

# Prevalence and Associated Risk Factors of Intestinal Parasitic Infections in Children at Slum Area of Karachi

Intestinal  
Parasitic  
Infections in  
Children

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## ABSTRACT

**Objective:** To determine the prevalence and associated factors for intestinal parasitic infections in children aged 5 to 15 in Khuda Ki Basti, Karachi, Pakistan.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at Community Health Sciences, Hamdard College of Medicine & Dentistry, Hamdard University, Karachi from May, 2018 to August, 2018 for a period of four months.

**Materials and Methods:** Two hundred eight children aged 5 to 15 years were randomly selected after permission from the Institutional ethics review committee. The stool specimens were collected and taken to the laboratory. SPSS version 23.0 was used for data entry and analysis. Frequency and percentages were calculated for description variables.

**Results:** Stool examination was carried out for 208 children. Four intestinal parasites were identified with an overall prevalence of 38 (18.27%). The most prevalent intestinal parasite found was *Entamoeba histolytica* (10.10%) then *Ascaris lumbricoides* (03.36%), *Giardia lamblia* (03.36%) and *H. nana* (01.44%).

**Conclusion:** The overall prevalence of parasite infections was low in this study due to good hygienic practices, such as a significant number of children wash their hands before eating and a large number of children wash their hands after using the toilet.

**Key Words:** Parasitic infections, Children, Hygienic practices, slum area of Karachi

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## INTRODUCTION

In both, industrialised and developing countries, intestinal parasite infections remain are still a major public health concern. All of these illnesses are widely recognised to be endemic in areas with poor sanitation and crowded living conditions and they are linked to the community's water supply, age, and socioeconomic status.<sup>1</sup> Intestinal parasite infections are widespread worldwide, affecting an estimated 3.5 billion people. They are responsible for clinical morbidity in approximately 450 million people.

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Developing countries are said to be the most affected with school-aged children accounting for, the vast majority of cases.<sup>2</sup> The distribution of these parasite illnesses is influenced by a variety of factors. These include socio-demographic factors associated with poverty, such as a lack of access to proper sanitation, potable water, and healthcare, as well as the current climatic and environmental circumstances. School-aged children are one of the groups most vulnerable to parasite infections of the intestine. Parasites have a wide range of negative impacts on schoolchildren, which is disturbing. These infections have a negative impact on children's survival, hunger, growth and physical fitness, school attendance, and cognitive function.<sup>3</sup>

Parasitic infection is a major cause of childhood malnutrition, anaemia, stunted physical and mental growth, psychosocial issues, recurring gastrointestinal and upper respiratory tract infection, and hence contributes to high morbidity and death in children. Despite improving socioeconomic situations and higher living standards, it remains a public health issue in advanced countries, such as the United States.<sup>4</sup> The reason that helminthic infestation is a global public health problem and because clinician have generally ignored it since, while worms can cause significant clinical problems. Patients rarely report to health centers due to the sluggish progression of the signs and

symptoms.<sup>5</sup> Intestinal parasite infections are more common in school children aged 5 to 14 years. They account for 12% of the total disease burden in children.<sup>6</sup> Due to the high incidence and major unfavourable consequences of intestinal parasite infection in children, several studies have been undertaken in many cities across Pakistan, however a severe deficiency was felt for a recent study in Karachi.<sup>7-9</sup> Hence, the objective of the present study is to determine the prevalence of intestinal parasite infections and its associated factors in children aged 5 to 15 years old in 'Khuda Ki Basti', a semi-urban slum settlement in Karachi, Pakistan.

## MATERIALS AND METHODS

A cross-sectional study was undertaken among children living in Khuda ki Basti, a semi-urban slum settlement in Karachi. After approval from ethical review committee of Hamdard University, from May, 2018 to August, 2018 for a period of four months, two hundred and eight children aged between 5 to 15 years were selected randomly. Pre-tested questionnaire was used for the collection of data from the parents of study participants. A clean, dry, screw-capped and appropriately labelled plastic container was delivered to parents of 208 children for sample collection. Informed consent was acquired from parents for sample collection. Labels with code number, name, age and sex sufficed to identify the specimens. The container was sent the day before and the participants were instructed to defecate in it the next morning. It was to be avoided by not diluting it with the urine or water. It was ensured that the study individuals were not taking any medication such as antibiotics, anthelmintics, anti-diarrheal agents, antacids or hypertonic salts. A total of 208 stool samples were collected and transferred to the laboratory. SPSS version 23.0 was used for data entry and analysis. Frequencies and percentages were calculated for descriptive variables.

## RESULTS

Frequency distribution of socioeconomic demographic variables were studied in a total of 208 children of which 76 were between 5 to 6 years, 86 between 6 to 10 years and 46 were more than 10 years of age. Out of 208 children, 106 were males and 102 females. Out of total, 150 were school going children. Majority of the children 160 (77%) belongs to poor families, 26 (12.5%) children from economically good families and 22 (10.5%) children had very good financial background. Assessment of educational status of the mothers showed that 66 (31.7%) mothers were illiterate & among the literate group, 128 (61.5%) matriculate and 14 (6.7%) mothers were educated till graduate level.

Stool examination was carried out in 208 samples. Four intestinal parasites were identified with an overall prevalence of 38 (18.27%). The most prevalent

intestinal parasite found was *Entamoeba histolytica* (10.10%) then *Ascaris lumbricoides* (3.36%), *Giardia lamblia* (3.36%) and *H. nana* (1.44%). (Table 1) Frequency of the risk factors like hand washing before eating, soap for hand washing, washing hand after using toilet, practice of finger nail trim and boiled water for drinking purpose were determined among the all children. (Table 2)

**Table No.1: Laboratory Results**

Parasite	Total Participants	Stool D/R Performed	Positive Results	%age
<i>Entamoeba histolytica</i>	208	208	21	10.10%
<i>Ascaris lumbricoides</i>	208	208	7	3.36%
<i>H. nana</i>	208	208	3	1.44%
<i>Giardia lamblia</i>	208	208	7	3.36%

**Table No. 2: Frequency of Risk Factors Among Children**

Risk factors		Frequency	%age
Hand washing before eating	Yes	186	89.40
	No	22	10.60
Soap for hand washing	Yes	128	61.50
	No	80	38.50
Washing hand after using toilet	Yes	184	88.50
	No	24	11.50
Practice of fingernail trim	Yes	126	60.60
	No	82	39.40
Boiled water for drinking purpose	Yes	74	35.60
	No	134	64.40

## DISCUSSION

The overall prevalence of parasitic infections in this study was 18.27%. *Entamoeba histolytica* (10%) is the most common intestinal parasite in our study. Other parasites in our study include *Giardia lamblia* (3.36%), *H. nana* (1.44%), *Ascaris lumbricoides* (3.36%).

The observed prevalence of intestinal parasites of 22 (18.33%) was in line with the Okyay's study (13.80% & 22.40%) in western city of Turkey.<sup>10</sup> It was lower as compared with reports of other similar studies, 79.9% in North Gondar<sup>11</sup>, 91.2% in Jimma<sup>12</sup>, 63.8% in Egypt<sup>13</sup> and in Gondar (34.2%).<sup>14</sup>

According to the present study, the prevalence of the parasite *Entamoeba histolytica* was highest (10% among children). This prevalence was low in comparison to the prevalence reported by Gopi Chand et al. (30.76%)<sup>15</sup> and Adepeju et al (67.60%)<sup>16</sup> and is most likely due to good hygiene practices among children of this slum area of the Karachi.

The frequency of the parasitic infection caused by *Ascaris lumbricoides* was 3.36%. This incidence was

consistent with the 3.4% and 3.9 % prevalence reported in India<sup>17</sup> and Rome respectively <sup>18</sup>. However, the prevalence was significantly low than in studies conducted by Gondar et al <sup>11</sup> (48%) and in another study in Northern Ethiopia, it was found to be 83.4%.<sup>19</sup> The prevalence of *Giardia lamblia* was found to be 3.36%, which is low when compared to a study conducted in Pakistan's district Mianwali<sup>20</sup> in Punjab province, where 37.7% of stool samples tested positive for *Giardia lamblia*. This disparity could be explained by the fact that in this study sample 89.40% children washed their hands before eating and 88.50% washed their hands after using toilet.

*H. nana* parasitic infection was detected in 1.44% stool samples, which is relatively low when compared to other research. A study conducted in Pakistan found 31.0% prevalence which might be attributable to the current study's participants' good hygienic status when compared to prior studies.<sup>20</sup>

In underdeveloped nations, exceptionally high prevalence have been observed; for example, in a study from rural southern India, the overall period prevalence of intestinal parasites was 97.4%/month.<sup>21</sup> Another study in Sierra Leona reported 73.5% prevalence rate. <sup>22</sup> The higher rates in these communities could be linked to lack of hygiene.

## CONCLUSION

Our targeted community has a lower prevalence of parasite infection. This lower prevalence of parasite infestation reflects improved living condition and cleanliness. Over the last few years, the combined efforts of Pakistan's health care workers' authorities in the fight against parasites have resulted in a significant drop in the prevalence of parasitic infestation.

The young children who were found to be positive had a propensity of going outside, playing on the dirt, and eating without washing their hands, which contributes to their high prevalence. Poor sanitation, open field defecation, unclean stagnant water, and a low economic level are the key risk factors for high prevalence.

### Author's Contribution:

Concept & Design of Study:	Naveed Mansoori
Drafting:	Syed Ishtiaq Ahmed Fatmi
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Revisiting Critically:	Naveed Mansoori, Syed Ishtiaq Ahmed Fatmi
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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