



HOOKWORM INFESTATIONS IN PERI-URBAN SLUMS OF PAKISTAN

Ashraf Majrooh¹, Rabail Kanwal^{1*}, Irfan Bashir²

¹Institute of Social and Cultural Sciences, University of Punjab, Lahore, Pakistan.

²Faculty of Pharmacy, University of Central Punjab, Lahore, Pakistan.

ABSTRACT

Worm infestations interfere with the normal nourishment of child which is the most common problem in developing countries of world specially Pakistan, Bangladesh and India. One of the leading causes is impure drinking water, low socio-economic state, poor personal hygiene and poor sanitation. Worm infestations sometimes may lead to some sort of major problems such as worm may cause respiratory or cardio vascular problems as they move with blood stream.

Key words: Worm infestations, Pakistan.

INTRODUCTION

The developmental ages of childhood has higher risk for mortality and morbidity. In utmost cases, the various childhood problems exist are interrelated and distress the children's development and growth, the most common ones being infections, malnutrition and parasitic infestations. Degree of parasitic infestations amongst children is a major public health issue in several regions of the world. This infestation is mostly more in the areas with heavy rainfall [1]. Worm infestation remains one of the main problems of child development. This is especially a greater health hazard in developing countries. Worms may be of many shapes and sizes, from microscopic "pinworms" to "tape-worms" that are several feet long. [2] Most of these worms live in the intestinal tract. Any of several types of worms may live in the human body as parasites (infestation), sometimes causing mild to severe illness. These worms could infest the blood, intestines or organs e.g., liver, lungs. The World Health Organization (WHO) estimates that infection with round worms (*Ascaris lumbricoides*), whipworms (*Trichuris trichiura*) and hookworms (*Ancylostoma duodenale* and *Nector americanus*) with associated morbidity, affect approximately 250 million, 46 million and 151 million people, respectively [3]. Heavy hookworm burden is the major aetiology for iron deficiency anaemia in young children. Worm infestation in children has been studied in various parts of Pakistan. In a study children were more infected (60%) with helmenthic and protozoa than adults

(30%) who had only protozoa infection. Prevalence of helmenthic infestation in children was 23% in Islamabad, 21.7% in Bagh District [8] and 31% in Quetta [5]. High prevalence of worm infestation in children is reported from northern areas of Pakistan but no study is available central Punjab districts [6]. The impure drinking water, low socio-economic state, poor personal hygiene and poor sanitation coupled with low literacy rates of parents particularly the mothers are the main causes [7]. Worm infestation is one of the major causes of childhood malnutrition, anaemia, and stunted physical and mental growth, psychosocial problems. It also causes recurrent gastrointestinal and upper respiratory tract infection leading to high morbidity and mortality in children [8]. The reason for being a global public health problem is that helmenthic infestation have largely been over looked by clinician, because although worms can cause severe clinical problems, patients rarely report at health centre due to its slow progress of the signs and symptoms [9]. Worm infestation has a close association with the environmental and socio demographic aspects like illiteracy, poverty, poor environmental hygiene. Children were at distinctive danger because of their activities alike lack of importance to personal hygiene and play. By the children, the whole family might ultimately get worms and can suffer [10]. Worm infestations were usually not observed but sometimes may lead to major problems, which distress several organ systems. Many of them are

*Corresponding Author : Rabail Kanwal E mail: kanwal.rabail@yahoo.com.

due to unhygienic living conditions and poor food. In countries like India, they constitute a major public health issue, as hookworm infestation cause anemia in a majority of children [11]. A wide range of worms invade humans, their size range from half inch pinworms to tape worms as long as thirty feet. The most significant between them are the Hookworms, round worm and pinworms. Majority (not all) of the worms survives inside the intestines and normally don't cause prominent indications except they cross the intestinal wall and transfer to another organ or part of the body. Any infestation by worm may cause respiratory or cardio vascular problems as they move with blood stream [12].

PINWORMS

These worms are very small in size, about 2-4mm, mostly seen in clusters and white in color. They are categorized by the extreme itching in anal area. They are generally live in lower intestinal tract of peoples. The female worms lay eggs in the anal area during night and cause severe itching. The consequential rubbing transfers the eggs to the fingers. Children eat foodstuff without cleaning and washing their hands, the eggs hatch in the intestines and thus the cycle continues [13].

ROUNDWORMS CAUSING ASCARIASIS

It is assessed that up to 1/4th of the total world's population is infected by round worms. They lives in the small intestine, lays huge numbers of eggs that were excreted in the stools. Open air excretion cause contamination of soil. Vegetables are cultivated in contaminated soil, when these vegetables consumed uncooked such as salads causes worm infestations [14].

HOOKWORM

It has been assessed approximately 2 billion individuals were infested in India alone with hookworm. They enter into the body from the skin, usually by bare feet. It also developed by food like beet root, carrots when eat without washing. The larvae enter in to the small intestine, where they may alive for many years and taking nutrients through intestinal walls. Hookworm infestation may lead to chronic blood loss and reduction of iron, stored in body cause Iron deficiency anemia. This may lead to retarded development of infant, birth of underweight babies (if the pregnant women are infected). The eggs which are expelled in stool, cycle re-continues if the soil gets contaminated [15].

REVIEW OF LITERATURE

The Review of literature is a systematic and extensive collection of possible sources of previous work; familiarize fact- findings after securitizations and site of reference to the issue under study. It is useful in considering and developing vision into the selected issue under study, also to develop and improve a conceptual framework for the study. A descriptive study was conducted to evaluate the knowledge of the women with socio-economic status, age, defecation practices house hold crowding, etc. in relation to the intensity, prevalence

and associated risk factors for infestation with hook worm , ring worms etc, in tea growing populations of Assam. Results indicated that, the children of mothers with lack of knowledge, poor defecation practices overcrowding of households, low socio economic status are suffering with one or more helminthes infestations i.e. 81% [16]. A descriptive study is done to identify the intestinal helminthes infestations in Hubli, Karnataka. They collect 1000 stool's samples of children whose age was below 6 years by suitable method of sampling. Through microscopic examination, outcomes have indicated that the frequency of intestinal helminthes infestations was 79.2% [17]. A study was directed at the effectiveness of single dose combination drug treatment with Diethyl carbamazepine and Albendazole on the occurrence of worm infestations in south India. They collect 1,00,000 children by suitable method of sampling. The results showed that the prevalence rate of intestinal helminthes were 53.9% combination therapy formed a cure rate of 74.3% and the egg decline rate is 97.3% [18]. To observe the mother's information about worm infestations in children of pre-school of Gond tribal public in Kundam town of Jaipur district, Madhya Pradesh, a descriptive study was done. The mothers' information was evaluated by means of interview and the mothers who were ignorant from worm infestations, their children were suffered with anemia due to helmenthic infestations [19]. In Gonda region, Ethiopia a study was done to observe the occurrence of helminthes infestations. By the method of simple random sampling they collected 8006 children. By means of kato katz system, the outcome of study showed that hook worm (16.3%), *trichuris trichura* (12.7%) and *ascaris lumbricoides* (35.4%) [20]. A relative study was directed on the occurrence of intestinal parasites amongst children living in urban and rural settings in & around Chennai. They collected 324 stool samples by suitable sampling method. 125 specimen Out of 324 samples were collected through rural area and 199 samples of feces were collected through urban area. The findings showed that, the overall occurrence of intestinal parasites was 91%. Among that *Trichiuris trichiura* was 45.6% and *Acchylostoma duodenale* was 37.6%, *Acscaris lumbricoides* was 52.8%, [21]. To find out the occurrence of intestinal helminthes infestation among the people of Okinawa, Japan, they collected 654 samples of stools by method of simple random sampling. By use of modified kato katz method the outcomes showed that 17.4% suffered with three types of nematodes i.e.hookworm, trichura and ascaris, [22]. In Southern Thailand a relative study was done between worm infestations soil contamination in both rainy and seasons in the endemic village. The sample of fifty households was collected by method of simple random sampling. By using statistical analysis, the outcome of study showed that the occurrence helminthes eggs were 83% in the soil throughout the rainy season while compared with dry season [23]. A nationwide survey was done by the education department of Philippines to evaluate the occurrence of worm infestations. They collected twenty- two million children by suitable sampling method. Through microscopic

investigations, the investigator found that, 30% of the total population has three common kinds of helminthes such as hookworm round worm, and whipworm [24]. A descriptive study was led to assess the information of mothers of children between two to twelve years of age about the intestinal helminthes in order to form helminthes control program in Qena governorate, Egypt. They collected informations from seven-sixty-eight mothers through interview. The results presented that, all the mothers considered worms are harmful and they are conscious for the need of treatment. Sufficient information was existing among few mothers about how to prevent infection. Based on outcomes they designed health education program aiming on improving the sanitary and hygiene behavior and promoted the use of informal networks of communication in order to guide the illiterate mothers [25]. In a study to evaluate the occurrence and strength of intestinal infestations in children of Orang Asli in Malaysia they collected 205 samples of stools by method of simple random sampling. Through microscopic investigation, results showed that the occurrence of Hookworm 28.8% and Ascariasis was 62.9%, Trichiuris was 91.7% [26]. A school and chemotherapy based schistosomiasis and intestinal helminthes infection control program was conducted among people Matuga division, Kwale district. They collected sample of 12,000 children by suitable sampling method. Through microscopic examination, the results showed that above 80% of the school going children were infected with more than one intestinal helminthes the occurrence of ascariis infection were decreased by 83% with Levamisole mass chemotherapy, single dose, three times a year, [27].

A cross sectional study was carried out between the occurrences of intestinal worm infections with that of degree of soil pollution with human faeces in Sri Lanka. They had collected 99 samples of stools through simple

random sampling method. Through microscopic investigation the study showed that 77.7% are positive for at least 1 helminthes infestation where there soil pollution is more proved by soil analysis. The occurrence rate of Hookworm and Ascaris, Trichiuris infections were 22% 54%, and 28%, respectively [28].

A study was done to find the level of knowledge among mothers of some selected slums of Sri Lanka, they provide a questionnaire regarding worm infestation to the mothers, it was showed that the occurrence of worm infestation were more amongst the children of illiterate womens that is 81% [29].

A relative study was done among 131 mothers in two rural regions of Bangladesh to observe the knowledge about the awareness of helmenthic infestation, regarding to the use of health services and treatment seeking behavior. Questionnaire was provided related to helmenthic infestations. The outcomes showed that almost every respondent considered worms as a cause of poor health. High percentage of mothers who had more exposure to health education and the bio-medical knowledge of helminthes had obtained de-worming treatment for their children when compared to the other area. The reasons were the social and cultural constraints [30].

CONCLUSION

All these studies have shown that there is a greater prevalence of worm infestations in children and there is lesser knowledge of mothers regarding causes, spread of infection, complications, care and prevention of worm infestations. If mothers have adequate knowledge about worm infestations, they can prevent this problem in their children to maximum extent. So there is a greater need for assess mothers knowledge, attitude and practice continuously to keep up the child's health.

REFERENCES

1. Achars. Textbook of pediatrics. 3rd ed. New Delhi, Orient Longman pvt ltd, 2005, 379-84.
2. Ahmed AK, Malik B, Shaheen B, Yasmeen G, Dar JB, Mona AK, et al. Frequency of intestinal parasitic infestation in children of 5-12 years of age in Abbottbad. *J Ayub Med Coll Abbottabad*, 15(2), 2003, 28-30.
3. Billakshan SR, Pokharel PK, Paudel IS, Acharaya A, Jha N. A study of prevalence of worm infestation and associated risk factors among the school children of Dharan, Eastern Region of Nepal. *Inter J Medical Dental Sciences*, 2(2), 2013, 121-7
4. Montresor A, Crompton DWT, Hall A, Bundy DA, Savioli L. Guidelines for the evaluation of soil transmitted helminthiasis and schistosomiasis at a community level. World Health Organization, Geneva, 1998.
5. Crompton DW, Nesheim MC. Nutritional impact of intestinal helminthiasis during the human life cycle. *Ann Rev Nutr*, 22, 2002, 35-59.
6. Tahir Z, Hafeez R, Zafar A, Jehnagir S. Comparison of prevalence of intestinal parasites in children and adult population. *Biomedica*, 18, 2002, 74-5.
7. Tanwani AK, Qazi SA, Hashimoto K, Khan MA. Intestinal parasites in stool samples from children at the Childrens Hospital Laboratory, Islamabad. *Pak Ped J*, 19, 1995, 61-4.
8. Khan A, Sultana A, Dar AMK, Rashid H, Najmi SAA. A study of prevalence, distribution and risk factors of intestinal helmenthic infestation in district Bagh (Azad Kashmir). *Pak Armed Forces Med J*, 54, 2004, 243-8.
9. Wadood A, Bari A, Rehman A, Qasim KF. Frequency of intestinal parasite infestations in school children in Skardu. *Pak Armed Forces Med J*, 57, 2007, 77-81.
10. Alam M, Khaltak AL, Talha M. Helmenthic infection, a clinical review. *BMJ*, 327, 2003, 431-3.
11. Okyay P, Ertug S, Gultekin B, Onen O, Beser E. intestinal parasite prevalence and related factors in school children, a western city sample- turkey. *BMC Public Health*, 2004, 22(4), 64
12. Kaus KD, Lundgren RG, Juranek DD, Robert JM, Spencer HC. Intestinal parasitism in the United States, update on a continuing problem. *Am J Trop Med Hyg*, 50, 1994, 705-13

13. Merid Y, Hegazy M, Mekete G, Teklemariam S. Intestinal helmenthic infection among children at Lake Awassa Area, South Ethopia. *Ethopia J Health Dev*, 15, 2001, 31-8
14. Health-Topics-worms,(updated 2007 sep, cited 2006 Nov 18) available from < <http://www.WHO.int/child-adolescent-health/> >
15. Worm infestations,(updated 2007 Nov 14, cited 2006 Jan) available from < <http://www.innvista.com/health/microbes/parasite/worms>.
16. Traub RJ, Robert son ID, Irwin P, Mencke N, Andrew Thompson RC. The prevalence associated with geohelminth infection in tea growing communities, Assam, India. *Trop med int Health*, 9(6), 2004, 688-701.
17. Chandrashekhara MR, Nagesha CN. Intestinal helmenthic infestations in children, Hubli, Karnataka. *Indian J pathol microbial*, 46(3), 2003, 492-494.
18. Mani TR, Rajendran R, Muni ratnum A et al Efficacy of co-administration of albendazole against geohelminthiasis, *Trop med int health*, south India 7(6), 2002, 541-48.
19. Rao V.G, Yadav R, Bhondeley M.K, Das S et al worm infestation and anemia in tribal pre- school children of Madhya Pradesh, *J. commun. Dis*. 34(2), 2002, 100.
20. Jemaneh K, Lengeler C. The use of morbidity questionnaires to identify high prevalence of geohelminth infections, Ethiopia. *Ethiop med J*, 39(3), 2001, 213-28.
21. Maria carol Fernandez, Susan Verghese, Bhuvaneshwari R et.al, A comparative study of intestinal parasites prevalent among children in rural and urban settings in and around Chennai. *J Commun. Dis*, 34(1), 2000, 35.
22. Tama A, Miyagi J, Kamimura K, Tokyama Y, Hasegawa H, et al, The prevalence of intestinal helmenthic infestations, Indonesia. *Southeast Asian J. Trop med public health*, 30(1), 1999, 64-77.
23. Chongsuvivatwong V. Uga S. Nagneen W. Soil contamination and infections by soil transmitted helminthes in an endemic village, southern Thailand. *South east Asian J Troop med public health*, 30(1), 1999, 64-67.
24. Easton A, intestinal worms impair child health, *BMJ Philiines*, 318 (71-78), 1999, 214.
25. Curtale E, Pezzatti P, Sharma Al al Madat H, Ingese P, Soad YS. Babillen E et al. Knowledge of mothers towards intestinal in Uer Egypt, *Health policy plan*, 13(4), 1998, 423-32.
26. Norhaya m, Zainudin B, Mohammed CG, Ootuman P, Azizi O, Fathima MS. The prevalence of Trichiuns, Ascaris & Hook worm infection in Orang Asli children. *South Asian J Trop Med Public health*. 28(1), 1997, 161-8.
27. Magnussen P. Michiri E, Mumgai P, Ndzovu M, Ouma J. Tosha S.A School based aroach to the control of intestinal helminthe infections in children in Matuga, Kenya, *Trop Med int health*, 1997, 2(9), 825-31.
28. Edirisinghe JS. Weiligama DJ. Soil contamination with geohelminth ova in tea plantation in Ceylon. *Med J*, 42(4), 1997, 167-72.
29. De Silya NR, Jayapani YP, de Silya HJ. Socio-economic & behavioral affecting the prevalence of geohelminths in pre-school children. *South East Asian J Trop Med Public health*, 27(1), 1996, 36-42.
30. Rousham EK Perceptions & treatment of intestinal worms in local differences in knowledge, Bangladesh. *Soc Sci & Med*. 39(8), 1994, 1063-8.