

Prevalence of Nematode Worms and Associated Risk factors

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ABSTRACT

The prevalence of Nematode worms with special references to *Ascaris lumbricoide*, *Enterobius vermicularis* and *Trichuris trichura* were studied in different areas of Karachi City. A total 223 cases were recorded from seven different hospitals of Karachi city during January to December 2011. The total patients of *Ascaris lumbricoide* were 109 including 49 male with 44.95% and 60 female with 55.04% while the total number of patients having *Enterobius vermicularis* were 95 from which 47 were male with 49.47% and 48 female with 50.52%. The total patients suffering from *Trichuris trichiura* were 19 including 9 male with 47.36% and 10 female with 52.63%.

Keywords: Nematode worms, Intestine, Patients, Hospitals, Karachi.

INTRODUCTION

Parasitic intestinal infections caused by Nematode worms are most prevalent infections in human in developing countries and cause a significant morbidity and mortality in endemic countries. These Nematode worms also known's as geohelminths and soil- transmitted helminthes which are most prevalent in tropical and subtropical regions due to improper facilities of sanitation (Savioli and Albonico, 2004 and Cappello, 2004)

A lot of research work has been done on Intestinal infection Albonico *et al.*, (1999) worked on control strategies of Nematode infection. Drake *et al.*, (2000) Studied on the cognitive and development impacts of ascariasis, trichiuriasis and hook worm. Stephenson *et al.*, (2000) observed malnutrition due to helminth infection. Bundy *et al.*, (2001) observed the global epidemiology of Nematode infection. Crompton and Nesheim (2002) observed the impact of nutrition on helminthiasis. Siddiqui *et al.*, (2002) studied the distribution of Intestinal parasites in a rural area of Karachi. Cappello (2004) observed the global health impact of Nematodes. Bonsal *et al.*, (2004) recorded the incidence of Intestinal Parasites among the people

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of Low Socio-economic area of Chandigarh (north India) while Okyay *et al.*, (2004) observed the prevalence and related factors in school children of Turkey. Khurana *et al.*, (2005) made comparison among rural and Urban population in Chandigarh. Bethony *et al.*, 2006 worked on ascariasis, trichiuriasis and hook worm. Shaukat *et al.*, (2006) observed the Intestinal parasitic record from Ehsanullah diagnostic laboratory in Karachi. Jacobsen *et al.*, (2007) estimated the prevalence of intestinal infection among young children of highlands of rural Ecuador. Kabatereine *et al.*, (2007) observed the impact of helminth control programme in Uganda children. Mehray *et al.*, (2008) studied the prevalence and associated factors of Intestinal parasites among children in an Urban slum of Karachi. Hotoz *et al.*, (2008) observed the helminth infection as a neglected tropical disease. Wani *et al.*, (2008) recorded the helminthic infection in children of Kashmir Valley. Guadalupe *et al.*, (2009) reported the *Ascaris lumbricoide* in newborns of infected mothers. WHO, 2010 present the updated global target of soil transmitted helminthiasis. Steinmann *et al.*, (2010) observed rapid appraisal of helminth infection among school children in Oshoblist, Kyrgyzstan. Figueiredo *et al.*, (2010) studied that chronic helminth infection are associated with immune hypo responsiveness.

Hsieh *et al.*, (2010) detected the parasitic intestinal infection among laboures Kaohsiung. Talat *et al.*, (2012) observed the prevalence of helminth infection in different areas of Karachi.

MATERIALS AND METHODS

The present research work was carried out for one year i.e. January to December 2011. The information was collected from Pathological Laboratories of different Hospitals of Karachi City as Saifee Hospital situated in Nazimabad, Sindh Govt. Hospital in Khokrapar Malir, Usman Memorial Hospital in Federal B Area, Ibn-e-sina Hospital in Gulshan-e-Iqbal, Haleem Hospital in Sakhi Hasan North Nazimabad while Khizar Hospital and The Hospital in Shah Faisal Town.

RESULTS AND DISCUSSION

The results represent information collected from 223 patients during a period of one year (from January to December 2011) from 7 different hospitals of Karachi i.e. Ibn-e-sina Hospital, Saifee Hospital, Haleem Hospital, Usman Memorial Hospital, Sindh Govt. Hospital, Khizar Hospital and The Hospital. Nematodes collectively reffered to as soil transmitted helminths parasites causing greatest worldwide cause of illness and are linked to lack of proper sanitation, lack of use of safe water and lack of hygiene therefore intestinal parasites prevails wherever there is poverty and effect the people of all ages.

The summarized results are presented in Table IV which showed the prevalence of Nematode parasites

Table I: Over all patients infected with *Ascaris lumbricoides* diagnosed from seven different hospital of Karachi City from Jaunary to December 2011.

Months	Iben-e-seena Hospital		Saifee Hospital		Haleem Hospital		Usman Memorial Hospital		Sindh Govt. Hospital		Khizar Hospital		The Hospital	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
Jan	0	2	0	1	0	1	0	0	2	0	1	0	1	0
Feb	0	4	1	1	1	0	0	1	0	2	0	1	0	0
Mar	0	0	2	1	0	0	1	0	0	0	1	1	0	1
April	1	0	1	1	2	1	0	0	1	1	1	0	1	1
May	1	0	1	0	0	1	0	0	1	2	0	1	0	0
June	0	1	1	0	1	0	0	0	1	0	0	1	1	1
July	0	1	2	0	0	2	0	0	0	0	1	0	0	1
Aug	1	0	2	2	0	0	0	0	1	1	0	1	2	0
Sept	0	0	1	1	1	1	1	1	0	0	0	1	0	1
Oct	0	1	0	4	2	0	0	0	2	1	1	0	0	0
Nov	0	1	0	1	0	0	0	2	1	1	1	1	2	1
Dec	0	0	0	2	1	2	0	0	2	1	1	1	1	1
Total	03	10	11	14	08	08	02	04	11	09	07	08	08	07

Table II: Over all patients infected with *Enterobius vermicularis* diagnosed from seven different hospital of Karachi City from January to December 2011.

Months	Iben-e-seena Hospital		Saifee Hospital		Haleem Hospital		Usman Memorial Hospital		Sindh Govt. Hospital		Khizar Hospital		The Hospital	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Jan	0	0	0	1	0	1	1	1	1	1	1	0	1	1
Feb	0	0	1	0	1	0	0	0	3	1	0	1	0	0
Mar	0	0	1	1	0	0	0	1	1	2	1	0	0	1
April	0	0	0	0	1	0	0	0	1	1	0	1	1	0
May	0	0	1	0	0	0	1	1	2	1	1	0	0	1
June	0	0	1	0	0	0	0	0	2	2	0	1	0	0
July	0	0	0	1	0	1	0	0	1	1	1	0	1	0
Aug	0	0	1	1	0	1	0	1	1	1	0	2	0	1
Sept	0	0	0	1	0	1	1	0	2	2	1	2	0	1
Oct	0	0	1	1	2	1	0	0	1	1	0	1	1	1
Nov	0	0	0	1	1	0	0	1	1	1	1	2	0	0
Dec	0	0	0	0	1	0	1	0	2	1	2	0	1	0
Total	0	0	06	07	06	05	04	05	18	15	08	10	05	06

Table III: Over all patients infected with *Trichuris trichiura* diagnosed from seven different hospital of Karachi City from January to December 2011.

Months	Iben-e-seena Hospital		Saifee Hospital		Haleem Hospital		Usman Memorial Hospital		Sindh Govt. Hospital		Khizar Hospital		The Hospital	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Jan	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Mar	0	0	1	1	0	0	0	0	0	0	0	0	0	0
April	0	0	0	1	0	0	0	0	0	0	0	0	0	0
May	0	0	1	1	0	0	0	1	0	0	0	0	0	1
June	0	0	1	0	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Aug	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Sept	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oct	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Dec	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Total	0	0	07	07	0	0	01	01	0	0	0	0	01	02

Table IV: Over all summarized record of patients of *Ascaris lumbricoides*, *Enterobius vermicularis* and *Trichuris trichiura* collected from seven different hospital of Karachi during January to December 2011.

Hospitals Name	Observed Cases						Total Positive infection cases		
	<i>Ascaris lumbricoides</i>		<i>Enterobius vermicularis</i>		<i>Trichuris trichiura</i>		Total Male	Total Female	Total Patients
	Male	Female	Male	Female	Male	Female			
Iben-e-seena Hospital	03 23.07%	10 76.92%	0 0	0 0	- 0	- 0	03 23.07%	10 76.92%	13 5.82%
Saifee Hospital	11 44%	14 56%	06 46.15%	07 53.84%	07 50%	07 50%	24 46.15%	28 53.84%	52 23.31%
Haleem Hospital	08 50%	08 50%	06 54.54%	05 45.45%	0 -	0 -	14 51.85%	13 48.14%	27 12.10%
Usman Memorial Hospital	02 33.33%	04 66.66%	04 44.44%	05 55.55%	01 50%	01 50%	07 41.17%	10 58.82%	17 7.62%
Sindh Govt. Hospital	11 55%	09 45%	18 54.54%	15 45.45%	0 -	0 -	29 54.71%	24 45.28%	53 23.76%
Khizar Hospital	07 46.66%	08 53.33%	08 44.44%	10 55.55%	0 -	0 -	15 45.45%	18 54.54%	33 14.79%
The Hospital	07 50%	07 50%	05 45.45%	06 54.54%	01 33.33%	02 66.66%	13 46.42%	15 53.57%	28 12.55%
Grand Total	49 44.95%	60 55.04%	47 49.47%	48 50.52%	09 47.36%	10 52.63%	105 47.08%	118 52.91%	223 100%

in all parts of Karachi City. The rate of infection of *Ascaris lumbricoides* (Table-I) is most common parasite, and was found in all parts of Karachi. The rate of intensity in females was found higher (Table IV) i.e. 44.95% in males and 55.04% in females.

Enterobius vermicularis also cause a worldwide disease called Enterobiasis which is a second widest distribution and found also common in Karachi City (Table II). The intensity of infection due to

E. vermicularis was found 49.47% in males and 50.50% in females (Table IV).

The distribution of *Trichuris trichiura* in different hospitals is represented in Table III and the overall summarized infection due to *Trichuris trichiura* was found 47.36% in males and 52.63% in females. (Table-IV).

The geohelminth infections are highly prevalent due

to the conditions which are most frequently associated with water source, defecation site, and especially personal hygiene and for the control of infection it is very important to improve the sanitary system

REFERENCES

- Albonico, M., Crompton, D. W., and Savioli. L. 1999. Control strategies for human intestinal nematode infection. *Adv Parasitol*, 42, 277-341.
- Bansal D., Sehgal R., Bhatti H.S., Shrivastava., S.K., Khurana S., Mahajan R.C. and Malla N. 2004. Intestinal Parasites and intra familial incidence in a low socio-economic area of Chandigarh (North India). *Nepal Med Coll J*, 6, 28-31.
- Bethony J, Brooker S, Albonico M, Geiger SM, Loukas A, Diemert D, Hotez PJ. 2006. Soil-transmitted helminth infections: ascariasis, trichuriasis and hookworm. *Lancet*, 2006, 367:1521-1532.
- Bundy, D.A.P., Chan M.S., Medley G.F., Jamison D and Savioli L. 2001. "Intestinal Nematode Infections." *The global epidemiology of infectious diseases* (C.J.L. Murray and A .D. Lopez, eds). Cambridge Harvard University Press.
- Cappello M. 2004. Global health impact of soil transmitted nematodes. *Pediatr Infect Dis J*. 23: 663-664 [Pub Med]
- Crompton, D.W.T., and M.C. Nesheim. 2002. Nutritional impact of intestinal helminthiasis during the human life cycle. *Annu. Rev. Nutr*. 22:35-59.
- De silva NR., Brooker S., Hotez PZ., Montresor A, Engles D, Savioli L 2003. Soil transmitted helminth infection updating the global picture. *Trends Parasitol*. 19: 547-551 [Pub Med]
- Drake LJ., Jukes MCH., Sternberg RJ., Bunday DAP. 2000 Geohelminth infections (ascariasis, trichiuriasis, and hookworm): cognitive and development impacts. *Sem Paediatr Infect Dis*. 11: 245-51
- Figueiredo CA, Barreto ML, Rodrigues LC, Cooper PJ, Silva NB, Amorim LD, Alcantara-Neves NM. 2010. Chronic intestinal helminth infection are associated with immune hyporesponsiveness and induction of a regulatory network. *Infect immune*, 78: 3160-3167.
- Guadalupe I, Mitre E, Benitez S, Chico ME, Cordova X, Rodriguez J, Nutman TB, Cooper PJ. 2009. Evidence of intrauterine sensitization to *Ascaris lumbricoides* infection in newborns of infected mothers. *J Infect Dis*. 199:1846-1850
- Hotez PJ, Brindley PJ, Bethony JM, King CH, Pearce EJ, Jacobson. 2008. J: Helminth infections: the great neglected tropical diseases. *J Clin. Invest*, 118:1311-1321.
- Hsieh M-H., Lin W-Y., Dai C-Y., Huang J-F., Huang C-K., Chien H-H., Wang C-L., Chung W-L., WUJ-R., Chen E-R., Ho C-K., YU M-L. 2010. Intestinal parasitic infection detected by stool examination laboures Kaohsiung. *Kaohsiung J Med Sci*. 26: 136-142.
- Jacobsen KH., Ribeiro PS., Quist BK., Rydbeck BV. 2007. Prevalence of intestinal parasites in young Quichua children in the highlands of rural Ecuador. *J Health popul Nutr*. 25: 399-405. [Pub Med]
- Kabatereine NB, Brooker S, Koukounari A, Kazibwe F, Tukahebwa EM, Fleming FM, Zhang Y, Webster JP, Strthard JR, Fenwick A (2007).: Impact of a national helminth control programme on infection and morbidity in Ugandan School Children. *Bull World Health Organ*. 85:91-99.
- Khurana S., Aggarwal A and Malla N. 2005. Comparative analysis of intestinal parasitic infections in slum, rural and urban population in and around union Territory, Chandigarh. *J commun Dir*. 37: 239-243.
- Mehraj V, Hatcher J, Akhtar S, Rafique G, Beg MA. 2008. Prevalence and factors associated with intestinal parasitic infection among children in an urban slum

of Karachi PLoS ONE 3: e3680.

Okyay P, Ertug S, Gultekin B, onen O, Beser E. 2004. Intestinal parasites Prevalence and related factors of parasitic infections in school children, a western city sample-Turkey BMC Public health., 4:1-9.

Savioli L., Albonico M. 2004. Soil transmitted helminthiasis. Nat Rev Microbiol. 2:618-619 [Pub Med]

Shaukat N., Bilqees F.M., Hadi R., Ziadi V.A. and Nadia A. 2006. A record of intestinal parasitic infections from Ehsanullah diagnostic laboratory, Nazimabad Karachi. J. Baqai Med. Univ. 9: 29-36.

Siddiqui, M.I., Bilqees F.M., Ilyas M, and Perveen S. 2002. Prevalence of parasites infections in a rural area of Karachi Pakistan J. Pak. Med. Assoc. 52: 315-320.

Steinmann P, Usubalieva J. Imanalieva C, Minbaeva

G, Stefiuk K, Jeandron A, Utzinger J. 2010. Rapid appraisal of human intestinal helminth infections among School Children in Osh oblast, Kyrgyzstan. Acta Trop, 116:178-184.

Stephenson LS., Latham MC., ottesen EA. 2000. Malnutrition and parasitic helminth infections. Parasitology ; 121: S 23-38 [Pub Med]

Talat R., Farzana I., Sharifa G., and Sobia M. 2012. Prevalence of human intestinal parasites in different areas of Karachi Pakistan. B: Helminth infection. Proceedings of parasitology 53; 67-76.

Wani S.A., Ahmad F., Zargar S.A., Dar P.A., Dar Z.A., and Jan T.R. 2008. Intestinal helminthes in a population of children from the Kashmir valley, India. J. Helminththal, 82, 313-317.

WHO. 2010. Soil-transmitted helminthiasis. Number of children treated 2007-2008: updated on 2010 global target. Wkly Epidemiol Rec, 85; 141-148.