

Identification of Intestinal Parasite in Children Having Diarrhea of District Mardan

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Abstract:

Diarrhea is a major cause of illness and mortality in children under 5 years of age in developing countries, including Pakistan. Approximately 3.5 billion individuals are infected with intestinal parasites and nearly 450 million suffer from clinical disease. A total of 150 samples were collected, out of 150 samples 40 were positive. The samples were collected in a clean, screw-top container labeled with the patient's name, gender. These 40 samples were shown a positive result for diarrheal tests. The data was conducted from different hospitals named al-Shifa hospital shergarh, out of 40 samples from that hospital 5 (12.5%) samples were positive. 50 samples were collected from Mardan Medical Complex (MMC) in which 12 (30%) cases were positive. out of 150 samples 20 samples were collected from Tehsil Headquarter Hospital Takht Bhai (THQ) 9 (22.5%) samples were observed positive. Out of 10 samples that were taken from Hathan Medical Center (HMC) 3 (7.5%) cases were positive. From Type. D Hospital lundkhwar out of 30 samples 11 (27.5%) were positive. Out of 40 patients, 25 were the most common male and 15 were female observed. Having percentage of male (62.5%) and female have (37.5%). we find out the ova of Ascaris Lumbricoids, Hook Worm, s T-Sagnita, and Giardia. we have examined 150 stool samples, out of 150 stool samples 64 (42.66%) Ascaris lumbricoides, 42 (28%) Hookworm, 21 (14%) T-Sagnita, 19 (12.6%) Giardia. Improvements in sanitation, limiting open-air defecation, provisions of sanitary latrines for all, and hygiene and health education were the required interventions that were instrumental in preventing these infections. Due to limited treatment options are available and poor health care facilities in study areas, the situation can irritate if remain hidden.

Keywords: Intestinal parasite, Diarrhea, Infection, Hookworm, THQ, Mardan

Introduction:

Parasitic infection is very common in underdeveloped areas around the world. Many intestinal parasites and other enteropathogenic infections can be transmitted through food handling(1). Diarrhea, weight loss, abdominal pain, nausea, vomiting, lack of appetite, abdominal distention, and Iron deficiency anemia are all common side effects of parasites (2). In the underdeveloped world, parasitic infections are a major public health concern and a primary cause of sickness and illness in children (3). Intestinal parasite infections (IPIs) are endemic all over the world and have been described in detail constituting the greatest single worldwide cause of illness and disease(4). Intestinal parasitic infections have a worldwide distribution with high prevalence found in people with low socio-economic status and poor living conditions as well as people in overcrowded areas with poor environmental sanitation(5). Intestinal parasite infestations are more frequent among school-age children, and they tend to occur in the high intensity of this age group(6). Globally, intestinal parasitic infections (IPIs) are one of the main causes of human morbidity and mortality especially in developing countries in which public health standards are not as high as in developed countries (7). Intestinal parasitic infections have always been an important public health problem in the tropics, particularly in developing countries like India, where the humid climate. The prevalence of intestinal parasites is more in displaced camps due to poor sanitation, the primitive standard of living, and personal habits of cleanliness(8). These infections can be observed globally, especially in tropical and subtropical regions that are deprived of healthy water and sanitation facilities. According to the World Health Organization (WHO) data, many people in the world are infected with a broad spectrum of parasitic helminth and protozoa (9). *Cryptosporidium* is one of the intestinal protozoal organisms fitting to the subclass of *coccidian*(10). *Cryptosporidium* species are tiny microscopic parasites that cause cryptosporidiosis. It is classified as an emerging pathogen by the Center for Disease Control and Prevention (CDC) (11). Diarrhea is a leading cause of mortality and morbidity in children under five accounting for 526,000 deaths annually or 9% of all deaths in children in this age group worldwide in 2015. (12) The high prevalence in children is attributed to many factors, particularly environmental and personal hygiene(13). Diarrhea is one of the primary causes of juvenile mortality and morbidity, especially in underdeveloped countries, where it kills over half a million children each year. (WHO 2013) Three different types of IPs were identified in 14 districts of Madagascar in 2008–2009 from children under five years of age suffering or not of diarrheal disease. The overall prevalence was 36.5% and *G. intestinal* was the dominant IP (12.6%) followed by *Trichomonas intestinal* (6.2%) and *E. histological* (2.0%) (14). Enteric cryptosporidiosis is prevalent worldwide and causes a variety of problems ranging from acute severe diarrhea to self-limiting diarrhea, mainly in infants and young children, to nosocomial infection leading to fatal cases in immune-compromised persons. (15) *Giardia duodenalis*, a common intestinal protozoan parasite causes infections that range from asymptomatic cyst passage and acute diarrhea to a syndrome of chronic diarrhea, weight loss, and malabsorption(16). The aim of the current to identify the major causes of diarrhea and to evaluate attitude and knowledge regarding the management of diarrhea of mothers of children less than five years

of age living in an urban area in Mardan, Pakistan.

Methodology:

Study Design

A cohort study or prospective observational study was conducted for the identification of intestinal parasitic children having diarrhea. Samples were collected from the stool of infected children.

Study area

Samples were taken from different hospitals of Mardan including (Mardan Medical complex, Gangai hospital Takht Bhai, al Shifa medical center shergarh, hathian medical center, and Type-DHospital lundkhwar Mardan) and were brought to the lab of the Department of zoology G.D.C Lundkhwar. In the zoology lab, identification of intestinal parasites from the collected samples was carried out by the following identification procedures, like Stool RE, Microscopy.



Figure. Map of District Mardan

Samples Collection

After receiving early information on their diarrheal children's signs and symptoms, 150 patients were maintained under surveillance in the current study. After that, the samples were collected once from each patient. A total of 150 isolates were brought to a lab of zoology at G.D.C Lundkhwar for further investigation. These clinical isolates were collected from May

2021 to September 2021.

Sample processing

Stool RE samples were collected from infected children having symptoms of diarrhea. The samples were collected in a clean, screw-top container labeled with patients' names, gender, and data. The sampling processing was performed with the following steps:

Step 1

The collected samples were kept in a matchbox and sterile bottle for further processing in the laboratory.

Step 2

Preparation of slides from the collected samples. The slides were washed with distilled water and dried.

Step 3

We took a stool RE in nanometer by matches and put it on slides 1 or 2 drops of normal saline water were added for easy observation. The media were in the square formed.

Step 4

The prepared slides were observed under the microscope, having a 20X magnification power. we find out the ova of *T-Sagnita*, *Ascaris Lumbriciods*, *Hook Worm,s* and *Giardia*.

Results:

The current research was conducted to identify the intestinal parasites from February to September 2021 from different hospitals of district Mardan. A total of 150 samples were collected, out of 150 samples 40 were positive. The samples were collected in a clean, screw-top container labeled with the patient's name, gender. These 40 samples were shown a positive result for diarrheal tests. The data was conducted from different hospitals named al-Shifa hospital shergarh, out of 40 samples from that hospital 5 (12.5%) samples were positive. 50 samples were collected from Mardan Medical Complex (MMC) in which 12 (30%) cases were positive. out of 150 samples 20 samples were collected from Tehsil Headquarter Hospital Takht Bhai (THQ) 9 (22.5%) samples were observed positive. Out of 10 samplesthat were taken from Hathian Medical Center (HMC) 3 (7.5%) cases were positive. From Type. D Hospital lundkhwar out of 30 samples 11 (27.5%) were positive. Out of 40 patients, 25 were the most common male and 15 were female observed. Having percentage of male (62.5%) and female have (37.5%). we find out the ova of *Ascaris Lumbriciods*, *Hook Worm,s* *T-Sagnita*, and *Giardia*. we have examined 150 stool samples, out of 150 stool samples 64 (42.66%) *Ascaris lumbricoides*, 42 (28%) *Hookworm*, 21 (14%) *T-Sagnita*, 19 (12.6%) *Giardia*.

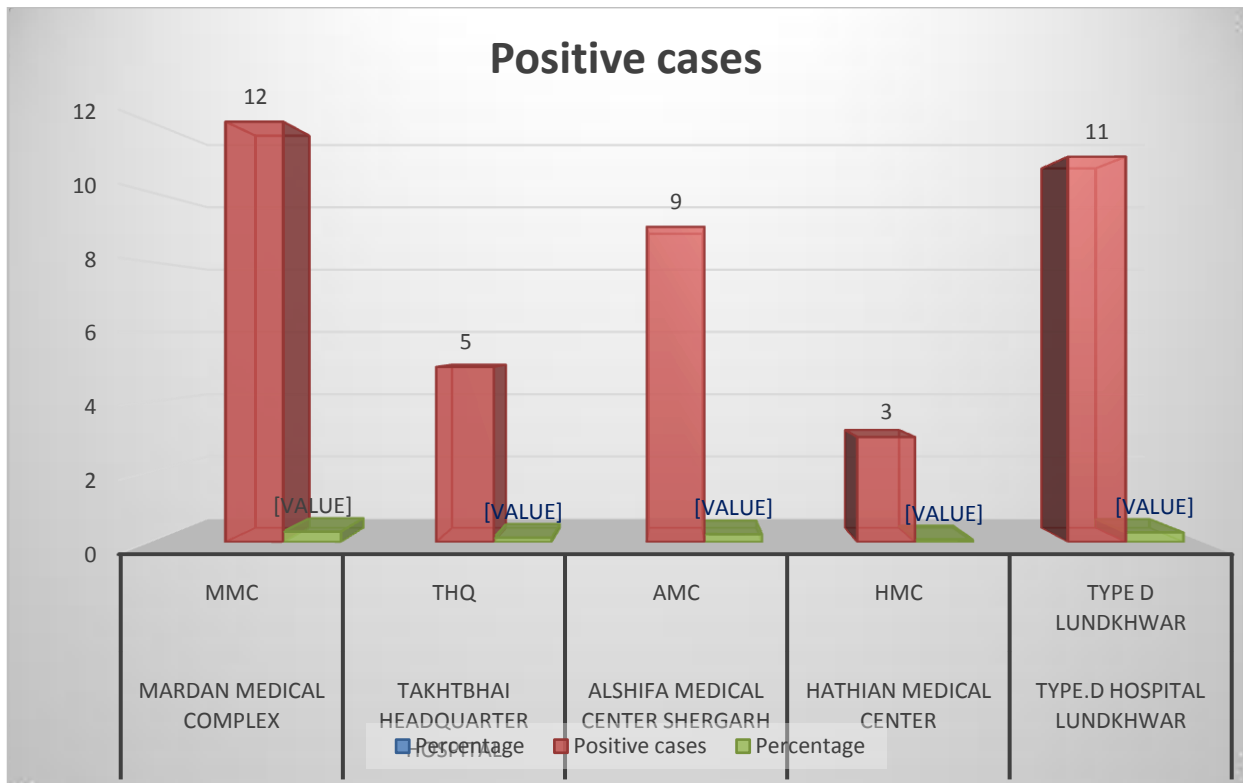


Fig 4.1 Positive cases in different hospitals

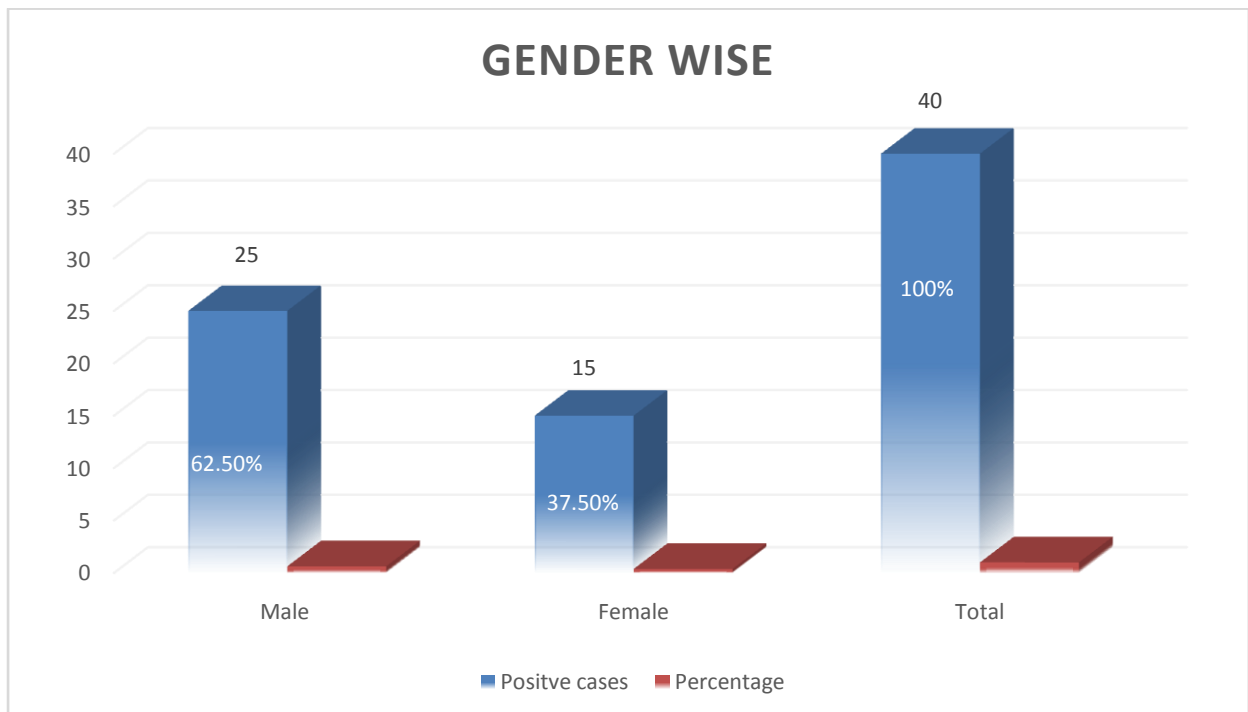


Fig 4.2 Gender wise distribution

Table 4.1 Gender wise distribution of male and female

Gender	Positive cases	Percentage
Male	25	62.5%
Female	15	37.5%
Total	40	100%

Discussion:

Intestinal parasitic infections (IPIs) are globally endemic and have been described as constituting the greatest single worldwide cause of illness and disease. Intestinal parasites are a major source of disease, particularly in tropical and subtropical countries (17). Intestinal parasitic infections caused by intestinal helminths and protozoa are among the most common human infections endemic throughout the world especially in tropical and subtropical countries including India. About 3.5 billion persons are infected with intestinal parasites and nearly 450 million suffer from clinical morbidity (18). Intestinal helminths or protozoa were detected in 59 (46.5%) of the 127 stool samples tested *Trichuris trichiura* was found in three (2.4%) cases, whereas *Ascaris lumbricoides* was found in one (0.8 percent). In 14 (11%) instances each, *Giardia intestinal* and *Entamoeba histological* were found, as were *Balantidium coli* in 3 (2.4%) cases and *Cryptosporidium* spp in 24 (18.9%) patients (Table 1). There was no evidence of mixed infection. The age range of 1 to 5 years old had the largest number of cases. Males and females were both infected with the parasites. In the feces of children under the age of one year, no protozoa or helminth eggs were found (19). A total of 267 food handlers were surveyed, and data on socio-demographics and possible risk factors for intestinal parasite infection were collected using a pre-tested structured survey. Around 10 grams of stool RE specimens were examined using wet mount and formal ether concentration procedures. Intestinal parasites were identified in 83.1% (n=222/267) of the participants. In 28.4% of the participants (n=76/267), multiple infections were discovered. In order of frequency and percentage, the following infections were listed: *Ascaris lumbricoides* were found in 55.8% of cases (n=149/267). *Trichuris trichuira* 14.9 percent (n=40/267), *Entamoeba histological* /dispar 14.2 percent (38/267), *Enterobius vermicularis* 9.73 percent (n=26/267), *Hymenolepis nana* 9.36 percent (n=25/267), *Taenia saginata* 8.98 percent (n=24/267), Hookworm 5.61% (n=15/267) and *Giardia lamblia* 5.61 percent (n=15/267). Food handlers containing various harmful organisms can expose customers to substantial health risks, according to the research. Screening and treatment of food handlers are effective methods of preventing food-borne parasite infections (20). In the current study at least 150 stool samples were collected from infected patients in which intestinal helminths were found.

out of 150 samples, 40 were positive, The samples were collected in a clean, screw-top container labeled with patients' names, gender. These 40 samples were shown a positive result for diarrheal tests. The data was conducted from different hospitals named al-Shifa hospital shergarh, out of 40 samples from that hospital 5 (12.5%) samples were positive. 50 samples were collected from Mardan Medical Complex (MMC) in which 12 (30%) cases were positive. out of 150 samples 20 samples were collected from Tehsil Headquarter Hospital Takht Bhai (THQ) 9 (22.5%) samples were observed positive. Out of 10 samples that were taken from Hathian Medical Center (HMC) 3 (7.5%) cases were positive. From Type. D Hospital lundkhwar out of 30 samples 11 (27.5%) were positive. We have examined 150 stool samples, out of 150 stool samples 64 (42.66%) *Ascaris lumbricoides*, 42 (28%) *Hookworm*, 21 (14%) *T-Sagnita*, 19 (12.6%) *Giardia*. Out of 40 patients, 25 were the most common male and 15 were female observed. Having percentage of male (62.5%) and female have (37.5%). we find out the ova of , *Ascaris Lumbricoids*, *Hook Worm,s T-Sagnita, and Giardia*. In this study 25 were male and 15 were female patients. We observed that the occurrence of intestinal parasites is more common in males than females. We found the most common intestinal parasites identified in the present study were *Hookworm*, *Ascaris lumbricoides*, *T- Sangita*, and *giardia* which is noteworthy as no study from Pakistan has reported such high rates of this helminth. In the region of Mardan, this helminth is now recognized as a major cause of diarrhea. The prevalence of *Ascaris lumbricoides* was low. It is not worthy that other nematodes such as *S. stercolaris* and *T. tichiura* were not found from the region. (21,22)

Conclusion:

The present study concluded that *Ascaris lumbricoides*, hookworms, and T- Sangita infection were predominant in young children (aged 1-5 years) in different areas of District Mardan. In this area, teenagers suffer from a high prevalence of diarrhea. These parasites were more common in males. Mostly these parasites caused infection in the summer season because of the decrease in humidity and increase temperature, so the larvae of these intestinal parasites were more susceptible to cause intestinal infection. Poor sanitation and inadequate environmental conditions constituted the main determining factors that predisposed this population to intestinal parasites. Improvements in sanitation, limiting open-air defecation, provisions of sanitary latrines for all, and hygiene and health education were the required interventions that were instrumental in preventing these infections. Due to limited treatment options are available and poor health care facilities in study areas, a situation can irritate if remain hidden.

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