WORM INFESTATION IN CHILDREN OF SKARDU

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ABSTRACT

Objective: To determine the frequency of parasitic infestation among children of district Skardu.

Study design: Cross-sectional study**.**

Place and Duration of study: Combined Military Hospital, Skardu, from September 2010 to January 2011

Materials and Methods: Two hundred and fifty children of 1-15 years of age. were selected from out patient department through non probability convenience sampling. Demographic information included gender, hygienic condition, source of drinking water, defecation site and maternal education. This information was recorded on a questionnaire. Parents were interviewed, while stool samples of children were collected for examination of ova and cysts.

Results: Ova and cysts of various parasites were found in 192(76.8%) children. Intestinal helminths were more frequent 167(87%) than protozoa 25(13%). Mixed infestation seen in 24(12.5%) cases and single parasite was seen in 168(87.5%) cases. Water from streams, use of traditional defecation sites, poor personal hygiene, illiteracy of mothers and rural living proved to be significant risk factors in predicting the intestinal helminth infection (p<0.05).

Conclusion: Parasitic infestation is very common in children belonging to Skardu region. Ascaris lumbricoides was the most common helminth infestation found compared to protozoa. Poor hygiene, use of stream water, rural living, and low level of maternal education have appeared as major contributors towards parasitic infestation.

Key Words: Parasitic infestation, children, Skardu

INTRODUCTION

Parasitic disease is a major public health problem globally with intestinal parasites being most common in developing countries, in both rural and urban communities[1,2]. Global estimates indicate that nearly 3.5 billion people are affected from parasitic infections and that among them 450 million become ill, the majority being children[3].

Worm infestation in children has been studied in various parts of Pakistan. In one of the study children were more infected (60%) with helminths and protozoa than adults (30%) who had only protozoal infection[4]. Prevalence of helminthic infestation in children was found to be 23% in Islamabad[5], 21.7% in Bagh District[6], and 31% in Quetta[7]. High prevalence of worm infestation in children is reported from northern areas of Pakistan[8-11] Major factors for worm infestation are poor socio-economic status, large family size, low educational level and poor environmental sanitation[5]. Single parasite infection is common[5-11], however multiple parasites have also been reported[12]. Worm infestation in children results in chronic diarrhea and malnutrition.

Baltistan is an underdeveloped part of the country where most of the population is living near or under the poverty line. Poor hygienic and sanitation conditions are prevalent and clean drinking water is not available. People in this area are dependent on stream and well water. Diarrhea and malnutrition are common in children of this area. Keeping in view these public health problems this study was conducted with the objective to assess the frequency of intestinal geohelminths and other intestinal parasitic infections. We also assessed the association of intestinal geohelminths with certain risk factors such as use of stream water for drinking and hygiene related practices of the community.

SUBJECTS AND METHODS

This cross-sectional study was conducted at Combined Military Hospital (CMH) Skardu, from Sep 2010 to Jan 2011.

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Two hundred and fifty children aged 1–15 years were chosen through non-probability convenience sampling from the out patient department of Combined Military Hospital Skardu.

Inclusion Criteria

Children from 1 to 15 years of age.

Children living in Skardu for more than 6 months.

Exclusion Criteria

Critically ill children were not included.

Children accompanied by relatives other than parents were not included.

Ethical Considerations

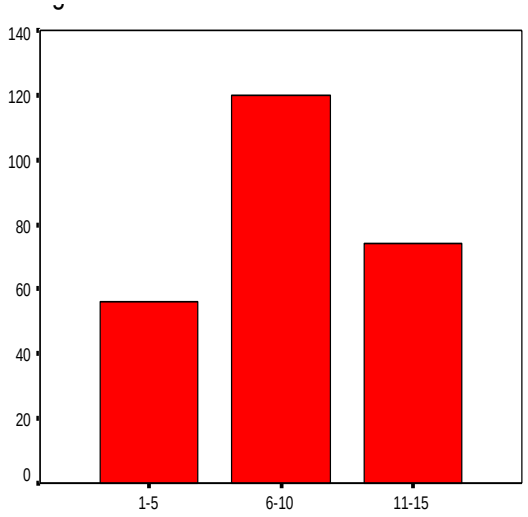
The study was approved by the hospital ethics committee and written informed consent was taken from parents of the child. Parents were inquired for information regarding age, gender, residential area (rural or urban), level of education of the mothers (illiterate, secondary or graduate), sanitation facilities, type of drinking water (well, filtration plant, or stream water), personal hygiene and defecation site (traditional , modern sanitary or open field latrine). A team of two trained staff members collected data on a pre-tested structured questionnaire incorporating the variables mentioned above. Single stool sample was taken. Participants were sent to laboratory of Combined Military Hospital Skardu where they were provided with a labeled clean stool container with l0 ml of 10% formalin. Stool specimens were processed immediately using simple smear techniques. Slides were made using one drop of normal saline and five grams of stool. Trained technician on duty examined all the samples. The laboratory diagnosis of smear for parasite infestation was based on demonstration of ova, cysts or trophozoites. The result of stool examination was recorded in a register.

Data was analyzed using SPSS-13 Descriptive statistics were used to describe the data. Chi-square test was applied to study the association of infestation of any intestinal geohelminth with various risk factors $p<0.05$ was considered as a significant value.

RESULTS

Out of Two hundred and fifty children included in the study 129(51.6%) were males and 121(48.4%) females. The age wise distribution of children is shown in fig 1. Personal hygiene was poor in 151(60.4%) and good in 99(39.6%). The different sources of drinking water are depicted in fig 2. A total of 43(17.2%) were using modern latrines, 154(61.6%) were using traditional latrines and 53(21.2%) were using open fields as defecation site. The level of education of mothers is depicted in fig 3. Fifty one (20%) children belonged to urban areas and 199(80%) belonged to rural areas.

Stool examination showed an overall predominance of intestinal parasites with 76.8%(192/250) yield. The distribution of



Age group

Fig.1: Distribution of age of children (n=250)

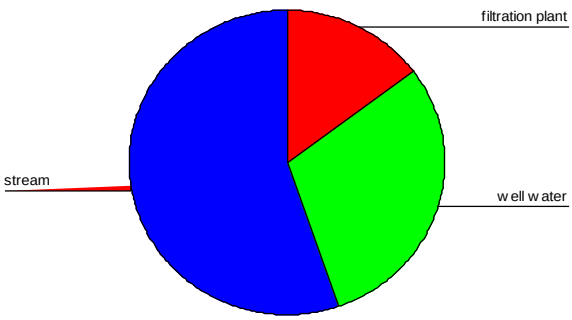


Fig. 2: Description of source of water among children (n=250)

Table- 1: Parasitic infestation in relationship with demographic characteristics

Demographic Characteristics		Worms present	Worms absent	p-value
Gender	Male	90 (46.8)	39 (67.3)	0.006
	Female	102 (53.2)	19 (32.7)	
Residential area	Rural	162 (84.3)	37 (64)	0.001
	Urban	30 (15.7)	21 (36)	
Maternal education	Illiterate	116 (60.4)	7 (12.03)	<0.001
	Secondary	56 (29.2)	32 (55.17)	
	Graduate	20 (10.4)	19 (32.7)	
Hygienic condition	Poor	130 (67.8)	21 (36.3)	<0.001
	Good	62 (32.2)	37 (63.7)	
Source of drinking water	Streams	112 (58.3)	26 (44.8)	
	Wells	60 (31.3)	15 (25.8)	0.002
	Filtration plant	20 (10.4)	17 (29.4)	
Defecation site	Modern latrines	30 (15.6)	13 (22.5)	
	Traditional latrines	114 (59)	40 (68.9)	0.024
	Open fields	48 (25.4)	5 (8.6)	

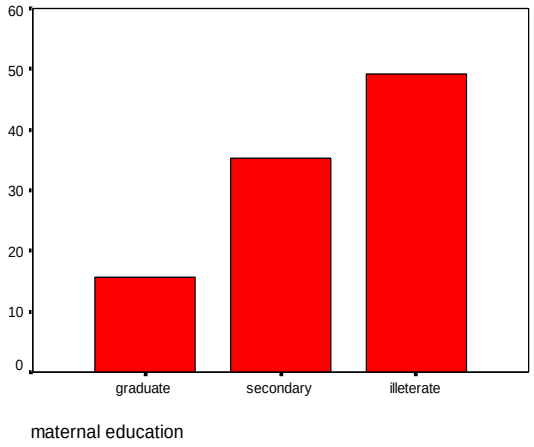


Fig. 3: Maternal education of all the childre (n=250)

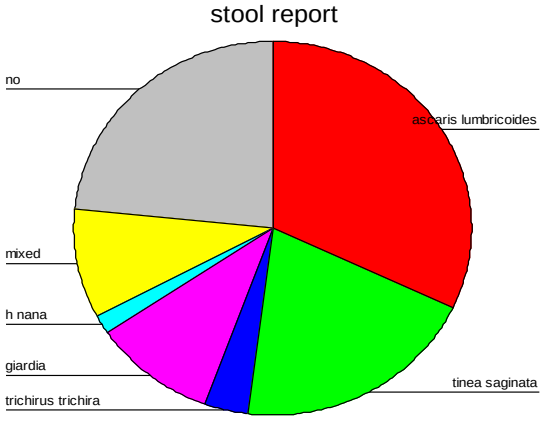


Fig. 4: Distribution of worms.

worms is illustrated in fig 4. Intestinal helminths were more commonly seen 167(87%) than protozoa 25(13%). The commonest age group affected was of 11-15 years 115(59.9%) followed by the age group of 6-10 years 48(25%) and age group of 1-5 years 29(15.1%). Frequency of worms in relation to demographic features is depicted in table 1. Water from streams, use of traditional defecation sites, poor personal hygiene, illiteracy of mothers and rural living proved to be significant risk factors in predicting the intestinal helminth infection (p<0.05).

DISCUSSION

Present study was done in one of the underdeveloped areas of Pakistan where public health facilities are scarce. In this study, 192 children (76.8%) were infested with parasites. Worm infestation in children from other northern areas of Pakistan is also high: Abbottabad (85%)[9-10] and towns of Yasin and Singal (91%)[11]. Other studies in Pakistan showed frequency of 23% in Islamabad[12], 21.7% in Bagh District[6] and 31% in Quetta[7] which is lower than our study. In another study done by Alam and colleagues in school children of Skardu in 2007, the frequency of worm infestation was found to be (54.9%)[8] The high frequency of parasitic infestation in district Skardu is probably a consequence of a low standard of living, poor sanitation, lack of personal hygiene, traditional methods of agriculture, indiscriminate defecation and the use of human feces as fertilizers. The incidence

of parasitic infestation in Caribbean children was (43.5%)[13] in Afghanistan (47.2%)[14], in Nepal (66.6%)[15] and Bangladesh (53%)[16].

Legesse and Erko (2004) noted a high frequency of 88.2% among the school children in rural Ethopia.[17] Similarly in India, worm infestation was more in rural area than urban area[18]. The same result was seen in our study. Multiple parasitic infestation was seen in (12.5%) cases in the present study which is higher than other reported studies[19]. The reason may be the maximum population is using stream water which is usually contaminated with human and animal wastes. In the present study, helminthic infestation was higher than intestinal protozoa. Similar trend was reported by other workers[8,10,12,15,17]. While Tahir and colleagues[4] have reported higher protozoal than helminthic infestation.

In our study the highest frequency is seen in the 11-15 age group followed by the 6-10 age group. Similar age-related prevalence variations among school children have been reported by other investigators[20]. In Iran, the parasitic infestation was highest in 2-14 years age group (25.5%)[21].

In the present study no gender difference was noted in parasitic infestation and similar results are observed by others[9,12,17,20]. One report from Northern Pakistan showed high infestation in girls[13] In a study in Palestine a significantly higher frequency of infestation was seen among males compared to females[22] This finding can be partially explained by the difference in gender behavior. Children consuming drinking water from streams and wells were found to be at greater risk of acquiring of worm infestation than those using water from filtration plant. This pattern of infestation has also been seen in various other studies as well[23].

In our study, it was also found that maternal education was a significant risk factor for the acquisition of infestation. Maternal education has been found to be the most important risk factor for children acquiring the parasitic infestation[24].

The limitations of the study must be kept in mind. The study is cross-sectional in design and there might be potential information biases relating to the collection of questionnaire data. Besides, the quantitative nature of data was a limitation in qualitatively exploring the reasons behind poor sanitation and related behavioral practices.

CONCLUSION

The present study reveals that intestinal helminthic infestation is quite frequent among children of Skardu. This situation strongly calls for the institution of control measures, including treatment of infected individuals, improvement of sanitation practices, provision of clean water. Further studies are required to find out trend and frequency of intestinal protozoan infestation in the children of district Skardu. The impact of each measure would be maximized through a health education program directed at children and their mothers in particular, and to communities in general. 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 results. Universal deworming of children should be carried out.

REFERENCES

1. Adedayo O, Nasiiro R. Intestinal parasitoses. J Natl Med Assoc 2004; 96: 93-6.
2. Small EA, Tice AD, Zheng X. Intestinal parasites of the Pacific. Hawaii Med J 2003; 62: 216-9.
3. World Health Organization. Control of tropical diseases. Geneva: WHO; 1998.
4. Tahir Z , Hafeez R, Zafar A, Jehangir S. Comparison of prevalence of intestinal parasites in children and adult population. Biomedica 2002;18:74-5.
5. Tanwani AK, Qazi SA, Hashimoto K, Khan MA. Intestinal parasites in stool samples from children at the Children`s Hospital Laboratory, Islamabad. Pak Ped J 1995; 19: 61-4.
6. Khan A, Sultana A, Dar AMK, Rashid H, Najmi SAA. A study of prevalence, distribution and risk factors of intestinal helminthic infestation in district Bagh (Azad Kashmir). Pak Armed Forces Med J 2004; 54: 243-8.
7. Wadood A, Bari A, Rehman A, Qasim KF. Frequency of intestinal parasite infestation in Children Hospital Quetta. Pak J Med Res 2005; 44: 87-8.
8. Alam M, Khattak AL, Talha M. Anemia and intestinal parasitic infestations in school children in Skardu. Pak Armed Forces Med J 2007;57:77-81.
9. Hussain SM, Raza MI, Naeem S. Prevalance of intestinal Parasites in Northern Areas of Pakistan (Baltistan Division-Skardu). Biomedica 1997; 13: 60-4.

10. Ahmed AK, Malik B, Shaheen B, Yasmeen G, Dar JB, Mona KA. Frequency of intestinal parasitic infestation in children of 5-12 years of age in Abbottabad. J.Ayub Med Coll Abottabad 2003;15:28-30.

11. Waqar SN, Hussain H, Khan R, Khawaja A, Majid H, Malik S, et al. Intestinal Parasitic Infections in Children from Northern Pakistan. Infect Dis J 2003; 12:73-7.

12. Tanwani AK, Qazi SA, Hashimoto K, Khan MA. Intestinal parasites in stool samples from children at the Children`s Hospital Laboratory, Islamabad. Pak Pediatr J 1995; 19: 61-4.

13. Lindo JF, Validum L, Ager AL, Campa A, Cuadrado RR, Cummings R, et al. Intestinal parasites among young children in the interior of Guyana. West Indian Med J 2002; 51(1): 25-7.

14. Gabrielli AF, Ramzam M, Nauman C, Tsogzolmaa D, Bojang B, Khoshal MH, et al. Soil-transmitted helminths and haemoglobin status among Afghan children in World Food Programme assisted schools. J Helminthol 2005; 79: 381-4.

15. Sharma BK, Rai SK, Rai DR, Choudhury DR. Prevalence of intestinal parasitic infestation in school children in the northeastern part of Kathmandu Valley, Nepal. Southeast Asian J Trop Med Pub Health 2004; 35: 501-5.

16. Hosain GM, Saha S, Begum A. Impact of sanitation and health education on intestinal parasite infection among primary school aged children of Sherpur, Bangladesh. Trop Doct 2003; 33: 139-43.

17. Legesse M, Erko B. Prevalence of intestinal parasites among school children in south east of Lake Longano, Ethopia. Europ J Health Develop 2004;18:116–20

18. Narain K, Raj guru SK, Mahanta J. Prevalence of Trichuris trichiura in relation to socio-economic and behavioral determinants of exposure to infection in rural Assam. Indian J Med Res 2000;112:140–6.

19. Pathmeswaran A, Jayatissa R, Samarasinghe S, Fernando A, De Silva, Thattil RO, et al. Health status of primary schoolchildren in Sri Lanka. Ceylon Med J 2005; 50: 46-50.

20. Okyay P, Ertug S, Gultekin B, Onen O, Beser E. Intestinal parasites prevalence and related factors in school children, a western city sample--Turkey. BMC Public Health 2004; 4: 64.

21. Sayyari AA, Imanzadeh F, Bagheri Yazdi SA, Karami H, Yaghoobi M. Prevalence of intestinal parasitic infections in the Islamic Republic of Iran. East Mediterr Health J 2005; 11: 377-83.

22. Ibrahim AH. Prevalence of intestinal parasites among school children in Dier-El-Balah town in Gaza, Strip, Palestine. Ann Saudi Med 2002; 22: 273–5.

23. Curtis V, Kanki B, Meretens T, Traore E, Diallo I, Tall F, et al. Putties, pits and pipes; explaining hygiene behaviour in Burkina-faso. Soc Sci Med 1995; 41: 383–93.

24. Oguoma V, Anyasodor A, and Mbata T. Prevalence of Intestinal Protozoan parasites among children aged 5-12 years in Owerri Metropolis South Eastern Nigerian. Trop. J. Health Sci 2008;15(2): 43-8

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