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## PREVALENCE OF INTESTINAL PROTOZOAN AND HELMINTH PARASITES IN SUKKUR, SINDH

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### Abstract

A total number of 3000 stool samples were collected from different laboratories of Sukkur, Sindh, during the period of June 2005 to May 2007 and were analyzed for various Protozoan and Helminth intestinal parasites. Stool examination was done by direct microscopic examination. Total 1050 (35%) cases were found with intestinal pathogenic parasites in their stools. The most common parasite was *Gardia lamblia* found in 380 (36.19%) cases. *Entamoeba histolytica* in 195 (18.57%) cases. *Hymenolepis nana* in 170 (16.19%) cases. *Ascaris lumbricoides* in 155 (14.76%) cases. *Ancylostoma duodenale* in 76 (7.24%) cases. *Enterobius vermicularis* in 44 (4.19%) cases. *Trichuris trichiura* in 19 (1.81%) cases and *Taenia saginata* in 11 (1.05%) cases. The frequency of parasitic infection is high in Sukkur, Sindh possibly due to low socio-economic status, lack of health education, poor sanitation and warm climate in this area.

**Keywords:** Protozoan, Helminths, Intestinal parasites, Sukkur, Sindh.

### 1. Introduction

Intestinal Protozoan and helminth parasites are widely prevalent causing considerable medical and public health problems in developing countries, specially in tropical region (WHO 1981). In some parts of Bangladesh the prevalence rate is 80% and in Yemen it was reported 50%, (Khan *et al.*, 1986, Farag, 1985). It is known that scarce sanitary facility and poor personal hygiene plays crucial role in the transmission of such infections. In Pakistan, the parasitic infections are widely prevalent, with variable distribution in different parts of the country. Various surveys have been conducted in different cities of the country (Bilqees, 1982, Ansari and Sapru, 1963 Ansari, *et al.*, 1966 ) Ansari and Naru, 1968, Ansari, 1969 a, b. Qureshi, *et al.*, 1992, Siddiqui and Bano, 1979, Bano and yasmin, 1981; pal and subhani 1989. Ghauri and Alam 1992, Akhund, 1994, Shaikh, *et al.*, 2000, Siddiqui, *et al.*, 2002 Waqar, *et al.*, 2003, Neelofer and Shaukat, *at el.*, 2006) but no such study was conducted at Sukkur Sindh. Therefore, we collected the stool samples of all

ages and both sexes having bowel complaints from different laboratories of Sukkur, Sindh to know the incidence of intestinal parasitic infections at Sukkur Sindh.

### 2. Material and Methods

The study was carried out on stool samples which were received at different Pathological Laboratories at Sukkur Sindh from June 2005 to May 2007. Total 3000 cases from all age groups and both sexes having bowel complaints were included in the study. The stools samples were collected in disposable plastic bags and were examined within one hour after collection. After physical examination, smear preparation was done by using normal saline and Lugol's Iodine. Examined under light microscope using x 100 and x 400 magnification. Parasites were identified present in the stool of patients. Taxonomic identification of parasites was carried out with the help of taxonomic keys (Man Well, 1961, Yamagutti, 1961-1971) and available literature. The percentage of the parasites were calculated in order to find the pattern of each parasites.

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### 3. Results

A total number of 3000 stool samples were included in the study. 1050 (35%) cases were found infected with different pathogenic parasites (Fig. A). As evident in (Fig. B),

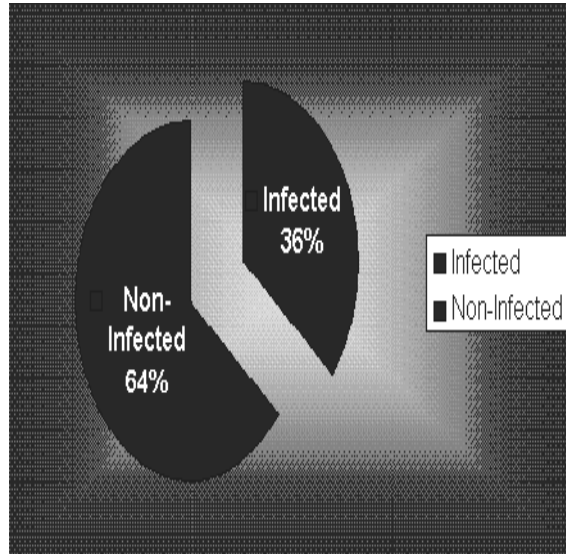


Fig. A. Frequency of intestinal Protozoan and Helminth parasites in Sukkur, Sindh

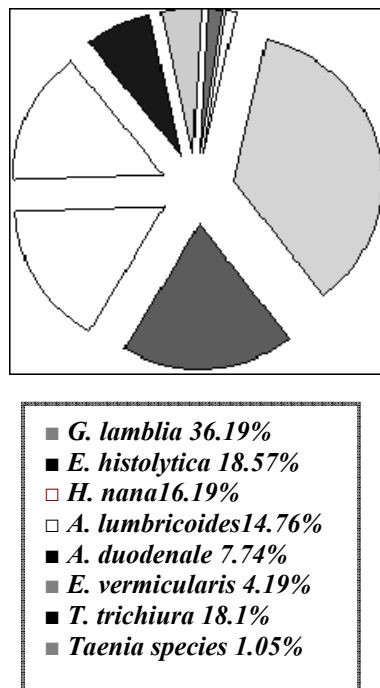


Fig. B. Over all prevalence of intestinal protozoan and helminth parasites

that *Giardia lamblia* was the most common parasite found in 380 (36.19%) cases followed by

*Entamoeba histolytica* in 195 (18.57%) cases. *Hymenolepis nana* in 170 (16.19%) cases. *Ascaris lumbricoides* in 155 (14.76%) cases. *Ancylostoma duodenale* in 76 (7.24%) cases. *Enterobius vermicularis* in 44 (4.19%) cases. *Trichuris trichiura* in 19 (1.81%) cases. The ova of *Taenia saginata* in 11 (1.05%) cases. (Table-1 and Fig. 1).

Table-1: Over all prevalence of intestinal protozoan and helminth parasites

| Parasites             | No.         | Percentage % |
|-----------------------|-------------|--------------|
| <i>G.lamblia</i>      | 380         | (36.19%)     |
| <i>E.histolytica</i>  | 195         | (18.57%)     |
| <i>H.nana</i>         | 170         | (16.19%)     |
| <i>A.lumbricoides</i> | 155         | (14.76%)     |
| <i>A.duodenale</i>    | 76          | (7.24%)      |
| <i>E.vermicularis</i> | 44          | ( 4.19%)     |
| <i>T.trichiura</i>    | 19          | (1.81%)      |
| <i>Taenia species</i> | 11          | (1.05%)      |
| <b>TOTAL</b>          | <b>1050</b> | <b>100%</b>  |

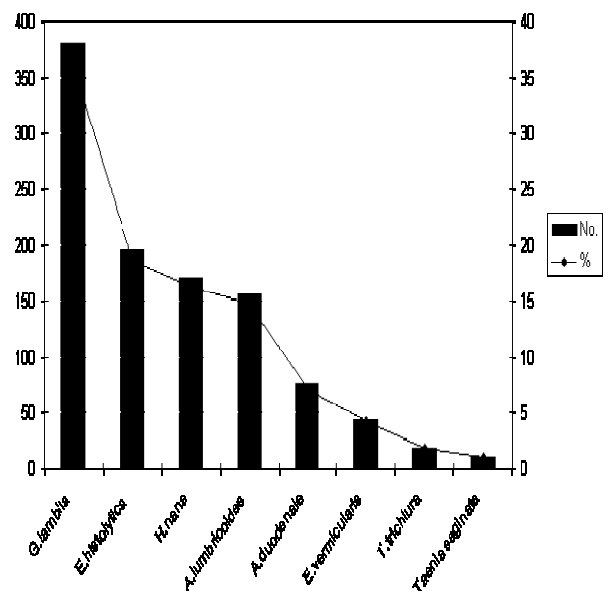
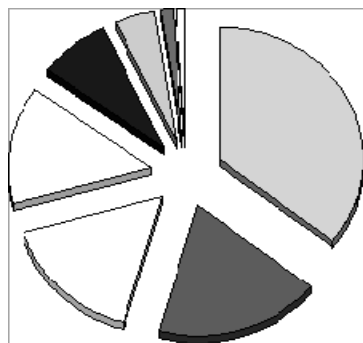


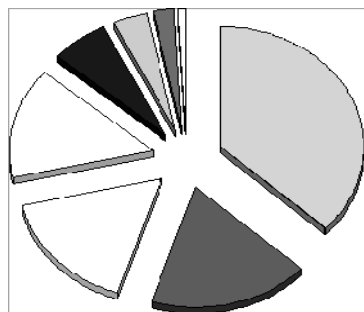
Fig.1. Over all prevalence of intestinal Protozoan and Helminth parasites

(Fig. C (i. ii) Table-2 and Fig. 2) indicates that among positive cases 590 (56.19%) were male, and 460 (43.81%) were female patients. (Fig. D, Table-3 and Fig.3) shows that among children upto 12 years of age group positive cases were 538(51.24%). (Fig. E, Table- 4 and Fig. 4) shows that among above 12 years of age group positive cases were 512 48.76%.



- *G. lamblia* 20%
- *E. histolytica* 10.67%
- *H. nana* 9.05%
- *A. lumbricoides* 8.09%
- *A. duodenale* 4.48%
- *E. vermicularis* 2.47%
- *T. trichiura* 0.76%
- *Taenia saginata* 0.66%

Fig. C (i). Prevalence of intestinal Protozoan and Helminth parasites in male population



- *G. lamblia* 16.19%
- *E. histolytica* 7.97%
- *H. nana* 7.12%
- *A. lumbricoides* 6.67%
- *A. duodenale* 2.76%
- *E. vermicularis* 17.1%
- *T. trichiura* 1.05%
- *Taenia saginata* 0.38%

Fig. C (ii). Prevalence of intestinal Protozoan and Helminth parasites in female population

Table-2: Prevalence of intestinal Protozoan and Helminth parasites according to sex.

| Parasites              | Male No. 590 (56.19%) | Female No. 460 (43.81%) |
|------------------------|-----------------------|-------------------------|
| <i>G.lamblia</i>       | 210 (20%)             | 170 (16.19%)            |
| <i>E.histolytica</i>   | 112 (10.67%)          | 83 (7.90%)              |
| <i>H.nana</i>          | 95 (9.05%)            | 75 (7.14%)              |
| <i>A.lumbricoides</i>  | 85 (8.09%)            | 70 (6.67%)              |
| <i>A.duodenale</i>     | 47 (4.48%)            | 29 (2.76%)              |
| <i>E.vermicularis</i>  | 26 (2.47%)            | 18 (1.72%)              |
| <i>T.trichiura</i>     | 08 (0.76%)            | 11 (1.05%)              |
| <i>Taenia saginata</i> | 07 (0.67%)            | 04 (0.38%)              |

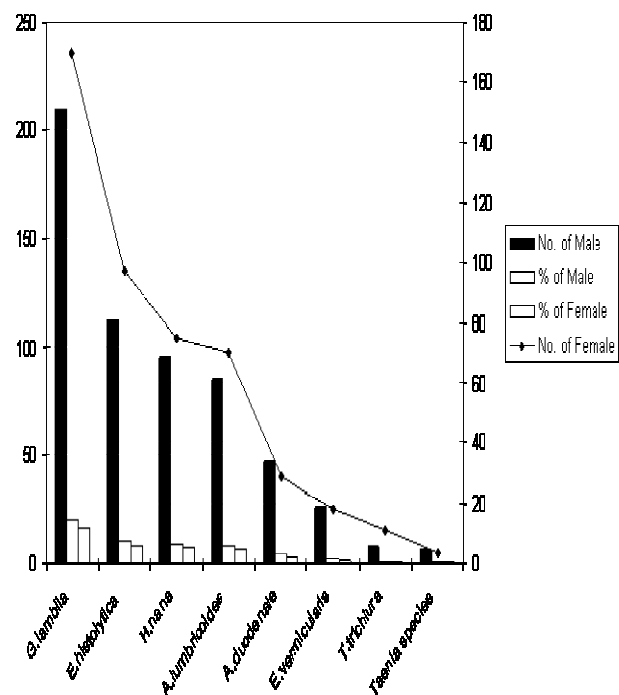


Fig 2. Prevalence of intestinal Protozoan and Helminth parasites according to sex

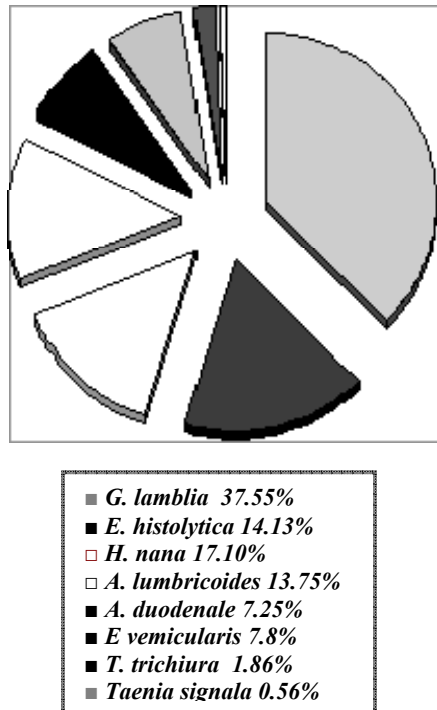


Fig. D. Prevalence of intestinal protozoan and helminth parasites up to 12 years of age

Table-3. Prevalence of intestinal protozoan and helminth parasites up to 12 years of age

| Parasites             | No.        | Percentage % |
|-----------------------|------------|--------------|
| <i>G.lamblia</i>      | 202        | (37.55)      |
| <i>H.nana</i>         | 92         | (17.10%)     |
| <i>E.histolytica</i>  | 76         | (14.13%)     |
| <i>A.lumbricoides</i> | 74         | (13.75%)     |
| <i>E.vermicularis</i> | 42         | (7.80%)      |
| <i>A.duodenale</i>    | 39         | (7.25%)      |
| <i>T.trichiura</i>    | 10         | (1.86%)      |
| <i>Taenia species</i> | 03         | (0.56%)      |
| <b>TOTAL</b>          | <b>538</b> | <b>100%</b>  |

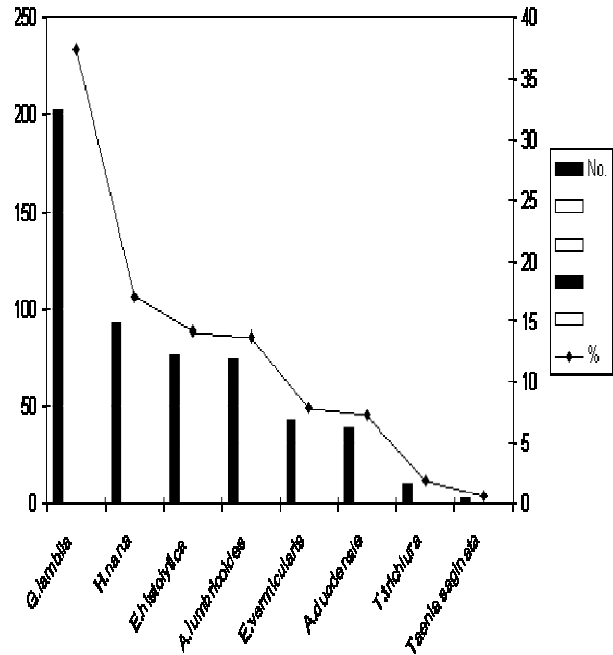


Fig. 3. Prevalence of intestinal Protozoan and Helminth parasites up to 12 years of age

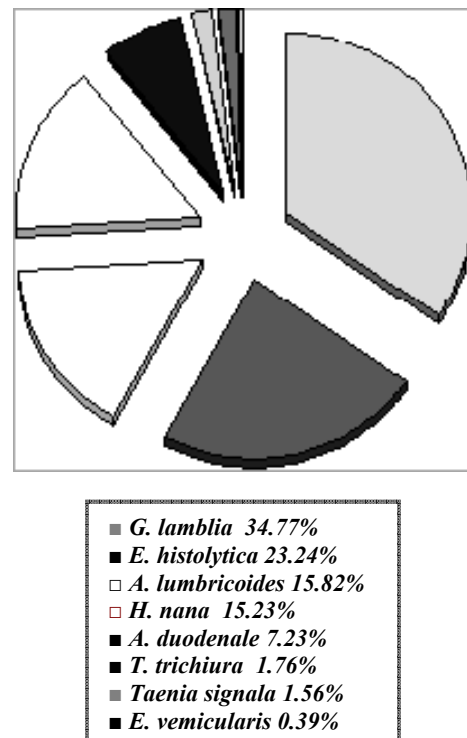
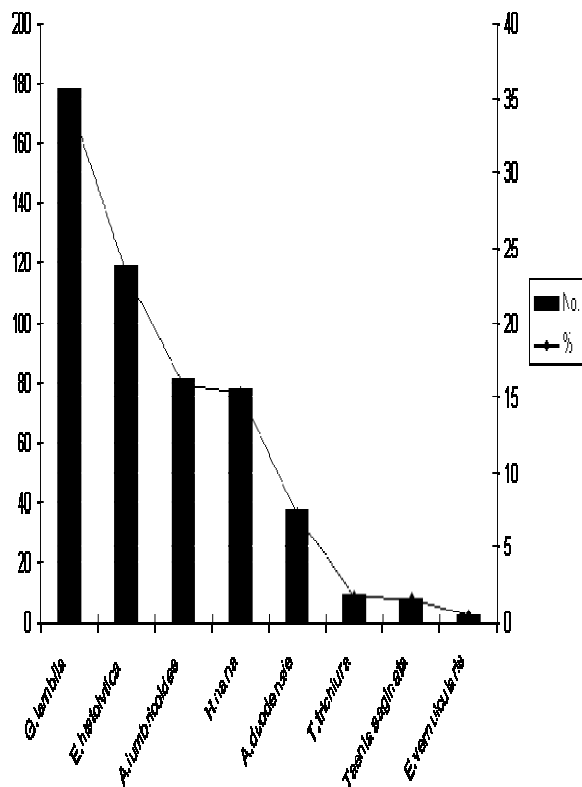


Fig. E. Prevalence of intestinal Protozoan and Helminth parasites above 12 Years of age.

**Table-4: Prevalence of intestinal Protozoan and Helminth parasites above 12 Years of age.**

| Parasites              | No.        | Percentage % |
|------------------------|------------|--------------|
| <i>G.lamblia</i>       | 178        | (34.77%)     |
| <i>E.histolytica</i>   | 119        | (23.24%)     |
| <i>A.lumbricoides</i>  | 81         | (15.82%)     |
| <i>H.nana</i>          | 78         | (15.23%)     |
| <i>A.duodenale</i>     | 37         | (7.23%)      |
| <i>T.trichiura</i>     | 09         | (1.76%)      |
| <i>Taenia saginata</i> | 08         | (1.56%)      |
| <i>E.vermicularis</i>  | 02         | (0.39%)      |
| <b>TOTAL</b>           | <b>512</b> | <b>100%</b>  |

**Fig. 4: Prevalence of intestinal Protozoan and Helminth parasites above 12 Years of age**

#### 4. Discussion

Intestinal parasitic infections are quite common in third world countries. In Pakistan it is also widely prevalent with variable distribution in

different parts of the country. In Rawalpindi, Islamabad incidence of positive cases were 34% in 1983 (Pal and Rana, 1983) and 14.6% in 1992 (Qureshi *et al.*, 1992). In Karachi frequency of positive stool samples was 30.04% in 1982 (Bilqees *et al.*, 1982) and 71.2% in 1986 (Baqai and Zuberi, 1986). Study from Karachi in 1986 revealed increased incidence of parasitic infections from previous study of 1982. Where as in present study 35% cases are positive. Similar results (28.27%) were reported from Nawabshah (Akhund, 1994), Larkana 31% (Shaikh, *et al.*, 2000) and shikarpur 33% (Shaikh *et al.*, 2003). In the present study *G.lamblia* is the most frequently isolated protozoal parasite (36.19%), similar results were reported from Karachi (Bilqees *et al.*, 1982, Baqai and Zuberi, 1986), Sargoda (Ghouri and Alam, 1992), Larkana (Shaikh *et al.*, 2000), Shikarpur (Shaikh *et al.*, 2003) and other cities (Akhund, 1994 Pal and Rana, 1983). Most common helminth was *H.nana* (16.19%), which is also reported the common helminth in other studies (Ghauri and Alam, 1992). The incidence in children upto 12 years of age group was high than the patients above 12 years of age group, it was noted that *G. lamblia* (37.55%) and *H. nana* (17.1%) were common while in patients above 12 years of age *G. lamblia* (34.77%) and *E. histolytica* (23.24%) were more frequent. There were (56.19%) males and (43.81%) were female patients. It was observed that the percentage of male patients was relatively higher than females. This is because in our culture males pass most of the time outside the home and are exposed to the external environment much greater to females. All studies shows that quite a large number of the population harbours protozoan and helminth pathogenic intestinal parasites with variable percentage in different places of Pakistan. This is mainly due to, lack of health education which promotes the chances of infection as the rural population are not aware about the transmission and prevention of infections, low socio-economic status, poor sanitation, contaminated water supply and warm climate. The infections can be controlled to some extent by overcoming these public health problems. It is suggested that, investigations for parasitic infections in patients with bowel complaints especially in children may be continuously carried out. There is a need of health education at all levels, education of

children in schools on sanitary laws and hygiene, use of boil water for drinking, washing of hands before meal and use of fresh home cooked food.

## 5. Conclusion.

1. Present study shows that *G. lamblia* is the most frequently isolated protozoal parasite (36.19%),
2. Most common helminth was *H. nana* (16.19%).
3. The pattern in children upto 12 years of age group, noted that *G. lamblia* and *H. nana* were common while in patients above 12 years of age *G. lamblia* and *E. histolytica* were more frequent.
4. The percentage of male patients was higher in all age groups.
5. Present study indicate that quite a large number of population harbours protozoan and helminth pathogenic intestinal parasites with variable percentage in Sukkur Sindh.

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