

Section

Paediatrics

Original

Article

Prevalence of Parasitic Infection among Children: A Hospital Based Prospective Study in Udaipur

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ABSTRACT

Background: According to World Health Organization (WHO) has evaluate that the control of parasitic infestation should be effectively incorporated into a multi disease approach together with tuberculosis, malaria and HIV/AIDS.

Methods: This study was carried out in the Department of Paediatrics, Pacific Medical College and Hospital, Bedla, Udaipur over a period of 1 year.

Results: In this study found that 23.75% children suffering from the *E. histolytica* followed by *G. lamblia* (12.5%), *Taenia* (15%), *Hookworm* (20%), *Ascaris* (17.5%), *T. trichuria* (11.25%).

Conclusion: Low socio-economic status, longer duration and frequency of diarrhea, non-availability of toilet facility and presence of dehydration were leading risk factors for parasitic infection in present study.

Key words: WHO, parasitic infection, children, *Ascaris*, *Trichuris*

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INTRODUCTION

The World Health Organization (WHO) estimates that infection with round worm (*Ascaris lumbricoides*), whipworm (*Trichuris trichiura*) and hookworms (*Ancylostoma duodenale* and *Necator americanus*) with associated morbidity, affect approximately 250 million, 46 million and 151 million people, respectively.^[1] About half the population in South India and 50% of school children in tribal areas of Central India^[2,3] are infected with *Ascaris lumbricoides*, *Trichuris trichiura* and/ or hookworm. In the western part of Nepal, 86.7% of the pre-school children are infected with a single geo-helminthic infection and 13.3% with mixed infections.^[4] Thus, worm infestation as a public health

problem needs immediate attention from policy makers in India.^[5]

Infective diarrhea is one of the leading causes of morbidity and mortality among children and caused by wide range of viruses, bacteria or parasites.^[6] The prevalence of different enteric pathogens varies with geographical area.^[7] Intestinal parasitic infection is a serious public health problem throughout the world particularly in developing countries.^[8-9] Parasitic infections are more common in pediatric age group as children are more vulnerable population.^[5] The consequences of these parasitic infections results in

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malnutrition, anemia, cognitive impairment and increased susceptibility to other infections.^[10-12]

Intestinal parasitic infections are endemic worldwide and have been described as constituting the greatest single worldwide cause of illness and disease. Poverty, low literacy rate, poor hygiene, lack of access to potable water and hot and humid tropical climate are the factors associated with high prevalence of intestinal parasitic infections in developing countries. It is estimated that 60% of the world's population is infected with gut parasites, which play a role in morbidity. The commonest parasitic infection reported globally are Ascaris(20%), Hook worm(18%), Trichuris trichura(10%) and Entamoeba histolytica(10%).^[13] In India overall prevalence varies from 13% to 68%.^[14] This present study expected to assess the prevalence of intestinal parasitic infections in 1 to 12 years children.

METHODS

Study population:- Eighty patients each in age group 1-10 years were included as cases.

Study Area:- This study was carried out in the Department of Paediatrics, Pacific Medical College and Hospital, Bedla, Udaipur.

Study duration:- Duration of this study was 1 year.

Sampling technique & Data collection:- Patients which were suspected with the intestinal parasitic infection in the department of Pediatrics send to the central laboratory to collect the samples. The universal containers were given with the instructions of stool collection. Stool samples were examined for the presence of parasites by both macroscopically & microscopically. Direct microscopic examinations were done by normal saline and iodine wet mount in the department of microbiology.

Inclusion Criteria:-

All children up to the age of 12 years except neonates, admitted in ward of pediatric department with complaints of diarrhea with or without mucous or blood, fever, abdominal pain, vomiting

Exclusion Criteria:-

Those children admitted without complaint of diarrhea and/or above 12 years of age, were excluded from the study. Children under 12 years of age presenting with diarrhea associated with other illnesses like hepatitis, respiratory infection, lactose intolerance history and surgical conditions like appendicitis were also excluded. Informed verbal consent was taken from the parents of enrolled children.

Data Analysis:- Data were analyzed by using Microsoft excel.

RESULTS

In our study, number of total 200 patients came in pediatric department with the age of 1-12 year, which was suspected for intestinal parasitic infection. Out of 200 patients, in eighty patients were diagnosed the parasitic infection from the department of microbiology. From the eighty patients, 67.5% were male and 32.5% were female. In the present study, 53.7% children were from the 5-8 age group followed by 9-12 (35%) & 1-4 (11.2%). In this study, 10% family of children's were educated & 22.5% were uneducated & 67.5% family status were literate. In our study, 85% source of drinking water were from hand pump 85% followed by tap 15%.

In this study found that 23.75% children suffering from the *E. histolytica* followed by *G. lamblia* (12.5%), *Taenia*(15%), *Hookworm*(20%), *Ascaris*(17.5%), *T. trichuria* (11.25%).

Table 1. Children with parasitic intestinal infection

Patients with intestinal infection	Number of patients	Percentage
Negative	120	60
Positive	80	40
Total	200	100

Table 2. Gender wise distribution

Gender	Number of patients	Percentage
Male	54	67.5
Female	26	32.5
Total	80	100

Table 3. Age wise distribution

Age	Number of patients	Percentage
1-4	9	11.25
5-8	43	53.75
9-12	28	35
Total	80	100

Table 4. Education status of the children's family

Education status of family	Number of patients	Percentage
Educated	8	10
Uneducated	18	22.5
Literate	54	67.5
Total	80	100

Table 5. Source of drinking water

Source of drinking water	Number of patients	Percentage
Tap	12	15
Hand pump	68	85
River	0	0
Total	80	100

Table 6. Way of hand washing

Hand washing after defecation	Number of patients	Percentage
Mud	49	61.25
Soap	18	22.5
Ash	13	16.25
Total	80	100

Table 7. Infection with parasites

Infection with intestinal parasite	Number of patients	Percentage
Entamoeba histolytica	19	23.75
Giardia lamblia	10	12.5
Taenia	12	15
Hookworm	16	20
Ascaris	14	17.5
Trichuris trichiura	9	11.25
Total	80	100

DISCUSSION

Our study, conducted to evaluate the prevalence rate and risk factors of intestinal parasitic infection has 40% children suffer from intestinal parasitic infections that were potentially treated by albendazole. Other studies found that prevalence rate of 44% & 77% among children.^[14-16] In our study, 40% children were infected with parasites, out of these, 23.75% children suffered from the *E. histolytica* followed by *G. lamblia* (12.5%), *Taenia* (15%), *Hookworm* (20%), *Ascaris* (17.5%), *T. trichuria* (11.25%).

A relatively high prevalence of intestinal geo-helminthes infections in these developing countries is due to poor socio economic conditions like presence of inadequate housing, low levels of education and awareness, poor health services, inadequate sanitation, lack of access to sanitation facilities and clean drinking water.^[15]

Many researchers have established that age, socio-economic and behavioral factors play a important role in causing intestinal geo-helminthic infection. Characteristics like household crowding, level of education, religion, use of footwear when outdoors, defecation practices, cattle ownership and water sources have implications in spreading infection.^[16] In the present study found that, 61.2% children were used mud for hand washing followed by soap (22.5%) and ash (16.2%). Use of soap and water practice after defecation was also protective for parasitic infection.

Sources of drinking water were also analyzed in this study, 85% source of drinking water were from hand pump 85% followed by tap 15%. Others have found associations of infection with intake of ring-well water and river water^[17] which is inconsistent with what we found in our study. Probably, the hand pumps which are dug at the shallow level come in contact with raw sewage due to proximity with open drain/ canal, overflowing drains, physical contact with wastewater or with open defecation and public washing and thus provided optimum conditions for the survival and development of the eggs of *Ascaris lumbricoides*. Risk of untreated wastewater discharge in spreading of geohelminths especially *Ascaris lumbricoides* has also been reported by others.^[18] Preventive measures for safety of available drinking water and spreading awareness related to sanitation related behavior should be adopted to minimize the prevalence of worm infestation. Simple community-based measures such as increasing public awareness about the drawbacks of open-air defecation, safe disposal of waste water and safe handling of drinking water can be used for easy and short-term. The hand pumps should be dug deeper and far away from the sewage tank to prevent their shallow depth from transmitting pathogenic contamination.^[19]

The previous studies suggested that single dose of albendazole for controlling parasitic infection is a simple, sustainable and cost-effective strategy if delivered through the nationwide Integrated Child Development Services

(ICDS) program.^[20] Such community-based programs need to be strengthened.

CONCLUSION

This study concludes that, most of the children in rural India have a high prevalence of intestinal geo-helminthes. Since these intestinal geo-helminthes are potentially treatable by a single dose albendazole, targeted deworming of population in this age group should be considered.

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