

Parasite	Positive	Negative	Percentage %
<b>E. histolytica</b>	178	54	76.7
<b>G. lamblia</b>	20	212	8.6
<b>A.lumbricoides</b>	1	231	0.4
<b>H. nana</b>	15	217	6.5
<b>S. mansoni</b>	1	231	0.4
<b>Ent.Vermicularis</b>	15	217	6.5
<b>S. stercoralis</b>	5	227	2.2

## Discussion

In the present study, the parasites were *G. lamblia*, *E. histolytica*, *A. lumbricoides*, *H. nana*, *S. mansoni*, *Ent. Vermicularis*, *S. stercoralis*. Among 232 persons (age 3-18 years) examined, 194 were found infected with intestinal parasites (83.6%) and 38 were negative (16.4%). Infection was in male. The highest percentage of parasites (61.4%). and this result is similar to other studies which showed greater in male (Azazy and Al-Tiar, 1999). Findings from our study demonstrated that the prevalence of *E. histolytica* infection (76.7%) was higher than other infection parasites, but previous study reported among children from Al-Mahweet (64.0%) and Ibb (33.7%) (Alsubaie et al., 2016, Alwabr and Al-Moayed, 2016). And *G. lamblia* in our study (8.6%). among children in the past study from Ibb was (23.6%), Hadhramout (16.8%) and Sana'a (16.1%) (Al-Haddad and Baswaid, 2010, Alsubaie et al., 2016, Al-Mekhlafi et al., 2016). In the present study, *S. mansoni* and *A. lumbricoides* was (0.4%), and in other study *S. mansoni* was (1.1%) and in Thailand *A. lumbricoides* was (1.3%) (Azazy and Al-Tiar, 1999, Wongsaroj et al., 2014, Farag, 1985, Boonjaraspinyo et al., 2013). In our study was (2.2%) for *S. stercoralis* and (6.5%) for *Ent. Vermicularis* and *H. nana*.

but reported by several authors *S. stercoralis* with a prevalence rate of (5.0%), *Ent. Vermicularis* (2.8 %) and *H. nana* (12.2%) (Azazy and Al-Tiar, 1999, Kitvatanachai and Rhongbutsri, 2017, Al-Haddad and Baswaid, 2010, Alsubaie et al., 2016).

The overall parasitic prevalence varied from one country to another all over the world. In Yemen it was 36.99% in Hadhramout (7), (27.5%) in Sana'a (4,8), In Oman, prevalence was 38.7% (Patel and Khandekar, 2006), it reached 70% in Kassala town, Sudan (Mamoun et al., 2009), and in the actual study (76.7%). This variety may be due to different climate in these different regions and/or to the number of samples tested and techniques used.

## Conclusions

The most common intestinal parasitic infection in children was *E. histolytica*. Method of transmission and protection among special needs students are limited.

## Recommendations

1. Further studies should include other cities in Yemen. For that, surveillance is required for intestinal parasites infection in special needs centers.



2. Water and cleaning materials must be available in the toilets of special needs students schools
3. Teaching and counseling students about methods of transmission of intestinal parasites and how to prevent them.

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