



ORIGINAL ARTICLE

An Epidemiological Profile of Human Gastrointestinal Parasites in Meerut District

Praveen Kumar*, Rajesh Praveen and Sneha Lata

*Department of Zoology, N.R.E.C. College, Khurja, (Bulandshahr).

Email Id: - drpks75@gmail.com

ABSTRACT

Parasitic infection of gastrointestinal tract is a major cause of morbidity and mortality. Intestinal parasitic infections are governed by environmental, socioeconomically, occupational and health factors. The present study was carried out to assess the risk factors of gastrointestinal parasites in Meerut District from 2006 to 2009. The prevalence of intestinal parasitic infection was more significantly higher ($\chi^2 = 24.05$, $df = 3$, $P = 11.345$) in illiterate patients of low age and very low income groups as compared to high income, education and age groups. The prevalence of gastrointestinal parasitic diseases in the populations appears to be high due to poverty, low literacy status and living standard.

Key Words: - Epidemiology, Intestinal Parasites, Poverty

Received 23/10/2013 Accepted 03/12/2013

©2013 AELS, INDIA

INTRODUCTION

Gastrointestinal Parasites 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. [13] 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. [8] 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. [4] 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. [11, 14] The present study was undertaken to obtain an authentic data regarding the epidemiological profile of gastrointestinal parasites in the population of Meerut District. 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 in Meerut District for three years from 2006 to 2009. For this study, the stool samples of 451 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 [12] was used to investigate the stool sample of persons. 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 χ^2 have been calculated, where the χ^2 value were more than P - value (at 0.01 levels).

RESULTS AND DISCUSSION

Overall 451, stool samples were examined by Simple Smear in Saline method on the population of Meerut District. The age combination shows that 224 (49.6%) persons were in 0-15 age group, 110 (24.4%) in 15-25 age group and 81(17.9%) in 25-35 age group while, 36(7.9%) were the above the age of 35 years. The sex based distribution shows that out of 451 samples, the 221(49.1%) were collected from males and 230 (50.9%) from female. According to socio-economic status 216(47.1%) persons were belongs to very low (≤ 5000), 125 (27.5%) to low (5001 to 15000), 62(13.7%) to medium (15001 to 25000) and 48(10.6%) persons to high (<25000) income group. The literacy status shows that the 131 (29.0%) were belongs to illiteracy, 92(20.3%) to primary education, 94(20.8%) to high school, 85(18.8%) to intermediate and 66(14.6%) to graduate and above. In these 451 samples, 37.9% positive parasitic patients were from 0 -15, 24.4% from 15-25, 16.0% from 25-35 and 5.5% from the age above 35. Further, sex wise distribution shows that 26.2% positive parasitic patients were male and 30.4% females. Their economic status shows that 39.3%, 26.4%, 12.9%, and 4.1% positive parasitic patients were in very low, low, medium and high income group respectively, while the literacy status shown that 36.6% positive parasitic patients were illiterate, 33.6% patients having primary education, 27.6% at high school level and 21.1% at intermediate, while the 7.5% positive parasitic patients were at graduate level. The results of present study shows that the gastrointestinal parasitic infection was found statistically more significant ($\chi^2 = 24.05$, $df = 3$, $P = 11.345$ at 0.01) in illiterate patients of low age and very low income group. The statistically analysis in gender, no significant association was observed between male versus female. ($P = 6.635$) Our findings are the consonance with socio-economic indicators. [9, 10] The unsanitary conditions and low age group increased the risk factors for developing intestinal parasitic infections. [1, 5, 7] In other study revealed that the prevalence of intestinal parasites was high in low age group as compared to other age group. [2] In the continuation of this study, another study also revealed that the high prevalence of intestinal helminthes shown in the low socio - economic group. [3] In conclusion, the prevalence of gastrointestinal parasitic diseases appears to be high due to poverty, low literacy status, standards of livings, social norms and customs.

Table: 1 – Prevalence analysis for positive patients according to age group.

| Characteristic Age Group | Total Number | Positive (+) | Negative (-) | Prevalence (%) |
|--------------------------|--------------|--------------|--------------|----------------|
| 0 - 15 | 224 | 85 | 139 | 37.9 |
| 15 - 25 | 110 | 28 | 82 | 24.4 |
| 25 - 35 | 81 | 13 | 68 | 16.0 |
| Above 35 | 36 | 02 | 34 | 5.0 |

* $\chi^2 = 24.05$, $df = 3$, $P = 11.345$ at 0.01 level

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

| Characteristic Gender | Total Number | Positive (+) | Negative (-) | Prevalence (%) |
|-----------------------|--------------|--------------|--------------|----------------|
| Male | 221 | 58 | 163 | 26.2 |
| Female | 230 | 70 | 160 | 30.4 |

Table: 3 – Prevalence analysis for positive patients according to age economic status.

| Characteristic Economic Status | Total Number | Positive (+) | Negative (-) | Prevalence (%) |
|--------------------------------|--------------|--------------|--------------|----------------|
| Very low (≤ 5000) group | 216 | 85 | 131 | 39.3 |
| Low (5001 to 15000) group | 125 | 33 | 92 | 26.4 |
| Medium (15001 to 25000) group | 62 | 08 | 54 | 12.9 |
| High (<25000) group | 48 | 02 | 46 | 4.1 |

* $\chi^2 = 33.64$, $df = 3$, $P = 11.34$ at 0.01 level

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

| Characteristic Education Level | Total Number | Positive (+) | Negative (-) | Prevalence (%) |
|--------------------------------|--------------|--------------|--------------|----------------|
| Illiterate | 131 | 48 | 83 | 36.6 |
| Primary level | 92 | 31 | 61 | 33.6 |
| High School level | 94 | 26 | 68 | 27.6 |
| Intermediate | 85 | 18 | 67 | 21.1 |
| Graduate & Above | 66 | 05 | 61 | 7.5 |

* $\chi^2 = 28.07$, $df = 4$, $P = 13.277$ at 0.01 level

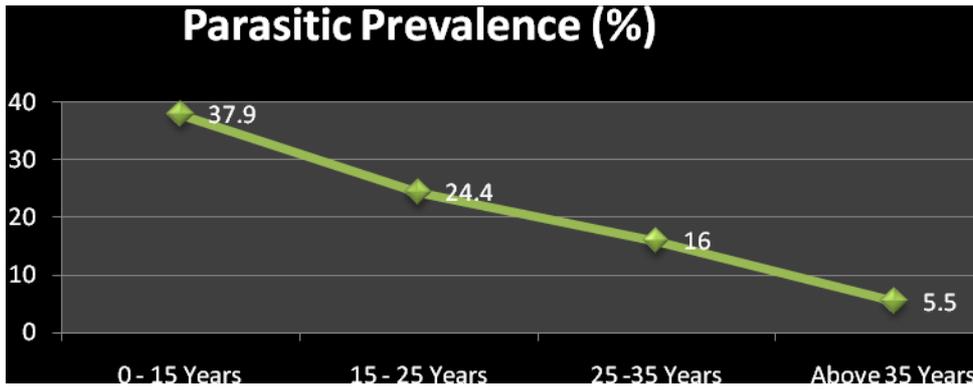


Fig:- 1- Prevalence of gastrointestinal parasitic infection according to age group.

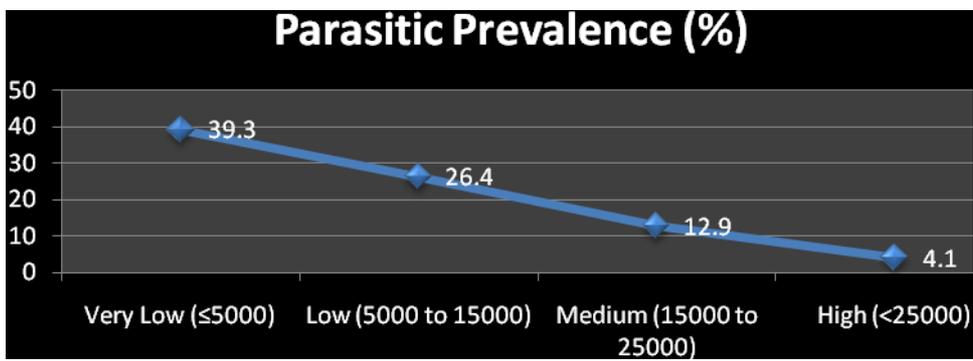


Fig:- 2- Prevalence of gastrointestinal parasitic infection according to economic status.

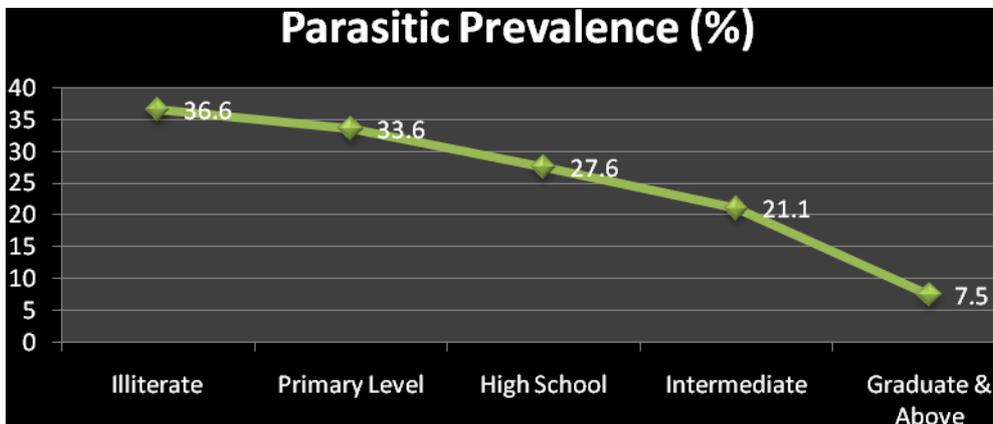


Fig:- 3- Prevalence of gastrointestinal parasitic infection according to education status

REFERENCES

1. Adamu, H., Endeshaw, T., Teka, T., Kifle, A. and Petros, B. (2006) The Prevalence of intestinal parasites in pediatric diarrheal and non-diarrheal patients in Addis Ababa Hospitals with special emphasis on opportunistic parasitic infections and with insight into the demographic and socio-economic factors. *Ethiopian J of Health Development*. **20**: 39 - 46.
2. Aschalaw, G., Belay, A., Bethel, N., Betreanon, S., Atnad, Y., Meseret, A., Megista, E. and Baye, G. (2013) Prevalence of intestinal parasitic infections and risk factors among school children at the University of Gondar community school, Northwest Ethiopia: a cross-sectional study. *BMC Public Health*. **13**: 304.
3. Bhandari, B., Gupta, G.P. and Mondowara, S.L. (1985) Prevalence of intestinal parasites in Udupur. *Ind. Jour. Ped.* **52**: 299.
4. Dutta, P.R. (1962) Rural Health Surveys in India, *P.H. Centers CHEB, DGHS, New Delhi*.

5. Hall, A., Kassa, T., Demissie, T., Degefie, T. and Lee, S. (2008) National Survey of the health and nutrition of school children in Ethiopia. *Trop Med. Int. Health.* **13**: 1518 – 26.
6. Leykun, J. (2001) Soil transmitted helminthic infections and S, Monsoni in school children from Chilga District, Northwest Ethiopia, *Ehiop. J. Health Science.* **13**: 79 - 87.
7. Mengistu, A. Grebre-Selassie, S. and Kassa, T. (2007) Prevalence of Intestinal Parasitic Infections among Urban dwellers in South West Ethiopia. *Ethiopian Journal of Health Development.* **21**: 12 – 17.
8. Noyer, C.M. and Brandt, L.T. (1999) Parasitic Infection of the gastrointestinal tract. *Curn – Gastro Interol. Rep.* **1(4)**: 282 – 291.
9. Rao, D.C.V. and Puri, R.K. (1973) Morbidity patterns is seen in urban pediatrics centre, Pondichery. *Ind. Tour. Com. Dis.* **5**: - 2.
10. Udani, R.N. and Patel. R.B. (1983) Impact of Knowledge of Anaganwadi workers on slum community. *Ind. Tour. Ped.* **50**: 157.
11. Wang, L.D., Guo, J.G., Wu, X.H., Chen, H.G., Wang, T.P., Zhu, S.P., Zhang, Z.H., Steinmann, P., Yang, G.J. and Wang, S.P. (2009) Chin's new strategy to block *Schistosoma japonicum* transmission: experiences and impact beyond Schistosomiasis. *Top Med Int. Health.* **13**: 1475 – 1483.
12. WHO (1991) Basic Laboratory Methods in Medical Parasitology, Geneva, Switzerland: p – 32.
13. WHO (2002) The prevalence and control of schistosomiasis and soil-transmitted helminthiasis, Geneva, *World Health Organization.*
14. Yakuba, N., Musa, G. and Yakubu, S.E. (2003) Seasonal Changes in the distribution and infection rate of *Schistosoma* intermediate hosts in River Kubanni and its Tributaries. *Bio Res Com.* **13**: 207 – 214.

Citation of this article

Praveen Kumar, Rajesh Praveen and Sneha Lata. An Epidemiological Profile of Human Gastrointestinal Parasites in Meerut District. *Bull. Env. Pharmacol. Life Sci.*, Vol 3 (1) December 2013: 228-231