

Studies on the Infestation Rate of Human Intestinal Parasites of Kirtipur

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Introduction

At present the prevalence rate of human intestinal parasites is variable in the global population. With the continuing advances in urbanisation and industrialisation along with control of various communicable diseases, intestinal parasitosis has become a common clinical entity even in the developing countries. Nepal, like most of the other developing countries presents a very depressing health statistics which results due to a wide range of communicable diseases. Mostly the protozoan and helminthic worms cause the diarrhoeal and dysenteric attacks contributing significantly to the high level of mortality and morbidity in Nepal. These are the major causes of sickness especially among children and infants.

The rate of human intestinal parasites infestation is so high in Kirtipur area that it has prompted the authors to report this rate. The aim of this study is an attempt to review the various infestation rate and to suggest measures to minimise the recurrence rate.

Geography of Kirtipur:

Kirtipur is big and densely populated village in the Kathmandu valley. It is situated

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at about two miles south-west of the capital town Kathmandu. The village is beautifully located at an elevated land overlooking the towns of Kathmandu and Lalitpur.

It is 4700 ft above the sea level. It is a very old village. Its birth dates back to year 1180 B.S. when it was founded by King Shiva Dev of Licchvi period.

The total population of Kirtipur is about 15000. The people mostly belong to Newar community- 40 percent to 50 percent of the people depend upon agriculture.

Material and Methods:

The present study was carried out in the Central Dept. of Zoology T.U., Kirtipur and T.U., Health Centre, Kirtipur, by the authors.

The stool samples of 285 human population of Kirtipur of age group from infants to 75 years of age, were collected during the period of June 1987 to November 1987 for routine examination to find out the prevalence of intestinal protozoan and helminthic parasites.

To ensure good conditions of samples collected, the following precautions were taken:

- (a) The containers were properly washed and dried but no antiseptic was used.
- (d) The containers once used were discarded.
- (c) The collection of samples were started at the earliest possible time and brought to the laboratory for examination.

Technique of stool examination:

The stool samples collected were first subjected to microscopic observation to find out blood stain, mucus, adult worms, tapeworms proglottids or larvae. Thereafter, four slides of each sample were prepared by the following methods for subsequent microscopic routine examinations.

The methods used were as follows:

A. COVERSLIP PREPARATION

- (a) Saline preparation: for protozoan trophozoites.
- (b) Iodine stain preparation: for protozoan cysts.

B. CONCENTRATION METHOD

For helminthic ova and embryos simple floatation technique of Mapleston was used.

C. SEDIMENTATION

For ova, cysts and larvae- Formal- ether concentration method.

Results and Observations:

Single stool samples of 285 human population including 149 males and 136 females of Kirtipur area were examined to find out the prevalence rate of intestinal protozoan and helminth parasites. The results obtained are presented in Table I and Table II.

General prevalence of total and specific intestinal Protozoan and Helminth Parasites

The perusal of table I and II shows that out of 285 stool samples, 192 samples were positive for one or more species of intestinal protozoan and helminth parasites showing 67.36 per cent prevalence rate of infestation. Of these, 37 samples (12.99 per cent) were infested with one or more species of protozoan parasite 143 samples (50.17 per cent) were infested with one or more species of helminth parasites and 12 samples (4.21 per cent) had mixed infestations with one or more species of protozoan and helminth parasites.

Therefore, the total protozoan parasites with one or more species were prevalent in 49 samples (17.19 per cent) and total helminth parasites with one or more species were prevalent in 155 samples (54.39 per cent) of the studied population (Table I). Thus the prevalence rate of infestations with total helminth parasites was much higher than that of total protozoan parasites. It was also seen that protozoan infestation was higher in female than in males.

Out of total positive samples the infestation rate of Helminth, protozoan and mixed were as follows-74.48 per cent, 19.27 per cent, and 6.25 per cent (Pie chart II).

Table I
Prevalence per cent of Protozoan, Helminth and Total Parasites
in the Studied Population

Sex	No. of stool samples examined		Stool samples infected with							
			No. of stool samples positive for (A+B+C)		Protozoan parasites only (A)		Helminth parasites only (B)		Mixed (C)	
	No.	%	No.	%	No.	%	No.	%	No.	%
M	149	52.28	94	63.08	13	8.72	74	49.66	7	4.69
F	136	47.72	98	72.05	24	17.64	69	50.73	5	3.67
T	285	100.00	192	67.36	37	12.98	143	50.17	12	4.21

Prevalence of specific Intestinal Parasites

The infestation rate of intestinal parasites as specific intestinal protozoan and helminth parasites in 192 infested stool samples were as follows and is represented in table II and line graph given below.

Protozoan Parasites:

Out of 49 samples infected with total protozoan parasites, 26 samples (9.12 per cent) were infected With *Giardia lamblia* and 27 samples (9.47 per cent) with *Entamoeba histolytica*

Helminth Parasites:

Out of 155 samples infested with total helminth parasites, the breakup of specific helminth parasites was: 114 samples (40.00 per cent) were infested with *Ascaris lumbricoides*; 72 samples (25.26 per cent) with *Trichuris trichiura*; 13 samples (4.56 per cent) with *Ancylostoma duodenales*; 7 samples (2.46 per cent) with *Hymenolepis nana* and 1 sample (0.55 per cent) with *Taenia solium*.

Table II
Prevalence percent of specific Intestinal Parasites in
Studied Population

Specific Intestinal Parasites	Male infected		Female Infected		Total	
	No.	%	No.	%	No.	%
PROTOZOA						
<i>Giardia lamblia</i>	11	7.38	15	11.03	26	9.12
<i>Entamoeba histolytica</i>	10	6.71	17	12.05	27	9.47
HELMINTH						
<i>Ascaris lumbricoides</i>	60	40.37	54	39.70	114	40.00
<i>Trichuris trichiura</i>	38	25.50	34	25.00	72	25.26
<i>Ancylostoma duodenales</i>	8	5.37	5	3.67	13	4.56
<i>Hymenolepis nana</i>	4	2.68	3	2.21	7	2.47
<i>Taenia solium</i>	1	0.67	-	-	1	0.35

Sex-wise Prevalence rate of total and Specific Intestinal Protozoan and Helminth Parasites.

With respect to sex, the infestation rate of total and specific intestinal protozoan and helminth parasites is shown in table II and Plate I. Out of the total stool samples of 285 human subjects studied, 149 (52.28 per cent) were of male and 136 (47.72 per cent) were of female.

Among 192 (67.36 per cent) stool samples infested with one or more species of intestinal protozoan and helminth parasites, 94 (63.08 per cent) were of male and 98 (72.05 per cent) were of female, showing higher prevalence rate for female.

With respect to protozoan parasites the prevalence rate was strikingly higher (17.61 per cent) in female than (8.72 per cent) in male. As regards helminth parasites the female population showed slightly higher prevalence rate (50.73 per cent) as compared to male (49.66 per cent).

Discussion

The perusal of literature on epidemiology of human intestinal parasites has revealed that in Nepal no organised and systematic research in this direction seem to have been undertaken.

The earliest report in the field of parasitology in Nepal was reported by H. Baezyska in 1914. But the work on human intestinal parasite was done after a lapse of fiftyone years by B. P. Sharma in 1965. Thereafter the aspect of parasitology expanded gradually in Nepal.

In the present study the general prevalence rate of 67.36 per cent of total intestinal parasites is in consonance with the findings of R.P. Sharma and N.R. Tuladhar (1971), V. O. Seulse (1975), S. Acharya (1979), M. Nepal and P. Palfy (1980), R. P. Khetan (1980) and Integrated Family planning and parasite Control project (1980-1985)

Conclusion

In the present study the very high prevalence rate of intestinal parasites seem to be due to extensive contamination of soil, food and water because night soil and sewerage water are generally used by vegetable planters. poor socio economic conditions and personal sub-hygienic conditions, unplanned housing scheme, imperfect drainage and sewerage system, open latrine system and uncleanness in relation to preparation and consumption of food, habit of walking bare foot etc and besides these menace of flies and other insects also seem to have contributed much towards the observed higher prevalence rate in this study.

There are numerous effective drugs used for the treatment of human intestinal parasitosis, but none of them can prevent recurrence because of high incidence of reinfection. For complete eradication, it is essential to adopt appropriate public health measures, increase the socio-economic status and impart proper health education.

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