



Epidemiological Evidence for a Differential effect of Intestinal Parasites in Khurja, Bulandshahr (U.P.)

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ABSTRACT

Health culture is one of the most important component in a community. Health component depends upon socio – economic status, housing, hygiene like as water supply, food hygiene, environmental hygiene and personal hygiene, sanitation culture and education. For the present study the samples of stool were collected and a survey was carried out during the period of 2012 to 2013 on the 279, randomly selected persons for human gastrointestinal parasitic diseases from urban and rural populations of Khurja, Bulandshahr. Epidemiological data were analyzed using Chi –Squared test. The prevalence of intestinal parasites was significantly higher ($\chi^2 = 11.17$, $df = 3$, $P = 7.82$ at 0.05 level) in low age group, ($\chi^2 = 30.28$, $df = 2$, $P = 5.59$ at 0.05 level) in low income group, ($\chi^2 = 4.73$, $df = 1$, $P = 3.84$ at 0.05 level) in rural population and ($\chi^2 = 20.73$, $df = 3$, $P = 7.82$ at 0.05 level) due to illiteracy. The aim of this study was to find out association, if any, between social factors viz; age, sex, rural or urban area, marital status, income, education and parasitic diseases. An understanding of relationship between these factors and prevalence of diseases might prove helpful in planning and execution of an effective strategy directed to eliminate the disease in highly endemic areas.

Key Words: - Epidemiology, Intestinal Parasites, Prevalence.

Introduction

Human gastrointestinal parasites are still on of the leading causes of gastric trouble among human population in developing countries. Human gastrointestinal parasites are highly specialized, possessing numerous adaptations, many of which are associated with their host and its mode of life. There are many factors that directly or indirectly cause malnutrition among children. Child malnutrition as cause of combination of inadequate nutrients, in appropriate food intake, gastrointestinal parasites (cause of Ascariasis, Ancylostomiasis, Trichuriasis, Amoebiasis, Malaria, Giardiasis, Elephantiasis etc) and other childhood diseases with improper care during illness [Mishra and Ratherford, 2000]. Intestinal parasites are worms and other intestinal parasites, which infest human beings that populate the gastro – intestinal tract. Children are more often infected with intestinal worms than adult. In humans, they are often spread by poor hygiene related to feces, contact with animals or poorly cooked food containing parasites. The major groups of parasites include protozoans and parasitic worms. Parasites can get into the intestine through the mouth and they move into the intestine where they can reproduce and cause diseases. The usual symptoms of intestinal worms are diarrhea, foul breath, dark circles under the eyes, constant desire for food and restlessness at night with bad dreams, anemia and headaches. These infections are the most prevalent in tropical and sub – tropical regions of the developing world where adequate water, sanitation facilities and poor economic conditions are lacking. [Savioli 2004, Cappello, M 2004, Sah and Bhattarai S 2013]. The worldwide prevalence of intestinal parasites is estimated in more than 3.5 billion with around 4.5 million clinical cases. [Okey, et al 2004]. The conditions required for transmission and aquisition of intestinal parasitism are favored in institutions where large number grouped together for a long period of time and

poor sanitary conditions prevail. Local conditions such as quality of domestic and village infrastructure, economic, occupation and social factors such as education influence the risk of infections, diseases transmission and associated morbidity and mortality. [Wang et al 2009, Yakuba et al 2003]. The objective of this study was to perform an epidemiological survey to determine the prevalence of intestinal parasitic infections in the populations of District Bulandshahr.

Material and Methods

The present study was conducted on human intestinal parasitic patients and few healthy subjects as control. In this study, a survey was carried out for human parasitic diseases, from rural and urban populations of Khurja, Bulandshahr District for the period of 2012 to 2013. For this study, an interview technique was performed to collect the information of subjects regarding their age, sex and family background. For the present study, a total no of 279, samples of stools from both rural and urban populations were collected for microscopic investigations in laboratory. During the Demographic study of persons, the age group, sex, socio - economic and literacy status were included in this study. The Chi –Squared tests were performed to the test for an association between all possible pairs of parasitic infections and between the genders of each age group. The calculated χ^2 value was more than P – value (at 0.05 level).

Results and Discussion

Overall 279, stool samples were examined by Simple Smear in Saline method in the population of Khurja, Bulandshahr District. The age combination shows that 103 (36.9%) persons were in 0 -15 age group, 96 (34.4%) in 16-25 age group and 59 (21.1%) in 26 – 35 age group while, 21 (7.6%) were above the age of 35 years. The sex based distribution shows that out of 279 samples, the 158 (56.6%) were collected from males and 121 (43.4%) from female. According to socio-economic status 122 (43.7%) to low (5001 to 15000), 88 (31.5%) to medium (15001 to 25000) and 69 (24.7%) persons were belongs to high (<25000) income group. The literacy status shows that 102 (36.5%) were belongs to illiteracy, 93 (33.3%) to high school, 53 (18.9%) to intermediate and 31 (11.1%) to graduate and above. In these 279 samples, 115 were found parasitic positive patient in which 46.9% positive parasitic patients were from 0 - 15 age group, 33.9% from 16-25 age group, 14.8% from 26 – 35 age group and 4.4% from the age above 35 years. Further, sex wise distribution shows that 56.5% positive parasitic patients were male and 43.5% females. Their economic status shows that 58.3%, 32.2%, and 9.5% positive parasitic patients were in low, medium and high income group respectively, while the literacy status shown that 53.9% positive parasitic patients were illiterate, 23.5% at high school level and 16.5% at intermediate, while the 6.1% positive parasitic patients were at graduate or above level. The results of present study shows that the gastrointestinal parasitic infection was found statistically more significant higher ($\chi^2 = 11.72$, $df = 3$, $P = 7.82$ at 0.05 level) in low age group, ($\chi^2 = 30.28$, $df = 2$, $P = 5.59$ at 0.05 level) in low income group, ($\chi^2 = 4.73$, $df = 1$, $P = 3.84$ at 0.05 level) in rural population and ($\chi^2 = 26.73$, $df = 3$, $P = 7.82$ at 0.05 level) in illiterate persons. Our findings are the consonance with socio-economic indicators [Lee, et. al. 2000, Kumar et. al. 2013, Kumar et. al. 2015, Kumar, P. 2018, Kumar, P. 2018 and Kumar, P. 2018, and Kumar, 2021] In the continuation of this study, another study also revealed that the high prevalence of intestinal helminthes shown in the low socio – economic group. [Bhandari, et. al. 1985]. The unsanitary conditions and low age group increased the risk factors for developing intestinal parasitic infections. [Gatt, et. al. 2000 and Heidan, et. al. 2003]. The relationship between socioeconomic status and child mortality has been well documented [Faarah, et. al. 1982, D'souza, et. al. 1982, Da Vanza, 1983, Majumdar, et. al. 1993 and Spencer, at. al. 1996] In other study revealed that the prevalence of intestinal parasites was high in low age group as compared to other age group.

CONCLUSION

The present study is fulfilling the national needs and human health hazards which are the most urgent and serious problem to tackled at the present day conditions. This study provides the influence of unhygienic condition of the continuity of human intestinal parasitic infection. The prevalence of gastrointestinal parasitic diseases appears to be high due to poverty, low literacy status, standards of livings, social norms and customs. The present study indicates

that a nationwide parasite control project is necessary to reduce the possibility of morbidity and mortality due to parasitic diseases in the country.

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Table: 1 – Prevalence analysis for positive patients according to residence gender.

Characteristic	Total Number	Positive (+)	Negative (-)	Prevalence (%)
Gender				
Urban	116	39	77	33.9
Rural	163	76	87	66.1

* $\chi^2 = 4.73$, $df = 1$, $P = 3.84$ at 0.05 level

Table: 2 – Prevalence analysis for positive patients according to age group.

Characteristic	Total Number	Positive (+)	Negative (-)	Prevalence (%)
Age Group				
0 – 15	103	54	49	46.9
16 – 25	96	39	57	33.9
26 - 35	59	17	42	14.8
Above 35 Years	21	05	16	4.4

* $\chi^2 = 11.72$, $df = 3$, $P = 7.82$ at 0.05 level

Table: 3 – Prevalence analysis for positive patients according to gender.

Characteristic	Total Number	Positive (+)	Negative (-)	Prevalence (%)
Gender				
Male	158	65	93	56.5
Female	121	50	71	43.5

$\chi^2 = 0.0017$, $df = 1$, $P = 3.84$ at 0.05 level

Table: 4 – Prevalence analysis for positive patients according to age economic status.

Characteristic Economic Status	Total Number	Positive (+)	Negative (-)	Prevalence (%)
Low Income (5001 to 15000) group	122	67	55	58.3
Medium Income (15001 to 25000) group	88	37	51	32.2
High Income (<25000) group	69	11	58	9.5

* $\chi^2 = 30.28$, $df = 2$, $P = 5.59$ at 0.05 level

Table: 5 – Prevalence analysis for positive patients according to education status.

Characteristic Education Level	Total Number	Positive (+)	Negative (-)	Prevalence (%)
Illiterate	102	62	40	53.9
High School level	93	27	66	23.5
Intermediate	53	19	34	16.5
Graduate & Above	31	07	24	6.1

* $\chi^2 = 26.73$, $df = 3$, $P = 7.82$ at 0.05 level

Fig:- 1- Prevalence of gastrointestinal parasitic infection according to residence.

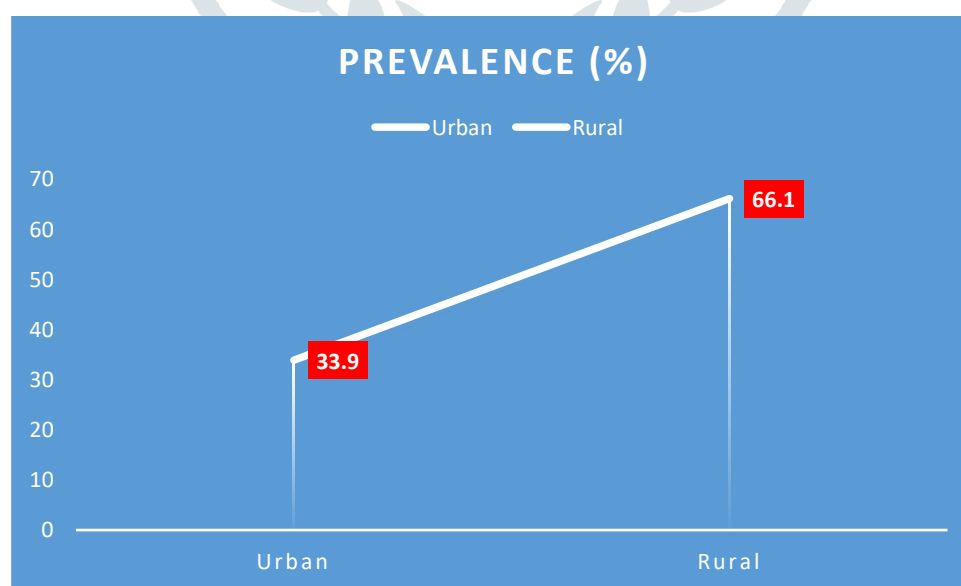


Fig:- 2- Prevalence of gastrointestinal parasitic infection according to age group.

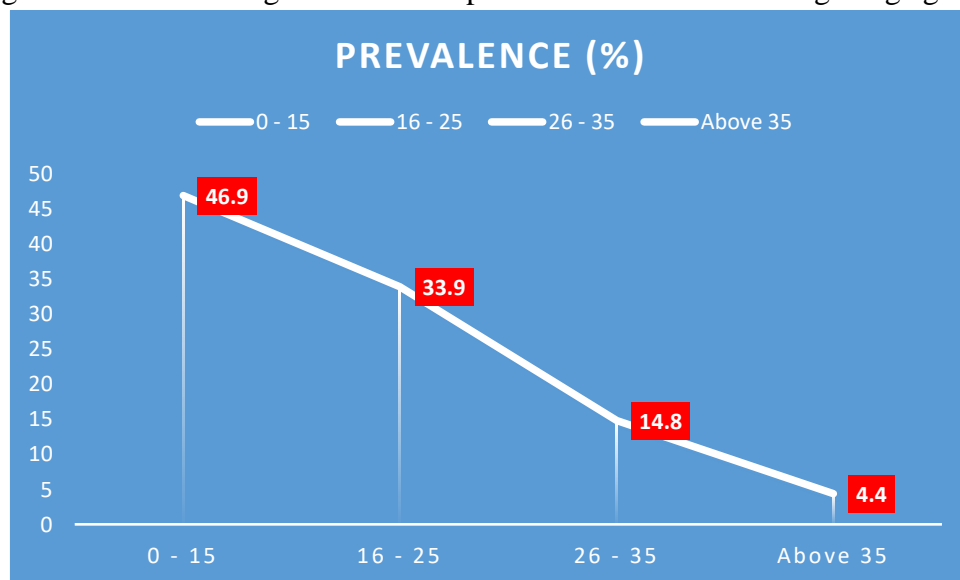


Fig:- 3- Prevalence of gastrointestinal parasitic infection according to gender.

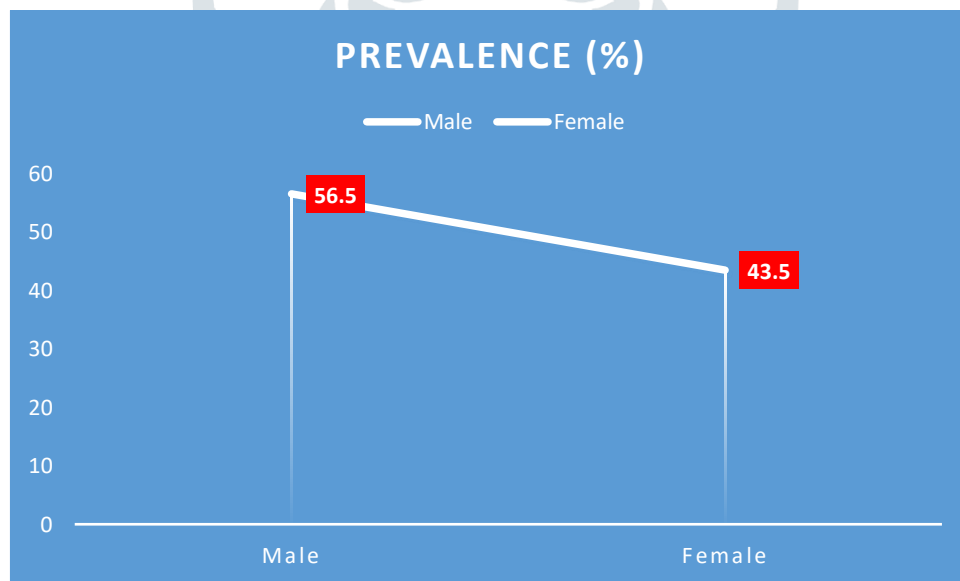


Fig:- 4 - Prevalence of gastrointestinal parasitic infection according to economic status.

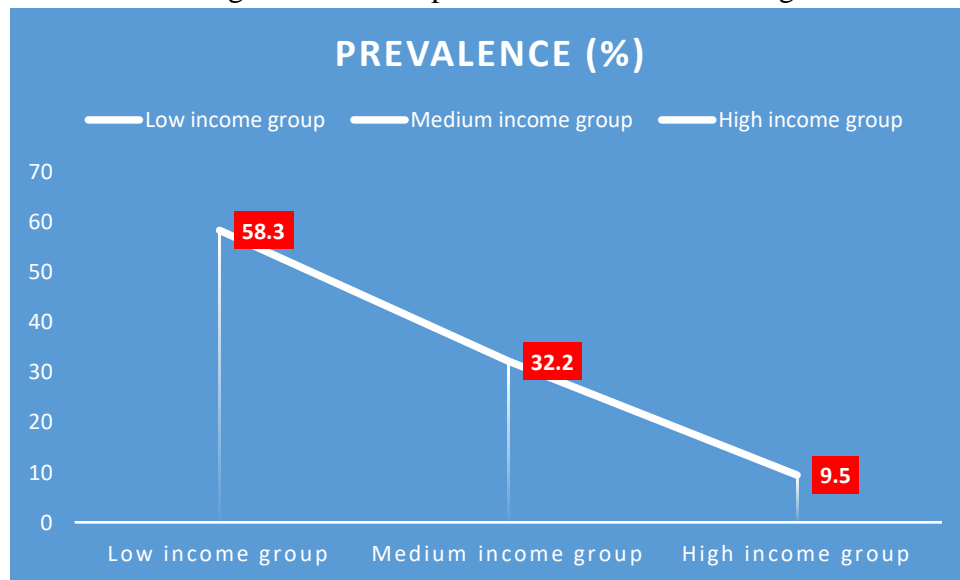


Fig:- 5 - Prevalence of gastrointestinal parasitic infection according to education status

