

# A Prevalence Study of Intestinal Parasites Infestation among Patients Attending HIMS Hospital, Located in South East Uttar Pradesh, India

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## ABSTRACT

**Introduction:** Parasitic infections are a serious public health problem in most of the regions of the world especially in developing countries, including India. This study determines the prevalence of Intestinal parasites in HIMS hospital at Varanasi.

**Materials & Methods:** In this study, total 662 stool samples received in Department of Microbiology were processed, examined and analyzed for ova /cyst/ Trophozoites of parasites within a period of 6 months i.e. from January 2017 to June 2017.

**Results:** Out of the total 662 samples parasitic infections Prevalence was 26.58%. Helminthes were 78.40% (Ascaris lumbricoides being common) and Protozoal cysts or trophozoites were 21.59% (Entamoeba histolytica being common) in positive samples. Also parasitic infection predominance was seen in female and 1-10 years age groups.

**Conclusion:** The analyzed results help in formulating and implementing prevention strategies in this particular region.

**Keywords:** Public Health Problem, Intestinal Parasites, Helminthes, Protozoa, Stool Specimen.

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## INTRODUCTION

Parasitic infections cause a tremendous burden of disease in both the tropics and subtropics as well as in more temperate climates and mostly occur where there is poverty and poor sanitation. Also parasitic infections inflicts considerable morbidity and mortality, though entirely preventable.<sup>1</sup>

High prevalence of parasitic infections may be due to one of the risk factors which may be low levels of environmental sanitation, lack of safe water supply, poor hygiene, low socio economic status, poverty, improper garbage disposal and impoverished health services.

Helminths such as Ascaris lumbricoides, hookworm, Trichuris trichiuria, Enterobius vermicularis and Protozoa Entamoeba histolytica and Giardia lamblia are some of the common intestinal parasites responsible for considerable morbidity in young and adult population.<sup>2</sup>

The Acquisition of intestinal parasitic infection may be by ingestion, inhalation or penetration of skin by infective forms. There is no direct person-to-person transmission. Re-infection occurs only as a result of contact with infective stages in the environment and their high incidence is closely correlated to poverty and poor environmental hygiene.<sup>3</sup>

Parasitic infections impair the nutritional status of the people. Morbidity is related to the number of worms harbored. People with light infections usually have no symptoms. Heavier infections can

cause a range of symptoms including intestinal manifestations (diarrhoea and abdominal pain), general malaise and weakness, impaired cognitive and physical development.<sup>4</sup>

The commonest parasitic infections reported globally are Ascaris (20%), Hookworm (18%), Trichuris trichiura (10%), and Entamoeba histolytica (10%).<sup>5</sup> In India overall prevalence rates range from 12.5% to 66%, with varying prevalence rates for individual parasites.<sup>6-9</sup> The purpose of this study was to find out the prevalence and to procure an accurate understanding of intestinal parasitic infection burden in particular geographical landscape (South East, Uttar Pradesh). Our study is also important as they provide basic prevalence data helping the clinicians in the diagnosis and management of the patients leading to control of parasitic infection in future.

## MATERIALS AND METHODS

### Study Area

The study was carried out at Department of Microbiology, Heritage Institute of Medical Sciences Varanasi, South East Zone of Uttar Pradesh.

### Study Population

A total of 662 stool samples of patients (outdoor and indoor) between the age group 0 to 70 years were collected between the period of January 2017- June 2017.

**Study Period**

Study period was around 6 months from January 2017 to June 2017.

**Collection and Processing of Specimens**

The patients were provided with dry, wide mouthed clean plastic container for collection of samples. Around 5 grams of solid or 10 ml of liquid stool was collected and were examined within 1-2 hours of collection. Macroscopic examination was done to look for structures like proglottids, scolices, adult tapeworm, round worm or hookworm. The samples were examined microscopically for ova and cysts of parasites using Saline and Iodine mounts on grease-free slides preparation examined under 100x and 400x magnifications.

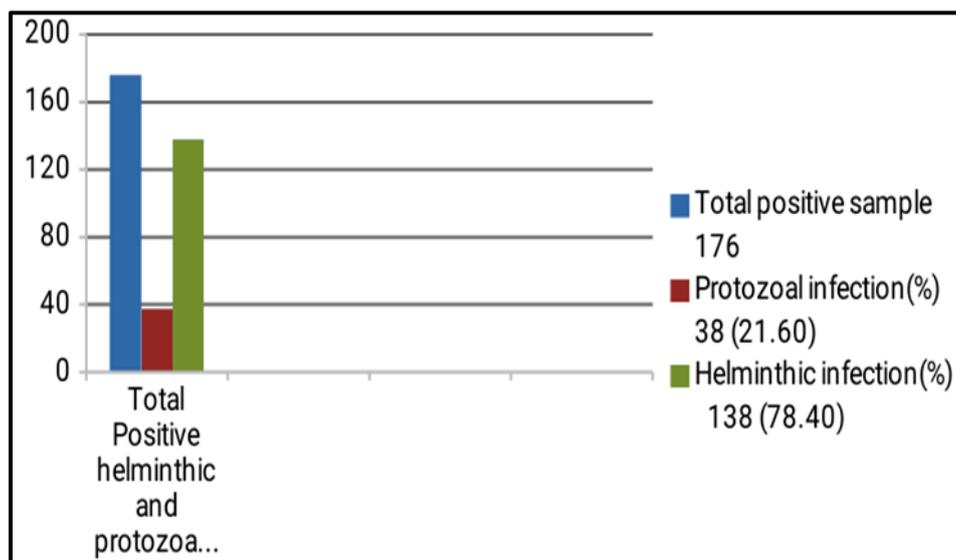
Protozoa and helminthes were identified according to morphological details. Nonpathogenic cysts were not included as positives. Repeat sample from same patients were not included in study.<sup>10</sup>

**Table 1: Prevalence of intestinal parasite**

Result	Number	Percentage
Infected	176	26.58
Not infected	486	73.42
Total	662	100

**Table 2: Distribution of parasites among infected samples.**

	Number	(%)
Helminths	Ascaris	75 (42.61%)
	Hookworm	59 (33.52%)
	Taenia sp.	4 (2.27%)
Protozoa	Entamoeba histolytica	27 (15.34%)
	Giardia lamblia	11 (6.25%)
Total	176	(26.58%)



**Fig 1: Total helminthic and protozoal infection**

**RESULTS**

Present study was conducted to find out the prevalence and to procure an accurate understanding of intestinal parasitic infection burden in particular geographical landscape (South East, Uttar Pradesh). A total of 662 samples was taken and examined out of which 176 were positive for protozoal or helminthic infection with a prevalence rate of 26.58% (Table 1).

Cyst and trophozoites of protozoa were found in 38 (21.59%) while eggs of helminthes were found in 138 (78.40%) of positive samples (Fig 1).

Among all the parasites which was identified *Ascaris lumbricoides* was commonest 75 (42.61 %) followed by Hookworm 59 (33.52%), *Taenia* species 4 (2.27%) *Entamoeba histolytica* 27 (15.43%) and *Giardia lamblia* 11 (6.25%). (Table 2)

In protozoal infection *Entamoeba histolytica* was commonest accounting for 27 (71.05%) followed by *Giardia lamblia* 11 (28.94%). It was noticed that females were the commonest group 33.33% as compare to males which was 22.19%. (Table 3)

Parasitic infection was more common in age group of 1-10 years (23.29%) followed by age group of >70 (13.06%), 20-30 (11.93%), 30-20 (11.93%), and lowest infection was seen in age group of 40-50years (7.94%). (Table 4)

**Table 3: Gender wise distribution of parasitic infection.**

Sex	Total No. of sample	No. of positive sample (%)
Male	401	89 (22.19%)
Female	261	87 (33.33%)
	662	176 (26.58%)

**Table 4: Age based prevalence of intestinal parasite.**

Age group (Year)	Total Stool sample examined (662)	Positive Stool sample (176) (%)
<1	7	0 (00)
1-10	168	41 (23.29)
10-20	120	20 (11.36)
20-30	88	21 (11.93)
30-40	75	21 (11.93)
40-50	56	14 (7.94)
50-60	57	20 (11.36)
60-70	37	16 (9.09)
>70	54	23 (13.06)

## DISCUSSION

Human parasitic infection is a global problem of enormous proportion with wide variation in intestinal parasite from region to region; different geographic areas, communities and ethnic groups even seasonal variation are also known.<sup>11</sup>

Knowledge of the distribution and extent of Intestinal parasitic infection in a given population is a prerequisite for planning and evaluating intervention program. The primary aim of this study was to know the burden of intestinal parasitic infection among the patients presenting with the symptoms suggestive of such infection in a rural tertiary care hospital. In the developing world intestinal parasitic infection is still an important cause of morbidity and mortality.<sup>12</sup> The present study results showed the occurrence of several intestinal parasites of public health importance in people residing in this area.

Out of the total 662 samples examined during the study, 176 (26.58%) samples were found to be positive for parasites. The prevalence percentage was comparable with those of Parameshwara rappa et al., (27.6%)<sup>13</sup>, Marothi et al., (21.4%)<sup>14</sup>, lower when compared to findings of Prakash et al., (38.1%)<sup>15</sup>, Rao et al., (59.5%)<sup>16</sup> and while it was more than the findings reported by Beena Jad et al. (7.8%)<sup>17</sup>, Rajvir Singh et al. (6.7%)<sup>18</sup> and Davane et al. (6.63%)<sup>19</sup>, Sethi et al., (7.3-15.5%)<sup>20</sup>, Khurana et al., (14.6%)<sup>21</sup>, and Taruna Singh et al. (13.9%).<sup>22</sup> This may be probably due to difference in time, place and methods of examination used.

In the present study, it was observed that prevalence of intestinal parasitic infection was seen more among females (33.33 %) than the males (20.19 %). Similar pattern was obtained in a study from Uttarakhand of Rajvir Singh et al.<sup>18</sup>, Swapna K et al.<sup>23</sup> The reason behind it may be, in addition to household work women's are more exposed to contaminated soil and water due to handling of livestock and field works than Men.

The prevalence of helminthic parasites was higher than that of protozoal infection and *A. lumbricoides* was the commonest; findings being in confirmation with the observations made by several other workers (Hedge and Patel<sup>24</sup>, 1986; Chandrasekhar and Nagesha<sup>25</sup>, 2003; Nagaraj et al.<sup>26</sup>, 2004). The prevalence of hookworm in this area seems to be much lower than that reported from Southern India where it is 61.5% (Kang, 1998).<sup>27</sup> Prevalence of other helminths such as, *Taenia* spp. is low (2.27%).

Among the protozoal infection - *E. histolytica* was the commonest intestinal parasite isolated which is comparable to the study from Bombay (Patel, 1986).<sup>28</sup> High prevalence has also been noted from Malaysia (21%) (Nor et al., 2003).<sup>29</sup> Other studies (Chandrashekar et al.<sup>30</sup>, 2005; Nagaraj et al.<sup>26</sup>, 2004), however, have reported *Giardia* to be the commonest parasite, which appeared to occur in low percentage of patients (3.9%) here.

High prevalence of helminthic infection in our study population may be attributed to their prevailing low living standards, lack of knowledge about personal hygiene, poor sanitation, open defecation and lack of proper sewage disposal leading to soil contamination and high endemicity of intestinal helminthiasis.

If the age factor is considered, highest percentage of cases in our study were in 1- 10 years (23.29%) & > 70 years (13.06%) next to it. Swapna K et al.<sup>23</sup> al from Uttarakhand have also found similar pattern. This can be attributed to lesser immunity young children and old age. Also other risk factors may be overcrowding, more outdoor activity and exposure to contaminated surroundings.

## CONCLUSION

To conclude, parasitic diseases are still common and responsible for mild but chronic morbidity. To overcome this prevailing health problem of the country, it requires multidisciplinary effort. This study emphasizes the need for health programmes and health education, provision for good sanitation, personal hygiene awareness and safe drinking water facility in addition to specific approach to prevent and control intestinal parasitic infections.

## REFERENCES

1. Brig Hemant Kumar (Retd), Capt Kalpana Jain (Retd), Maj Rahul Jain. A study of prevalence of intestinal worm infestation and efficacy of anthelmintic drugs. Medical journal armed forces India 2014; 70; 144-148.
2. Koneman EW, Allen SD, Janda WM, Schreckenberger PC, Winn WC, editors. (1997) Parasitology, Chapter 20. In: Color Atlas and Textbook of Diagnostic Microbiology. 5th edn. New York: JB Lipincott., pp. 1071-1076.
3. Tariq MM, Zahid FB, Frequency and pattern of intestinal parasitic infestation in upper Neelum Valley, Pakistan Armed Forces Medical Journal, 2006;4:1-5.
4. Jyoti S, Pratibha M, Lathwal S. Burden of intestinal parasitic infection in patients attending tertiary care hospital in rural Haryana: A three year retrospective study. Perspectives in Medical Research 2017;5(2):3-7.
5. World Health Organization. WHO Technical Reports Series. 1987: 749:1-86.
6. Amin, A.B., Amin, B.M., Bhagat, A.P., and Patel, J.C. Incidence of Helminthiasis and protozoal infections in Bombay. Journal of the Indian Medical Association 1979; 72: 225-227.
7. Ramesh, GN Malla, Raju N, Sehgal GS, Ganguly R, Mahajan , RC Dilawari, JB. Indian Journal of Medical Research. 1991;93:47 – 50.
8. Singh P, Gupta ML, Thakur TS, Vaidya NK. Indian Journal of Medical Science. 1991; 45; 201 – 204.
9. Singh S, Raju GV, Samantray JC Tropical Gastroenterology. 1993; 14 (3): 104 – 108.
10. K.D Chatterjee. Parasitology, protozoology and Helminthology (CBS Publishers and Distributors Pvt Ltd, New Delhi, India, 2009) 260-265.
11. Tedla S. Intestinal helminthiasis in man in Ethiopia. Helminthologia 1986;23:43- 8.
12. Tanowitz HB, Weiss LM, Wittner M. Tapeworms. Curr Infect Dis Rep 2001;3:77- 84.
13. Parameshwarappa KD, Chandrakanth C, Sunil B. The prevalence of intestinal parasitic infestations and the evaluation of different concentration techniques of stool examination. J Clin Diagn Res 2012; 6:1188-91.
14. Marothi Y, Singh B. Prevalence of intestinal parasites at Ujjain, Madhya Pradesh, India: Five year study. Afr J Microbiol Res 2011;5:2711-4.
15. Prakash O, Tandon BN. Intestinal parasites with special reference to *Entamoeba histolytica* complex as revealed by routine concentration and cultural examination of stool samples from patients with gastrointestinal symptoms. Indian J Med Res 1966; 54:10-4.
16. Rao VG, Aggrawal MC, Yadav R, Das SK, Sahare LK, Bondley MK, et al. Intestinal parasitic infections, anaemia and undernutrition among tribal adolescents of Madhya Pradesh. Indian J Community Med 2003; 27:26-9.

17. Beena Jad et. al (7.8%), Jad B, Raina S, Grover PS. Prevalence of intestinal parasites among patients of a tertiary hospital in Ambala city, Haryana, India. *Int J Res Med Sci* 2015; 3:3753-8.
18. Rajvir Singh, Pooja Singla, Madhu Sharma, Aparna, and Uma Chaudhary. Prevalence of Intestinal Parasitic Infections in a Tertiary Care Hospital in Northern India: Five year retrospective study. *Int. J. Curr. Microbiol. App. Sci* (2013) 2(10): 112- 117.
19. Davane MS, Suryawanshi NM, Deshpande KD. A prevalence study of intestinal parasitic infections in a rural hospital. *Int J Recent Trends Sci Technol* 2012;2:1-3.
20. Sethi S, Sehgal R, Malla N, Dudev ML, Mahajan RC. Changing trends of intestinal parasitic infections in Chandigarh (Northern India): Hospital based study. *Indian J Med Microbiol* 2000;18:1069.
21. Khurana, S., Aggarwal, A., & Malla, N. Comparative analysis of intestinal parasitic infections in slum, rural and urban populations in and around union Territory, Chandigarh. *J Commun Dis* 2005. 37, 239-243.
22. Singh T, Bhatambare GS, Deshmukh AB, Bajpai T, Srivastava I, Patel KB. Study of the prevalence of intestinal parasitic infections in a tertiary care hospital located in central India. *Int J Health Syst Disaster Manage* 2014; 2:113-6.
23. Kotian S, Sharma M, Juyal D, Sharma N. Intestinal parasitic infection-intensity, prevalence and associated risk factors, a study in the general population from the Uttarakhand hills. *Int J Med Public Health* 2014;4:422-5.
24. Hedge GR, Patel JC (1986). Prevalence of intestinal parasitic infestation in rural area. *J. Postgrad. Med.*, 32: 225-228.
25. Chandrasedhar MR, Nagesha CN (2003). Intestinal helminthic infestation in children. *Ind. J. Pathol. Microbiol.*, 46: 492-494.
26. Nagaraj S, Raghavan R, Macaden R, Kurpad AV (2004). Intestinal parasitic infection and total serum IgG in asymptomatic adult males in an urban slum and efficacy of antiparasitic therapy. *Ind. J. Med. Microbiol.*, 22: 54-56.
27. Kang G, Mathew MS, Rajan DP, Daniel JD, Mathan MM, Mathan VI, Muliylil JP (1998). Prevalence of intestinal parasites in rural Southern Indians. *Trop. Med. Int. Health.*, 3:70-75
28. Patel JC (1986). Ten year study of stool samples with particular reference to intestinal parasites. *J. Postgrad. Med.*, 32: 219-224.
29. Nor A, Ashley S, Albert J (2003). Parasitic infections in human communities living on the fringes of the Crocker range Park Sabah, Malaysia. *ASEAN Review of Biodiversity and Environmental Conservation*. (Assessed on 20 June 2007). Available at: <http://www.arbec.com.my/pdf/art11janmar03.pdf>.
30. Chandrashekar TS, Joshi HS, Gurung M, Subba SH, Rana MS and Shivananda PG (2005). Prevalence and distribution of intestinal parasitic infestations among school children in Kashi District, Western Nepal. *J. Med. Biomed. Res.*, 4: 78-82.

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