ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Analysis of Factors Associated With Intestinal Parasitosis among Patients Visiting National Medical College and Teaching Hospital, Birgunj, Nepal

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ABSTRACT

Intestinal parasitosis is major health problem in developing country like Nepal. The study aimed to assess the analysis of different factors associated with intestinal parasitosis among the patient in a hospital of Nepal. With the help of verbal consent, self-structure questionnaire was filled from the patient visiting out-patient department of National Medical College and Teaching Hospital, Birgunj, Nepal from may2008 to july2008. The stool sample was examined by formal ether sedimentation technique. Chi-square test was used for analytical assessment. Out of 179 stool samples (Male: 113, Female: 66), 21 (11.7%) were positive, female being highly infected (16.7%) as compared to their male counter parts (8.8%) (P>0.05). *Ascaris lumbricoides* was the commonest parasite (61.9%) detected, followed by hookworm (19.0%) and *Hymenolepis nana* (4.8%). *Giardia lamblia* was the most prevalent (9.5%) protozoa, followed by *Entamoeba histolytica* (4.8%). Helminths were more common (85.7%) than the protozoa (14.3%).Analysis of different factors associated with intestinal parasitosis shows infection rate among female is more than male. High detection of helminths signifies the need of public awareness regarding latrine use, protection from fecal contamination of water, hygienic and sanitation living behavior.

Keywords: *Ascaris lumbricoides* , Intestinal parasites, hospital, Nepal

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ISSN: 0975-8585

INRODUCTION

Intestinal parasitosis, a major public health problem in the developing countries is known to cause intestinal infections in man with respect to multiple social, economic, cultural, physiological and behavioral parameters.[1] The condition is further exacerbated by warm or hot and relatively humid climate along with poverty, malnutrition, high population density, unavailability of potable water and low health status.[2] Moreover, lack of education, lack of latrines, occurrence of diarrhea, lower socio-economic status, inadequate disposal of human excreta and the level of sanitation in households are other predisposing factors [3]. About one fourth of the world population is infected by one or more species of intestinal parasites, *Ascaris lumbricoides*, hookworm and Trichuris trichiura infecting 1.4 billion, 1.3 billion and 1.0 billion people, respectively [4, 5].

The prevalence of intestinal parasitosis ranges from 27.0% to 76.4% among general population in Nepal; [1, 6-8] whereas, hospital records in Nepal has shown the infection rate of 30.0-40.0%. [6] Similarly, a hospital based study over one decade period in Kathmandu has reported the intestinal parasitosis rate of 29.1-44.2%, with a static prevalence of A. lumbricoides, the commonest parasite in Nepal. [9] Other studies among the patients visiting health care centers in Kathmandu have shown the prevalence rate of 56.0% and 30.0%. [10-11] comparatively, lower prevalence rate (18.9%) has been reported among adult outpatients in a hospital, elsewhere in the world. [12] In this paper, we report the prevalence of intestinal parasites and the associated factors among patients visiting National Medical College and Teaching Hospital (NMCTH), Birgunj, Nepal.

METHODS

Study population and sample collection: The stool samples were collected from the patients visiting Out-patient Department of NMCTH, Birgunj, Nepal in 2008. Participation in the study was purely voluntary and verbal consent for participation was obtained from each participant. A self-structured questionnaire form was filled to achieve information on socioeconomic status and hygienic behavior interviewing each participant.

Processing of the samples: The samples were examined by formal ether sedimentation technique. The identification of the cysts, trophozoites, oocysts of protozoan parasites and eggs and larvae of helminth parasites was done microscopically based on their basic morphology.

Statistical analysis: Chi-square test was used to evaluate apparent differences for significance. Association of intestinal infections with different variables was tested.

RESULTS

Out of 179 stool samples (Male: 113, Female: 66), 21 (11.7%) were positive, female being highly infected (16.7%) as compared to their male counter parts (8.8%) ($P>0.05$) (Table-1).

ISSN: 0975-8585

A. lumbricoides was the commonest parasite (61.9%) detected, followed by hookworm (19.0%) and *Hymenolepis nana* (4.8%). *Giardia lamblia* was the most prevalent (9.5%) protozoa, followed by *Entamoeba histolytica* (4.8%). Helminths were more common (85.7%) than the protozoa (14.3%).

Table 1: Distribution of parasitic infection in different genders

Gender	Total	Positive	Percentage	P-value
Male	113	10	8.8	P>0.05
Female	66	11	16.7	
Total	179	21	11.7	

Table 2: Parasitic infection in relation to the presence of gastrointestinal complaints among the study subjects

Gastrointestinal complaints	Total	Positive	Percentage	P-value
Present	136	17	12.5	P>0.05
Absent	43	4	9.3	
Total	179	21	11.7	

Table 3: Parasitic infection among subjects with different family size

Family size	Total	Positive	Percentage	P-value
5 and less	31	4	12.9	P<0.05
6 to 10	116	9	7.8	
11 and above	32	8	25.0	
Total	179	21	11.7	

The parasitic infection rate was highest among subjects of age above 45 years (20.4%, 11/54), followed by those of 31-45 years (11.3%, 6/53) and those of 16-30 years (6.3%, 4/64). No one (0/8) of 15 years and below had parasitic infection (P>0.05). No difference in prevalence was observed among illiterate (12.8%) and those with school education (10.7%) but with higher education (5.6%) (P>0.05) (Fig 1). Subjects with gastrointestinal complaints showed marginally higher positive rate (12.5%) than those without such complaints (9.3%) (P>0.05) (Table-2).

The parasitic prevalence was found highest among the subjects with family size 11 and above (25.0%), followed by those with family size 5 and less than 5 (12.9%) and those with family size 6 to 10 (7.8%). The difference was statistically significant (P<0.05) (Table-3). Similarly, the subjects availed with toilet at their houses (6.1%) were less infected as compared with those lacking toilet (13.0%) (P>0.05) (Fig. 2).

ISSN: 0975-8585

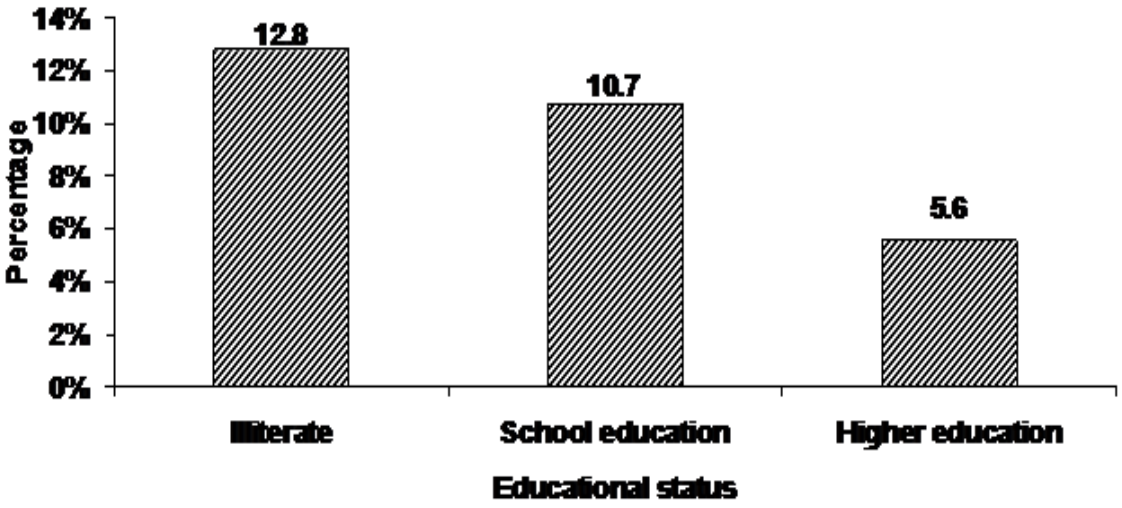

Fig 1: Parasitic prevalence among study subjects based on educational status

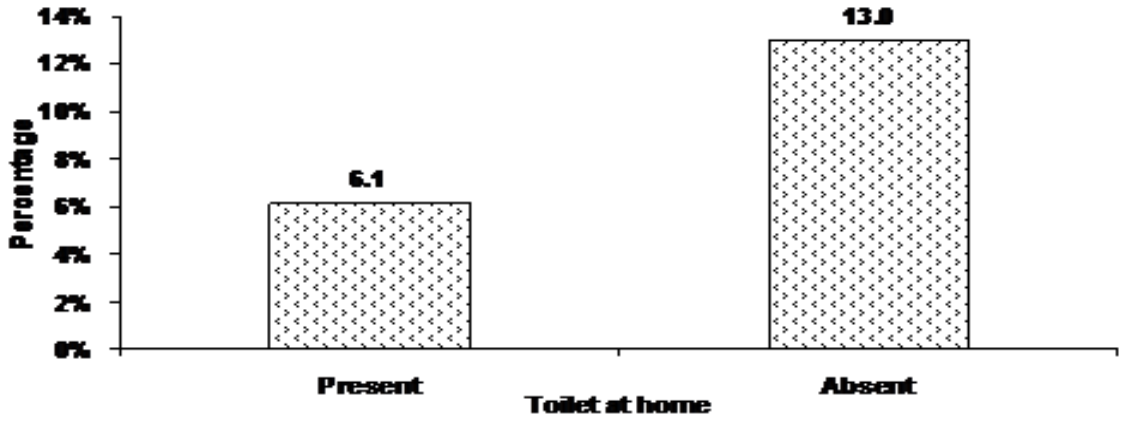

Fig 2: Parasitic prevalence among study subjects based on availability of toilet at home

DISCUSSION

Nearly one-tenth of subjects under study were found to have intestinal parasitic infection, which was much lower than that reported earlier among patients in different health care centers of Kathmandu Valley, and that among general population, elsewhere in Nepal. [1, 6-11] The remarkably lower prevalence in the present study as compared to the previous ones reflects the abating trend of parasitic prevalence in the country. This may be attributed to the awareness regarding the personal and community hygiene, environmental sanitation, improved socioeconomic status and the regular deworming programme being conducted, particularly for the children etc. Beyond the country, the parasitic prevalence rate has been reported very low

in a Thai Hospital (8.9%). [13] The higher positive rate observed among female was in agreement with the numerous studies in Nepal. [11, 14-16] The involvement of female in childcare and their low educational status is responsible for increased risk in them. Elsewhere, female reportedly have more soil contact during growing vegetables and eat raw vegetable with prepared food more often than male. Similarly, female were found to have 1.25 times more chances of being infected with A. lumbricoides than the male. [17] Though insignificant, the infection rate has been found to increase with the increase in age in the study. In contrary, adult patients have been found to have higher parasitic prevalence as compared to elderly and children in similar set ups in Nepal [11] and elsewhere, [13] where as higher rate has been reported among the child patients in Nepal. [10] The absolute absence of intestinal parasites among the children below 15 years in the present study might be attributed to the very less participants (only 8 among 179) of the age group.

The higher helminthic infection rate in the study was in agreement with that among general population in Nepal [8,9]. This might be due to the presence of more open land, open field defecation and agriculture as the major occupation of the people in the region. A. lumbricoides, reported as the commonest helminth in the study agreed with the study among general population [1,7-8] and that among hospital visiting patients in Nepal, during a period of ten years [9] as well as that among patients visiting a Kathmandu based medical care center, recently. [11] On the other hand, Uga et al (2004) reported T. trichiura as the commonest helminth among patients visiting different medical centers in Kathmandu. [10]

The increasing level of literacy was found to decrease intestinal parasitic infection, which was in agreement with Shakya et al (2006). [18] Likewise, the gastrointestinal complaints, found to be positively associated with the parasitic infection was in agreement with other reports. [18-20] However, the association was not significant statistically.

The parasitic infection rate was higher among the subjects with family size 11 and above as compared to those with smaller sized family ($P<0.05$), which may be attributed to limited distribution of nutrition and health care and inadequate hygiene and sanitation in the crowded family. Similar trend has been reported by Karrar and Rahim (1995) among Sudanese children. [21] However, the different trend was reported by Rai et al (2005). [22] Likewise, the higher infection rate found among the subjects with toilet at home as compared to those lacking the facility was in agreement with various studies in Nepal. [7, 14, 23]

Though the overall prevalence of intestinal parasitosis among the hospital visiting patients is declining, the predominant detection of parasite like A. lumbricoides indicates the high soil contamination with the helminth in the localities around the hospital. Similarly, various socioeconomic factors like illiteracy, family size, and availability of toilet at home have been more or less found to predispose intestinal parasitic infection. Thus it signifies the need of comprehensive program accompanying public awareness regarding use of latrine, literacy and population control to tackle with the problem. In addition, protection of water sources from

fecal contamination, proper sanitation and hygienic behavior among people, along with the continuity to the mass deworming program are sought in the localities around the hospital.

CONCLUSIONS

By analysis of different factors associated with intestinal parasitosis among the hospital visiting patient shows infection rate among female is more than male. High detection of A. lumbricoides and H. nana signifies the need of public awareness regarding latrine use, water source protection from fecal contamination, proper hygienic behavior along with the continuity to the mass deworming program.

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