

Prevalence of Intestinal Parasite and its Relation to Nutritional Status among Children in Rurl Area Nandyal, Andhra Pradesh-India

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Abstract : Intestinal parasitic infections are one of the biggest socioeconomic and medical problems. Epidemiological studies show that parasitic infections are among the most common infections and one of the biggest health problems of the society worldwide. Research carried out in different countries has shown that the socioeconomic status of the individuals is an important cause in the prevalence of intestinal parasites. **OBJECTIVES:** -To study the prevalence of worm infestation in 0-6yr children. To study the relation of worm infestation with malnutrition.

Materials and Methods: cross-sectional study taken up in rural field practice area of Department of Community Medicine, Santhiram Medical College, Nandyal. **Sample Size:** 455 children **Sampling technique:** Simple random sampling. **Collection of data** is by house to house visit. **DATA ANALYSIS:** data analysis: Microsoft Excel -2013 for entering the data, SPSS version 22 for cross tabulation and analysis, WHO anthro analysis. investigations hemoglobin estimation by Sahli's hemoglobinometer, stool examination by microscopy. **Results:** In our study out of 455 children 20% (91) falls in 5-6 yrs age group. 16.5% (75) are in 0-1 yrs age group. 3.9% of children have hook worm infestation, and 41.8% have round worm infestation. 37.7% of normal children, 47.5% of under nourished children and 57.4% were malnourished. Which is statistically significant. **Discussion:** -In the present study out of 455 children, 217 (47.7%) were males and 238 (52.3%) were females. Majority were Hindu 318 (69.9%). In our study 20% of children were selected by simple random sampling and hemoglobin was estimated by Sahli's method. In that 40% are normal, 22.2% were mild anemic, 37.8% were moderately anemic. In the present study out of 455 children 90.2% of children were from lower socio economic class have round worm infestation, 48.9% of children from upper lower class have round worm infestation. Which is statistically significant ($p < 0.001$). **Conclusion:** -In our study 40% are normal, 22.2% were mild anemic, 37.8% were moderately anemic. 47.5% of the children with worm infestation were under nourished, which shows a direct relation.

Key words: parasitic infection, hook worm, round worm, anemia, malnutrition.

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I. Introduction

Intestinal parasitic infections are one of the biggest socioeconomic and medical problems. Epidemiological studies show that parasitic infections are the most commonest infections and one of the biggest health problems of the society worldwide. Surveys on the prevalence of various intestinal parasitic infections in different geographic regions are a **prerequisite** for developing appropriate control strategies. Research carried out in different countries has shown that the socioeconomic status of the individuals is an important cause in the prevalence of intestinal parasites.

Two epidemiological factors distinguish parasitic diseases from other infections. The first factor is high prevalence of these infections so that parasitic infection prevalence estimates to be about 3–3.5 billion people, which cause 450 million deaths every year. The second factor is the high rate of incidence in poor and disadvantaged communities. These infections cause serious damage to children's development in non-developed countries and are related to failure to thrive, reduced physical activity and learning power.

The main symptoms of the diseases are related to gastrointestinal. It may also cause anaemia, physical and mental problems such as delayed growth in children, weight loss, fatigue and itching or rash around the anus and vulva. Several studies have been carried out to find the prevalence of intestinal parasites among children and based on the geographical and health status of the study setting the findings differ. In this study,

prevalence of parasitic infection in children residing in rural field practice area of Santhiram medical college, Nandyal has been studied.

II. Objectives

- To study the prevalence of worm infestation in 0-6yr children.
- To study the relation of worm infestation with malnutrition.

III. Materials And Methods:-

Cross-sectional study in rural field practice area of Department of Community Medicine, Santhiram Medical College, Nandyal. This area is located within a radius of 22 Km. from our college and has a population of 24,680 of which 455 are children of 0 to 6 years of age.

Majority of the population belonged to the lower and middle socio-economic status, having both literates and illiterates and the chief languages spoken were Telugu. The majority of the population was Hindu and some were Muslims and Christians. The main occupation was agriculture. Sample Size: 455 children. (minimum sample size)

Sampling technique: 455 Children were selected by simple random sampling.

study was undertaken on the sample by house to house visit.

The information regarding parent's education, occupation, religion, per-capita income, examination including anthropometrics, clinical examination and lab investigations viz., Hb% (Sahli's method), stool examination was done.

IV. Data Analysis

The following softwares were used for the data analysis:

1. Microsoft Excel -2013 for entering the data
2. SPSS version 22 for cross tabulation and analysis
3. WHO anthro analysis

V. Investigations

HEMOGLOBIN ESTIMATION:

It was done using Sahli's hemoglobinometer

STOOL EXAMINATION: A portion of stool is collected with a swab or with a spatula at time of defecation in clean disposable container and each container is labelled. Put a drop of normal saline on a microscope slide and mix it with a small amount of stool and examine under low and high power objectives. The smear must be a transparent one and excessive amount of stool should not be used. A cover slip is applied after, preparing a homogeneous smear. The smear is examined from one end to the other end moving the slide covering the entire smear. Parasite is unicellular as protozoa and multicellular as helminth³⁰

VI. Results

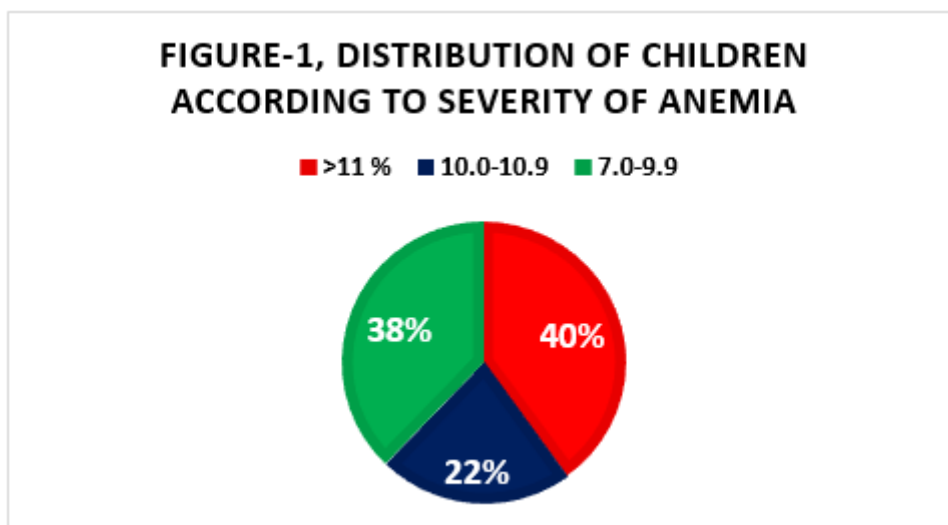


Figure 1 showing 20% of children were selected by simple random sampling and hemoglobin was estimated by Shalis method. In that 40% are normal, 22% were mild anemic, 38% were moderately anemic.

TABLE NO:1, DISRIPTION OF CHILDREN ACCORDING TO STOOL EXMINATION

	Hook worm	Percent	Round worm	Percent
Present	18	3.9%	190	41.8%
absent	437	96.1%	265	58.2%
total	455	100.0%	455	100.0%

Table 1 showing 3.9% of children has hook worm infestation, and 41.8% has round worm infestation.

TABLE NO:2, RELATION SHIP OF SOCIAL CLASS WITH HOOK WORM INFESTATION

Social class	Hook worm		Total
	Present	Absent	
lower	8	53	61
	13.1%	86.9%	100%
upper lower	4	225	229
	1.7%	98.3%	100%
lower middle	2	106	108
	1.8%	98.2%	100%
upper middle	3	38	41
	7.3%	92.7%	100%
upper class	1	15	16
	6.25%	93.75%	100%
Total	18	437	455
	3.9%	96.1%	100%

P=0.000,(df-4) Statistically highly significant

Table 2 showing 78.7% of lower socio economic class children has hook worm infestation, 52.4% of children in upper lower class has hook worm infestation, 20.4% of children I lower middle class has hook worm infestation, whereas upper class has only 12.5%. which is statistically highly significant, P less than 0.001.

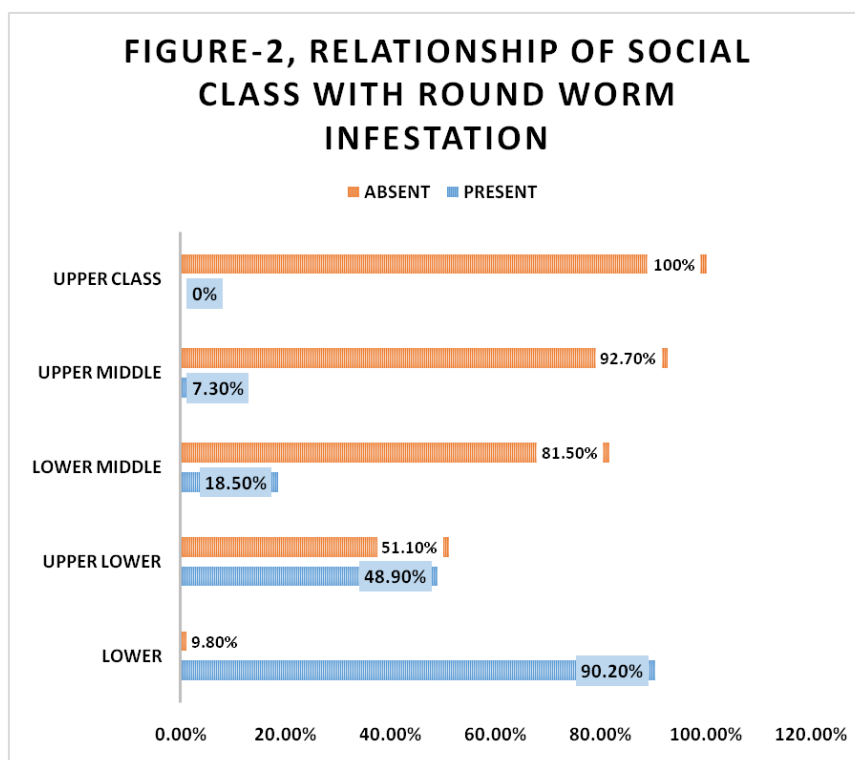


Figure 2 showing 90.2% of children from lower socio economic class has round worm infestation, 48.9% of children from upper lower class has round worm infestation, whereas 0% of children from upper class has no infestation. Which is statistically highly significant, P value less than 0.001.

TABLE NO:3 RELATIONSHIP OF MALNUTRITION WITH WORM INFESTATION

Impression	Worm Infestation		Total
	Present	Absent	
normal	110 37.7%	182 62.3%	292 100.0%
under nourished	48 47.5%	53 52.5%	101 100.0%
malnourished	31 57.4%	23 42.6%	54 100.0%
obese	1 12.5%	7 87.5%	8 100.0%
Total	190 41.8%	265 58.2%	455 100.0%
P=0.009 (df- 3)		Significant	

Table 3 showing 37.7% of normal children, 47.5% of under nourished children and 57.4% of malnourished children has malnourishment. Which is statistically significant.

VII. Discussion

In the present study out of 455 children, 217(47.7%) were males and 238 (52.3%) were females. According to religion Hindu 318 (69.9%), Muslims 69 (15.2%) and Christians 68 (14.9%).

In our study 20% of children were selected by simple random sampling and hemoglobin was estimated by Shalis method. In that 40% are normal, 22.2% were mild anemic, 37.8% were moderately anemic.

According to study conducted by ShallyAwasthi et al (2003)¹ 70% of preschool children were anemic. According to study conducted by Behera TR et al (2009)² 51.4% of 1 to 5 year children were anemic in which 2.1% had severe anemia.

According to the study by ShardaSidhU et al (2007)³ in Punjab among 1200 preschool children, 9.5% of children were normal and 90.5% were affected with various grades of anaemic conditions. Among anaemic, 6.33% were mildly anaemic and 75.75% moderately anaemic while 8.42% suffered form severe anaemia.

In NFHS-3, anaemia in children was measured in the field with a drop of blood from a finger stick using the HemoCue HB201+ analyzer. Three levels of anaemia were distinguished based on the level of haemoglobin: mild anaemia (10.0-10.9 grams/decilitre), moderate anaemia (7.0-9.9 g/dl), and severe anaemia (less than 7.0 g/dl)⁴. In a study conducted by BHATIA V et al⁵ Around two-third of children were suffering from anaemia with equal distribution in both sexes. This corroborates to the finding of various studies carried out in Delhi, which showed a high prevalence of anaemia in children^{6,7}.

In the present study out of 455 children 3.9% of children has hook worm infestation, and 41.8% has round worm infestation. Parasites were detected in 17.5% (95% CI 15.3%-19.9%) children by a single direct fecal smear examination. Of these, *Ascarislumbricoides* was found in 124 (68.1%)⁸.

Present study found *Ascarislumbricoides* to be the most predominant helminthic parasite (51.72%). This is a universal result as in^[9-15]. International results are similar specially in Ethiopia¹⁶ and Brazil¹⁷. Prevalence is 0.8% in USA even being a developed country¹⁸. A lumbricoides is a soil transmitted parasite and its embryonated ova are more resistant to cold and dry climate. Majority of infestations occur when the children are at play on the soil and do not wash their hands before having the edibles.

In a study conducted by Bhatia V et al prevalence of worm infestation was 35.67%.¹⁹

In a study conducted by Salvador et al evaluated the prevalence of hookworm in 374,120 children. Of these, 1,027 (0.27%) children were positive for hookworm²⁰.

In a study conducted by S Awasthi et al²¹ 50.3% children were infected with single or mixed geohelminth infections (Group A) while 51.6% suffered from other intestinal parasites (Group B). Studies from Nigeria and Pakistan have reported prevalence rates of 44% and 77% respectively among young children^{22,23} although an Ethiopian study found a much lower prevalence²⁴.

In Gonda region, Ethiopia a study was conducted to assess the prevalence of intestinal helminthes infestations. They collected 8006 children by simple random sampling method. By means of katokatz technique, the study results showed that *ascarislubricoides* (35.4%), hook worm (16.3%) and *trichuristrichura* (12.7%)²⁵.

A comparative study was conducted on the prevalence of intestinal parasites among children living in rural and urban settings in and around Chennai. They conducted 324 stool samples by convenient sampling method. Out of 324 samples, 125 specimens were collected from rural area and 199 stool samples were collected from urban area. The findings revealed that, the over all prevalence of intestinal parasites was 91%. Among that *Acscarislubricoides* was 52.8%, and *Anchylostomaduodenale* was 37.6%²⁶.

To identify the prevalence of intestinal helminthes infestation in Okinawa, Japan, they had collected 654 faecal samples by simple random sampling method. By means of modified katokatz technique the results showed that 17.4% had three kinds of nematodes i.e. ascaris, pin worm and hook worm²⁷.

In a study to assess the prevalence and intensity of intestinal infestations in Orang Asli children in Malaysia they had collected 205 faecal samples of simple random sampling method. By means of microscopic examination, study results revealed that the prevalence of Ascariasis was 62.9% and Hookworm 28.8%²⁸.

In the present study out of 455 children 78.7% of lower socio economic class children has hook worm infestation, 52.4% of children in upper lower class has hook worm infestation, 20.4% of children I lower middle class has hook worm infestation, whereas upper class has only 12.5%. which is statistically significant($p < 0.05$).

Many researchers have established that age, socio-economic and behavioral factors play a definitive role in causing intestinal geohelminth infection²⁹.

In the present study out of 455 children 90.2% of children from lower socio economic class has round worm infestation, 48.9% of children from upper lower class has round worm infestation, where as 0% of children from upper class has no infestation. Which is statistically significant($p < 0.001$).

VIII. Conclusion

In our study no of female children (52.3%) were slightly higher than male children(47.7%). 40% are normal, 22.2% were mild anemic, 37.8% were moderately anemic. 47.5% of the children with worm infestation were under nourished, which shows a direct relation.

Bibliography

- [1]. ShallyAwasthi, Rohini Das, Tuhinaverma, Sheila vir. Anemia and undernutrition among pre-school children in Uttar Pradesh, India. *Indian Pediatr* 2003;40:985-90.
- [2]. Behera TR, Satapathy DM, Sahani NC, Sahu T. Nutritional deficiency status among tribal children in a hard to reach area of Malkangiri district in Orissa. *Indian J Nutr Diet* 2009;46:106-11.
- [3]. Sharda Sidhu, KantaKumari, ManjulaUppal. Prevalence of anaemia in Bazigar(ex-nomadic tribe) preschool children of Punjab. *J Hum Ecol* 2007;21(4):265-67.
- [4]. Ministry of Health and Family Welfare Government of India, Nutrition in India, NATIONAL FAMILY HEALTH SURVEY (NFHS-3) INDIA 2005-06, www.nfhsindia.org
- [5]. Malnutrition among Under-Six Children in Chandigarh: Scarcity in Plenty BHATIA V, PURI S, SWAMI H M, GUPTA M, SINGH G, *Journal of clinical and diagnosis research* research Year : 2007 | Month : December | Volume : 1 | Issue : 6 | Page : 483 - 487 .
- [6]. Kapur D, Sharma S, Aggarwal KN. Effectiveness of nutrition education, iron supplementation or both on iron status in children. *Indian Pediatr* 2003;40:1131-7.
- [7]. National Family Health Survey (NFHS II) 1998-1999. Mumbai: International Institute of Population Sciences; 2000. p. 19.
- [8]. wasthi, S. ; Pande, V. K. (1997) Prevalence of malnutrition and intestinal parasites in preschool slum children in Lucknow *Indian Pediatrics*, 34 . pp. 599-605. ISSN 0019-6061 (<http://repository.ias.ac.in/59487/>)
- [9]. Riaz Ahmed Pal, Shahid Islam Rana. Incidence of intestinal helminth parasites of Man in the Twin cities of Rawalpindi - Islamabad. *JPMA*, 1983; 33: 33 - 38.
- [10]. Qureshi AH, Karamat KA, Qamer RH, Malik IA. Intestinal parasitic infestation in Rawalpindi / Islamabad area: A study of 12640 stool samples. *Pak J Pathol* 1992; 3: 31 - 39.
- [11]. Ansari MAR, Naru NA. Some incoming intestinal parasites of Lahore. *Pak J Med Res* 1968; 7: 138.
- [12]. Ghauri AS, Alam M. The pattern of intestinal parasitic infestation in Sargodha area: A comparative study. *Pak J Pathol* 1992; 3: 99 - 101.
- [13]. Ahmed A, Zohra A, Yasmin N. 'Albendazole' in intestinal helminthiasis. *JPMA* 1986; 36: 114 - 117.
- [14]. Bano L, Yasmin B. Observation on incidence of infection with intestinal parasites in school children of Peshawar. *Pak J Med Res*, 1981; 20 (2): 49.
- [15]. Bilqees FM, Khan A, Ahmed A. A survey of intestinal protozoan and helminth parasites in Karachi. *Pak J Med Res*, 1982; 21: 54 - 58.
- [16]. YaredMerid, MamdouhHegazy, GirmaMekete, ShiferawTeklemariam. Intestinal helminthic infection among children at Lake Awassa Area, South Ethiopia. *Ethiop. J. Health Dev.* 2001 (1); 15: 31 - 38.
- [17]. Maria RF, Souza W, Perez PE, Lapa T, Carvalho BA, Furtado A et al. Intestinal Helminthiasis and Anaemia in Youngsters from State of Parnambuco, Brazil. *Med Inst Oswaldo Cruz, Rio de Janeiro* 1998; 93 (3): 289 - 293.
- [18]. Kappus 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 (6); 1994: 705 - 13.
- [19]. Malnutrition among Under-Six Children in Chandigarh: Scarcity in Plenty BHATIA V, PURI S, SWAMI H M, GUPTA M, SINGH G, *Journal of clinical and diagnosis research* research Year : 2007 | Month : December | Volume : 1 | Issue : 6 | Page : 483 - 487 .
- [20]. Image of kids nutritional in provinces prepared by Health Ministry in Cooperation with UNICEF. Tehran, Senobar publisher. 1999; pp 96-94.
- [21]. Prevalence and risk factors associated with worm infestation in pre-school children (6-23 months) in selected blocks of Uttar Pradesh and Jharkhand, India S Awasthi1, T Verma1, PV Kotecha2, V Venkatesh3, V Joshi2, S Roy2 (<http://www.indianjmedsci.org/article.asp?issn=0019-5359;year=2008;volume=62;issue=12;spage=484;epage=491;aulast=Awasthi>)
- [22]. Oyewole F, Ariyo F, Oyibo WA, Sanyaolu, Faweya T, Monye P, et al. Helminthic reduction with albendazole among school children in riverine communities of Nigeria. *J Rural Trop Public Health* 2007;6:6-10. Back to cited text no. 14
- [23]. Hafeez R, Tahir Z, Chughtai AS. Incidence and intensity of soil transmitted helminths in a rural area of Lahore. *Int J Pathol* 2003;1:36-8. Back to cited text no. 15
- [24]. Tadesse G. The prevalence of intestinal helminthes infections and associated risk factors among school children in Babile town, eastern Ethiopia. *Ethiop J Health Dev* 2005;19:140-7.
- [25]. Jemaneh K, Lengeler C. The use of morbidity questionnaires to identify high prevalence of geohelminth infections, Ethiopia. *Ethiop med J*, 2001 Jul; 39(3): 213-28.

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- [26]. 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.
- [27]. 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. 1999 Mar; 30(1): 64-77.
- [28]. 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. 1997 Mar; 28 (1): 161-8.
- [29]. Traub RJ, Robertson ID, Irwin P, Mencke N, Thompson RC. The prevalence, intensities and risk factors associated with geohelminth infection in tea-growing communities of Assam, India. Trop Med Inter Health 2004;9:688-701.
- [30]. Z.Navanadharao, Practical medical technology, Vasavi graphics, june 2002, Nellore, page no 201-202

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