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*Full Length Research Paper*

# Parasitological Studies on Some Intestinal Parasites in primary school Children in Aswan Governorate Egypt

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**This cross sectional study was done in aswan Governorate to determine the prevalence of intestinal parasites and to identify the risk factors for infection in primary school children in this geographical area. The results will facilitate evaluation of the endemic level of different intestinal parasites and the determination of whether widespread or focal measures of parasite control are required. After obtaining official permission from the school administration, information and consent forms were prepared and given to the parents of all the study participants. three-hundreds children aged between 6-12 year were enrolled; a detailed questionnaire, complete clinical assessment complete as well as stool analysis was done The study revealed that Prevalence of parasitic infection was 31%. Single parasitic infection in 26% and mixed infection in 5%.The commonest helminthic infection was. *E. vermicularis* 6.6% followed by *H.nana* 3% *Ascaris* 1%. The commonest protozol infection was *E.histolytica* 8.3% followed by *Giardia* 3.7% and *Cryptosporidium* 1.7% Mixed infection was in form of *E. vermicularis* plus *E.histolytica* in 23.4%, *E. vermicularis* plus *Giardia* in 17.6%, *E. vermicularis* plus *Cryptosporidium* in 11.8%, *E.histolytica* plus *H nana* in 11.85%, *Ascaris* plus *E. histolytica* in 17.6%%, *Giardia* plus *E. histolytica* in 11.8%. Parasitic infestation was more prevalent in boys 53.8% than girls 46.2%. Parasitic infestation was more prevalent in rural children 39.73% than urban children 20.13%. Age ranged from 6 to 12 years with a mean of 8.97±1.72 years.**

**Keywords:** Egypt, Aswan, school-children, Intestinal Parasites, rural ,urban

## INTRODUCTION

Intestinal parasitic infection are amongst the most common infection world wide It is estimated that 3-5 billion people are affected , and that 450 million are ill as a result of these infection. The majority being children .these infections as regarded as serious public health problem. they cause iron

deficiency anaemia, growth retardation in children and other physical and mental problems (WHO 1998)

-The high prevalence of these infections is closely correlated with poverty, poor environmental hygiene and poor health services. The fecal oral route significant in the transmission of parasitic infections to human via poor personal hygiene and environmental condition such as

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contaminated soil and water sources Nxasona et al., (2013).

- it is important to measure their prevalence and identify the predisposing factors to infection as the first step for monitoring the progress of control efforts and for formulation of future intervention strategies (Hassan, 1994.)

-Due to lack of available studies on the intestinal parasitic infection in children in Aswan Governorate, the present study is planned to monitor the intestinal parasitic infection among urban and rural primary school children in Aswan Governorate.

### Subjects, Materials and Methods

This is a descriptive study carried out in Aswan Governorate during the period from October 2015 to March 2016. School children in four governmental primary schools in Aswan Governorate from both urban and rural. Random sample consist from Three hundred (300) child were included in the study. Their ages arranged from 6 to 12 years. One hundred and seventy (170) of them were males and one hundred and thirty (130) were females. An initial visit was carried out to each school. The aim of the study was discussed with the personnel in charge. A consent was taken from ministry of education and from national security office. Every child was subjected to a questionnaire about symptoms and signs suggestive of parasitic infection. The children were subjected to Careful history taking with special stress on symptoms suggestive of parasitic infection. General and/abdominal examination. as well as Stool examination by: Direct smear method Garcia and Bruckner, (1988)., Formol –ether concentration technique Ritchie, (1948)., Special stains for diagnosis of intestinal protozoa, Modified Ziehl-Neelsen staining Casemore et al., (1985)., Kato-Katz technique (cellophane fecal thick smear) Katz et al., (1972). And Adhesive: cellophane tape .Jacobs(1942); Peri anal swab was done for those who gave history of perianal itching..The statistical analyses of the results were computed by means of a statistical analysis software package “Microstat”, copyright of Ecosoft Inc. Data was collected, tabulated and statistically analyzed with SPSS version 9 statistical program comparison between studied groups was done using chi-square test (X<sup>2</sup>) at 5% level of significance. *Chi-square test* To test the significance of difference between frequency of different observation, chi square test was used

### RESULTS AND DISCUSSION

In the present study, we aimed to determine the prevalence of intestinal parasites in Aswan Governorate. After obtaining official permission from the ministry of education and from national security office..In our study the

prevalence of intestinal parasites in children between (6-12) years living in Aswan town, Aswan Governorate was 30%. This was in agreement with Ibrahim (2011) who reported that the prevalence of parasitic infection among Egyptian school children in El- Minia Governorate village in upper Egypt was 29.3%., and to Hassanin et al.(2014) who reported that the prevalence of parasitic infection among school children in Zifta City Gharbia Governorate was 31% and to Attia. (2004). Who reported that prevalence of parasitic infection among school children in Tala City Menoifya Governorate was 28.20. However our result was less than that reported in El- Morsy et al.,( 2007) who reported that prevalence of parasitic infection among school children in Sohag Governorate were 60.20% in urban area and 88.5% in rural area and to Hegazy et al., (2014) who reported that prevalence of parasitic infection among school children in Damanhur City were 51.8% and less than that reported in Omran et al., (2013) who reported that prevalence of parasitic infection among school children in Zewan Shorqia village Sohag Governorate was 55%.

In the present work age ranged from (6 to 12 years) with mean of (8.97±1.72) this agrees with Quinhui et al.,( 2006) who reported that, the school children had average age of (8.2 + 1.4) and to (Karim., et al.,( 2013) who reported that mean age was (7.45 ± 0.87) years. And disagree with Okayay et al.,( 2004) reported that mean age was (10.51± 2.33) for boys and (10.34± 2.77) for girls, and both age are higher than that reported in the present work. This may be due to different inclusion criteria and different sample size. As regards distributions of intestinal parasites in studied children regarding to age, we found that *E.histolytica*, *Giardia* and *mixed infection* (27.90%, 13.95 and 27.90%) respectively. More in older ages compared to younger ages (27.6%, 10.63% and 10.63) and (*H.nana*, *Ascaris lumbricoids*, *E.vermicularis* and *cryptosporidium*) more in younger ages (12.76%, 4.25%, 27.65 and 6.38%) respectively compared to older ages (6.9%, 2.32%, 16.27% and 4.65%).This agree with **Abd El -Aziz** et al., (2012) who reported that *E. histolytic* occurred in older and *E vermicularis* occurred in younger ages.

And disagree with Amuta et al., (2009) who reported no significance difference in infection rate between age groups as helminthes infection recorded among all age groups.

As regards sex distribution, our finding revealed that males were more & susceptible to infection (15.66) than females (14.33) this finding is in agreement with Amuta et al., (2009) who reported that infection was more in male children (53.33) than females (46.66%), and to Al Hindin ( 2002) who reported higher prevalence of infection among male (48%) as compared to (27.8%) in females, and to Hegazy et al., (2014) who reported that prevalence of infection among male (52.1%) as compared to (47.9%) in females. And to Omran et al.,( 2013) who reported parasitic infection in male was (59.38) in compared to

**Table 1:** Prevalence of intestinal parasites among studied children

	No	%
Infected	90	30
Non Infected	210	70
Total	300	100%

**Table 2:** Frequency of different intestinal parasites among school children

	No (300)	%
<i>E.vermicularis</i>	20	6.6%
<i>Ascaris lumbricoides</i>	3	1
<i>H. nana</i>	9	3
Mixed infection	17	5.6
• <i>E. vermicularis</i> + <i>E. histolytic</i>	4	1.3
• <i>E. vermicularis</i> + <i>Giardia</i>	3	1
• <i>E. vermicularis</i> + <i>cryptosporidium</i>	2	0.6
• <i>E. vermicularis</i> + <i>giardia</i>	2	0.6
• <i>E. vermicularis</i> + <i>E. histolytic</i>	2	0.6
• <i>E. vermicularis</i> + <i>E. histolytic</i>	3	1
• <i>E. histolytica</i>	25	8.3
• <i>Giardia lamblia</i>	11	3.7
• <i>Cryptosporidium</i>	5	1.7

**Table 3:** Pattern of mixed parasitic infection

Mixed infection	No (17)	%
<i>E. vermicularis</i> + <i>E. histolytica</i>	4	23.4
<i>E. vermicularis</i> + <i>Giardia</i>	3	17.6
<i>E. vermicularis</i> + <i>cryptosporidium</i>	2	11.8
<i>E. histolytica</i> + <i>giardia</i>	2	11.8
<i>H. nana</i> + <i>E. histolytica</i>	2	11.8
<i>Ascaris</i> + <i>E. histolytica</i>	3	17.6

**Table 4:** Incidence of single and mixed parasitic infection among studied children

	No	%
Single	73	24.2
Mixed	17	5.6

**Table 5:** Clinical symptoms and signs among infected and non infected children

	Infected (n=90)		Non infected (n=210)		Total		Chi-square test	
	no	%	No	%	no	%	X <sup>2</sup>	P. value
Reccurent Abd. pain	63	70.0	20	9.5	83	27.6	10.6	<0.001**
Vomiting	3	3.3	0	0.5	0.0	1	2.03	0.043*
Diarrhea	30	33.3	4	1.9	134	11.3	7.7	<0.001**
Pallor	50	55.5	22	10.4	72	24	8.2	<0.001**
Perineal itching	30	33.3	3	1.4	33	11	7.9	<0.001**

\* Statistically significant difference (p&lt;0.05)

\*\* Statistically significant difference (p&lt;0.01)

**Table 6:** Distribution of intestinal parasites in infected children regarding to sex

	Males N= 47	Female N= 43	Both (90)	P. value
<i>E.histolytica</i>	10 (21.2%)	15 (34.88)	25 (27.7%)	0.228
<i>Giardia</i>	8 (17.02%)	3 (6.9%)	12 (13%)	0.258
<i>H. nana</i>	6 (12.67)	3 (6.9%)	9 (10%)	0.574
<i>Ascaris</i>	2 (4.25)	1 (2.3)	3 (3.3)	0.937
<i>Cryptosporidium</i>	2 (4.25)	3 (6.9)	5 (5.5)	0.918
<i>E.vermicularis</i>	8 (17.02)	12 (27.90)	20 (22)	0.324
Mixed infection	11 (23.40)	6 (13.95)	17 (18.8)	0.382

**Table 7:** Distribution of intestinal parasite in infected children regarding to Age

	6-9 years N= 47		9-12 years N= 43		P. value
	No.	%	No.	%	
<i>E. histolytica</i>	13	27.65	12	27.90	0.834
<i>Giardia lamblia</i>	5	10.63	6	13.95	0.875
<i>H.nana</i>	6	12.76	3	6.97	0.574
<i>Ascaris lumbricoids</i>	2	4.255	1	2.32	0.937
<i>E.vermularis</i>	13	27.65	7	16.27	0.297
<i>Cryptosporidium</i>	3	6.38	2	4.65	0.918
<i>Mixed infection</i>	5	10.63	12	27.90	0.069

**Table 8:** Rural and urban distribution of intestinal parasites in infected children

	Rural (N= 60)		Urban (N=30)		Total (N= 90)		P. value
	No.	%	No.	%	No.	%	
<i>E.histolytica</i>	17	28.2	8	26.7	25	27.8	0.934
<i>Giardia</i>	8	13.3	3	10.0	11	12.2	0.909
<i>H.nana</i>	5	8.3	4	13.3	9	10.0	0.709
<i>Ascaris</i>	2	3.3	1	3.3	3	3.3	0.533
<i>E.vermicularis</i>	13	21.7	7	23.3	20	22.2	0.928
<i>Cryptosporidium</i>	3	5.0	2	6.6	5	5.6	0.871
Mixed infection	12	20.0	5	16.7	17	18.9	0.924

(51.38) in females. And to Ulukanligil and Seyrek (2004) showed more affection of males (57.2%) than girls (42.7%). The difference be attributed a activity of males than females. But this result is not in agreement with (Nimri and Megdam., 2004).Who suggested that the low immunity of females may account for higher prevalence in male than females.

As regards the distribution of intestinal parasites in studied children regarding to sex, 1-we found that females were more affected with (*E. histolytica*, *E. vermicularis* and *cryptosporidium*) (34.88, 27.90 and 6.9%) respectively than males (21.2%, 17.02 and 4.25%) while male were more affected with *Giardia*, *H.nana*, *Ascaris lumbricoids* and *mixed infection* (17.02, 12.76, 4.25 and 23.40) respectively than females (6.9%, 6.9% 2.3% and 13.95%) with no significant difference. These results were in agreement with Hassanein et al., (2014) who reported that infection with (*E. histolytica*, *E.vernicularis*) more in females (25.6%, 23.9%) respectively than males (17%, 23%). While males were more affected with *giardia*, *H.nana* and *mixed infection* (21%, 9% and 21%) respectively than females (14%, 8.1 and 10.50%). This results is in agreement with Amira et al., (2012) who reported that infection with *E. histolytica* was higher in females than males. And to Oluwafemi, (2003) who reported that infection with *E.histolytica* was higher in females than male.

As regards residence, we found that the majority of infected children were living in rural areas (60%) with significance difference (P. Value). This results in agreement with Hassanein et al., (2014) who reported that prevalence of parasitic infection in rural area was 66.1% and in urban area was 33.6% and to Fernandez et al., (2002) who reported that highest prevalence of parasitic infection 91% in school children was reported in rural areas in south india and to Hany et al., (2006) who reported that the prevalence of parasitic infections among rural children was found significantly higher than that or urban children (89% and 58% respectively. This may be due to in rural communities in Egypt, human faeces are often used as

agricultural fertilizer and warm climate, humid atmosphere, muddy nature of soil and consumption of large quantities of raw vegetables, without washing. Also, there is no central sewage disposal system or home aseptic tanks and even if water is used for drinking and coming in some village, water from Nile is commonly used for washing, bathing and these sociocultural habits are difficult to be changed all factors helps in transmission of parasitic infection. On international level Egger et al., (1990) reported a high prevalence of parasitic infection among rural children in Thailand. This could be explained by similarity of sanitary and hygienic condition in both Egypt and Thailand.

## CONCLUSIONS

Intestinal parasitic infection is an important public health problem in students between 6-12years living in Aswan City, Aswan Governorate with Prevalence rate (31.0%). Rural residence was significant association with parasitic infection. Both sexes were affected and males were more affected with *Giardia*, *H.nana*. *Ascaris* and mixed infection while females more affected with *E.histolytica*, *E.vermicularis* and *Crtyptosporidium*. Mean age of parasitic infection was (8.97±1.72) The most common type of parasitic infection was *E.histolytica* and the least one was *Ascaris*. Raising awareness about parasitic disease has very important effect in decrease prevalence of parasitic infection.

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