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A STUDY OF PREVALENCE OF INTESTINAL PARASITES AND ASSOCIATED RISK FACTORS AMONG URBAN AND RURAL POPULATION OF KHURJA (BULANDSHAHR)

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ABSTRACT

Parasitic infection of gastrointestinal tract is a major cause of morbidity and mortality. Despite the existence of effective parasitic infections remain a major public health problem. In rural and urban communities, continuing infection is often reinforced by dietary habits. The intestinal parasitism is common in developing countries. Their distribution is mainly associated with poor personal hygiene, environmental sanitation and socio – economic conditions. The present study was carried out to assess the risk factors of gastrointestinal parasites in Khurja, Bulandshahr from 2011 to 2013. A stool examination was performed on 357, randomly selected persons from urban and rural populations of Khurja, Bulandshahr. The collected stool specimens were examined microscopically for the presence eggs, cysts and trophozoits of intestinal parasites, using simple smear in saline method. Epidemiological data were analyzed using Chi – Squared test. The prevalence of intestinal parasites was significantly higher (χ^2 = 48.5, df = 3, P = 7.82 at 0.05 level) in low age group, (χ^2 = 14.85, df = 2, P = 5.99 at 0.05 level) in low income group, (χ^2 = 44.51, df = 3, P = 7.82 at 0.05 level) in illiterate persons, (χ^2 = 6.94, df = 1, P = 3.84 at 0.05 level) in rural population and (χ^2 = 67.34, df = 1, P = 3.841 at 0.05 level) in males as compared to females. 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.

KEYWORDS: Intestinal Parasites, Poverty, Nutritional Status.

INTRODUCTION

Everyone is a part of community and every community has a specific customs and culture. Health culture is one of the most important components of a community. Health component depends upon socioeconomic status, housing hygiene i. e. water supply, food hygiene, environmental hygiene and personal hygiene, sanitation culture and education. Gastrointestinal parasitic infections are amongst the most common infection Worldwide. Globally, two billion individuals were infected with intestinal parasites; out of these majorities were of the children [WHO, 2002]. Parasitic Infection of the gastrointestinal tract is a major cause of morbidity and mortality Worldwide; increased intestinal travel means that gastroenterologists are now likely to take care for patients suffered with parasitic disease [Noyer, and Brandt, 1999]. 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. Roundworms may give rise to inflammation of the intestine and lungs, nausea, vomiting, loss of weight, fever, nervousness and irritability. Intestinal parasites cause a significant morbidity and mortality in endemic countries. 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 and Nxasana et al, 2013]. More than 200 million people are estimated to be infected by various parasitic diseases in India. It is observed that about 60 – 80 percent population of certain areas of West Bengal, Uttar Pradesh, Bihar, Orissa, Punjab, East Coast of Tamil Nadu and Andhra Pradesh is infected with parasites. [Dutta, 1962]. Human gastrointestinal parasites are highly specialized, possessing numerous adaptations, many of which are associated with their host and its mode of life. Intestinal Parasitic infections are governed by behavioral, biological, environmental, socio-economical and health system factors. 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, e. t. 2009, and Yakuba, e. t. 2003]. The present study was undertaken to obtain an authentic data regarding the prevalence of gastrointestinal parasites and associated risk factors among the population of Khurja, Bulandshahr. Therefore, the aim of the present study is to determine the prevalence and risk factors of intestinal parasites.

MATERIAL AND METHODS

The present study was carried out 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 for two years from 2011 to 2013. For this study, the stool samples of 357 persons were investigated. A questionnaire was prepared to collect the information about individual's house regarding age, sex, occupation, socio-economic and literacy status. For the stool samples collection, the clean glass vials containing 10 ml. of Normal Saline, were supplied to individuals & suggested to mark their name, age and sex on the vials. The persons were requested to collect the specimen in the vials for microscopic investigations in laboratory. The Simple Smear in Saline method [WHO, 1991] was used to investigate the stool sample of persons. The persons having any cyst/ova/trophozoit/whole parasite were treated as parasitic positive patients. During the Demographic study of persons, the age group, sex, socio-economic and literacy status were included in this study. Epidemiological data were analyzed using Chi –Squared test. On the basis of the age group, literacy status, economic status and between the genders from each urban and rural population. The calculated value χ^2 have been calculated, where the χ^2 value were more than P – value (at 0.05 levels).

RESULTS AND DISCUSSION

Overall 357, stool samples were examined by Simple Smear in Saline method on the population of Khurja, Bulandshahr. The age combination shows that 133 (37.3%) persons were in 0 - 15 age group, 108 (30.3%) in 16 - 25 age group and 69 (19.3%) in 26 -35 age group while, 47 (13.2%) were the above the age of 35 years. The sex based distribution shows that out of 357 samples, the 193 (54.1%) were collected from males and 164 (45.9%) from female. According to socio-economic status 181 (50.7%) persons were belongs to low, 106 (29.7%) to medium and 70 (19.6%) to high income group. The literacy status shows that the 151 (42.3%) were belongs to illiteracy, 103 (28.9%) to high school, 71 (19.9%) to intermediate and 32 (8.9%) to graduate and above. In these 357 samples, 60.4% positive parasitic patients were from 0 -15, 29.7% from 16 -25, 6.3% from 26 - 35 and 3.6% from the age above 35. Further, sex wise distribution shows that 62.2% positive parasitic patients were male and 37.8% females. Their economic status shows that 54.05%, 37.84% and 8.1% positive parasitic patients were in low, medium and high income group respectively, while the literacy status shown that 62.2% positive parasitic patients were illiterate, 31.5% at high school level and 4.5% at intermediate, while the 1.8% 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 (χ^2 = 48.5, df = 3, P = 7.82 at 0.05 level) in low age group, (χ^2 = 14.85, df = 2, P = 5.99 at 0.05 level) in low income group, (χ^2 = 44.51, df = 3, P = 7.82 at 0.05 level) in illiterate persons, (χ^2 = 6.94, df = 1, P = 3.84 at 0.05 level) in rural population and (χ^2 = 67.34, df = 1, P = 3.841 at 0.05 level) in males as compared to females. Our findings are the consonance with socio-economic indicators. [Rao, and Puri, 1973, Udani, and Patel, 1983] The unsanitary conditions and low age group increased the risk factors for developing intestinal parasitic infections [Adamu, et. al. 2006, Hall, et. al. 2008 and Mengistu, et. al. 2007]. In other study revealed that the prevalence of intestinal parasites was high in low age group as compared to other age group. [Aschalaw, et. al. 2013, Praveen and Rajesh 2017, Kumar, et. al. 2013 and Kumar, et. al. 2015]. 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].

Table 1: Prevalence analysis for positive patients in urban and rural population.

Population	Total Number	Positive (+)	Negative (-)	Prevalence (%)
Urban	139	32	107	28.8
Rural	218	79	139	71.2

*χ^2 = 6.94, df = 1, P = 3.841 at 0.05 level

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

Characteristic Age Group	Total Number	Positive (+)	Negative (-)	Prevalence (%)
0 – 15	133	67	66	60.4
15 – 25	108	33	75	29.7
25 – 35	69	07	62	6.3
Above 35	47	04	43	3.6

*χ^2 = 48.5, df = 3, P = 7.85 at 0.05 level

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

Characteristic Gender	Total Number	Positive (+)	Negative (-)	Prevalence (%)
Male	193	69	124	62.2
Female	164	42	122	37.8

*χ^2 = 67.34, df = 1, P = 3.841 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 group	181	60	121	54.05
Medium income group	106	42	64	37.84
High income group	70	09	61	8.1

*χ^2 = 14.85, df = 2, P = 5.99 at 0.05 level

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

Characteristic Education Level	Total Number	Positive (+)	Negative (-)	Prevalence (%)
Illiterate	151	69	82	62.2
High School level	103	35	68	31.5
Intermediate	71	05	66	4.5
Graduate & Above	32	02	30	1.8

*χ^2 = 44.51, df = 3, P = 7.82 at 0.05 level

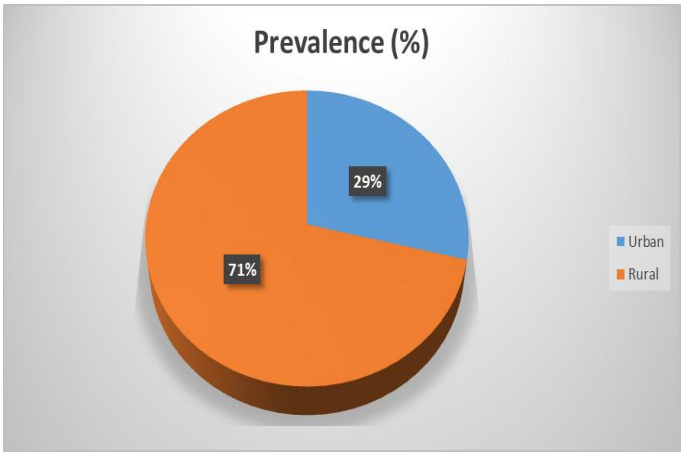

Fig. 1: Graph Showing the Prevalence Analysis for Positive Patients in Urban and Rural Population.

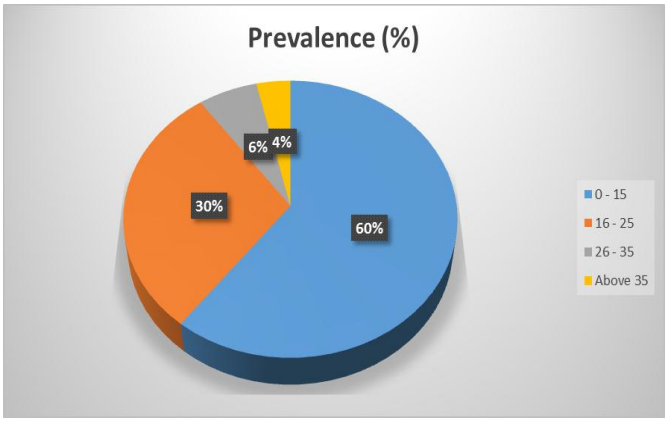

Fig. 2: Graph showing the prevalence analysis for positive patients according to age in urban and rural population.

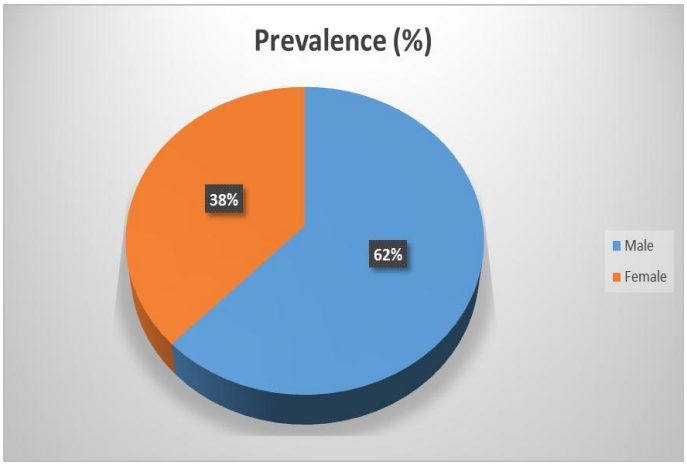

Fig. 3: Graph showing the prevalence analysis for positive patients according to sex in urban and rural population.

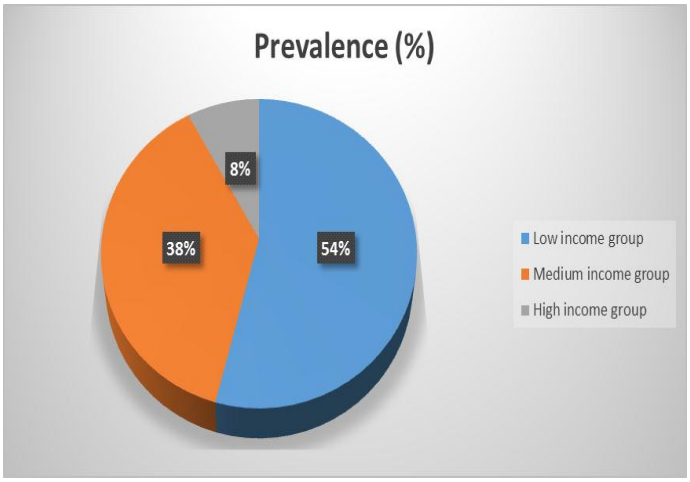

Fig. 4: Graph showing the prevalence analysis for positive patients according to economic status in urban and rural population.

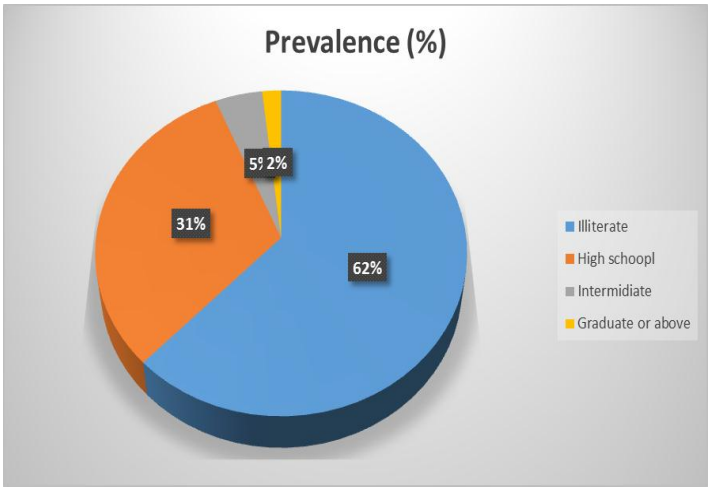

Fig. 5: Graph showing the prevalence analysis for positive patients according to education status in urban and rural population.

CONCLUSION

The present result shows that the infection of gastrointestinal parasitic diseases can reduced greatly by social awareness of associations, sustained education and improvement in the environmental/nutritional status. Nevertheless the above results indicate that a nationwide integrated gastrointestinal parasitic control programme involving chemotherapy, improvement in nutrition with the participation of the community to maintains a clean environment to all. It is necessary to reduce possible mortality due to gastrointestinal parasitic diseases.

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