

Knowledge and practice of Caregivers about Intestinal Parasitic Infestations at EL- Minia City.

Naglaa Mohammed Amein*, Soheir Ali Abed El-Hady Bader EL-Din *, Soad Sayed Bayomi *, Yosria EL-sayed Hossein**

E-mail of the corresponding author naglaamin2010@yahoo.com

Department of , community health nursing- faculty of nursing, EL-Minia university, Department of , community health nursing- faculty of nursing- Cairo university, - Department of , community health nursing- faculty of nursing Assiut university*.

Abstract

Intestinal infestations are amongst the common infections worldwide, it is estimated that about 3.5 billion people are affected, and that 450 million are ill as a result of these infestations, lead to physical and mental health problems such as iron deficiency anaemia, growth retardation, and lack of concentration the majority are being children that .Aim of the study: The study aimed to assess the knowledge and practices of caregivers about intestinal parasitic infestations at EL-Minia City. Subjects and methods: Descriptive research design was used in this study to identify the knowledge and practices of caregivers about intestinal parasitic infestations; the study was conducted in four primary governmental schools. These were Saad Zaglol, Tark ebn Ziad, Elfath and EL-shaheed schools at EL-Minia city. Tool of the study included a structured interview sheet it include two parts a) the demographic characteristics it includes (child age, child sex, residence, education and occupation of caregiversetc)The Caregivers knowledge regarding the intestinal infestation and consists of the following: (definition, types of intestinal worm, cycle of Pin worm and Ascariasis, mode of transmission, prevention, treatment B: The second tool (observational check list): was developed for assessing house environmental sanitation and assessing the caregiver's practices. Results: There was a highly statistically significant difference between the caregivers' and their knowledge about intestinal infestation. Also, there with highly statistically significant difference between caregivers and their practices this study found that significant improvement of knowledge, practices of caregivers regarding intestinal parasitic infestations. Recommendations: Encourage the role of the community health nurse in health education for prevention and controlling of intestinal infestation.

Keywords: intestinal infestation, caregiver knowledge. Practices

1-Introduction

Intestinal infestations are common cause of health problems in developing countries. It is estimated that at least one quarter of the world's population is chronically infected with intestinal parasites and 1.5to 2.7 million deaths annually (*WHO, 2009*).

Intestinal infestations are amongst the common infections worldwide, it is estimated that about 3.5 billion people are affected, and that 450 million are ill as a result of these infestations, the majority are being children. School age children are important target group in the community health because their physical and emotional health is vital to the future of society and they require guidance and direction. Children are vulnerable to many illness, injuries, emotional problem as a result of a complex and stressful environment, especially intestinal infestations (*Allender et al., 2010*).

School children carry the heaviest burden of morbidity due to intestinal infestations, it is estimated that approximately 70% of the disease burden on whole population can be prevented in high prevalence communities by treating school children alone (*Chan, 2004 & Nies and McEwen, 2011*).

Intestinal infestations are among the major diseases of public health problems in sub-Saharan Africa. Apart from causing mortality and morbidity, infection with intestinal parasites has been associated with stunting major of linear growth, physical weakness and low educational achievement in schoolchildren (*Erko and Legesse, 2004*).

Parasitic infestations have great impact on life quality of people all over the world especially in developing countries; the prevalence of parasitic infections in a particular region depends not only on bioenvironmental situation, but also on social, economical and cultural conditions, in developing Countries that are mainly situated in tropical areas, lack of access to health services, malnutrition, and poor sanitation, increase vulnerability to infection because of physiological and immunological reasons children more susceptible to parasitic infestation (*Hazrati Tappeh et al., 2010 & Borg and Ryan, 2010*).

The Governorate of Qena, in Upper Egypt, ranks 16 out of the 21 governorates in Egypt for which Health development Indicators are available, although intestinal helminthes are considered to be prevalent in the governorate, there is a complete lack of data on types of parasites present and their prevalence, the most common intestinal helminthes in the world are *Ascaris lumbricoides* round worm, they are usually referred to as soil-transmitted helminthes since they are most commonly disseminated by contamination of soil and environment with infected faeces, especially by children. Three helminthes present in Egypt are *Enterobius vermicularis*, *Hymenolepis nana* and tape worm). Their effects on child development appear less serious (**Curtalet et al., 2009**).

Enterobiasis and *Ascaris* is high prevalence in people live in crowded places and unhygienic environment, it is also expected that the prevalence of *Enterobius vermicularis* high in school children but stool examination is not a good method for diagnosis of *Enterobius vermicularis* infection (**Sirivichayakul et al., 2003**). In Egypt, 56.0% and 47.0% of children are worryingly suffering from Intestinal parasites and anemia, respectively in further detail 40.4% and 1.9%, 5.4%, 6.3%, 8.7%, 8.9%, 22.4%, of the Egyptian school children were suffering from *Enterobius vermicularis*, *Schistosoma* (S.) *haematobium*, *Giardia lamblia*, *S. mansoni*, *Ascaris lumbricoides* *Entamoeba* (E.) *histolytica* and *Ancylostoma duodenale*, respectively.

Through research in El-Minia city finding in 1800 case affected with parasitic infestation, this result obtained from Preventive Medical Department in administrative health in west medical center. This result at 2010 and also 2012. Related this result found intestinal infestations are community health problem and more spreading at El - Minia City.

Community health nursing staff should play an essential role in supporting parents and providing them with important information, and give health education to caregivers about how to deal with infected children with intestinal infestations through families, and community (**Bogitsh et al., 2013**)

2-Aim of the study:

The study conducted to assess the knowledge and practices of caregivers about intestinal parasitic infestations at EL-Minia City

3- SUBJECTS AND METHODS

3.1. Research Design

Descriptive research design was used in this study to identify the knowledge and practices of caregivers about intestinal parasitic infestations.

3.2. Setting:

This study was carried out in four primary governmental schools. These namely Saad Zaglol, Tark ebn Ziad, Elfath and EL-shaheed schools at EL-Minia city.

3.3. Sample:

The subject includes 100 caregivers (mothers or fathers, grand mother) of children from both sex (male and female) aged from 6-8 years within one year from starting of data collection selected by multistage random sample.

3.4. Tool of data collection:

It included:-

A structured interview sheet was constructed after reviewing the relevant literature to elicit information. It included two parts:

Part one: a) Socio demographic characteristics, such as child's age, gender, residence, birth order, parent's education and occupation, income.

The Caregivers knowledge regarding the intestinal infestation and consists of the following: (definition, (b types of intestinal worm, cycle of Pin worm and Ascarias, mode of transmission, prevention, treatmentetc)

Part 2:

It includes:

- a) Item related to child care, place of playing, absent from school, irritability during sleep, healthy food, normal weight, types of drinking water.
- B) Caregivers knowledge regarding the food safety in the house include (presence of disease from the contaminated food, types of disease, causes of this disease, prevention, important of hand washing and why, and time of hand washing.

3.5. Data collection:

An official approval letters were obtained from the Dean of Faculty of Nursing, EL-Minia University to directors of schools in EL-Minia City . These letters includes a permission to carry out the study and explains the purpose and nature of the study. Interviews were conducted individually with caregivers of the children after getting their oral consent to participate and after explaining to them the purpose of the study. They were reassured about the confidentiality of the obtained information. A pilot study was conducted before starting data collection on (10) caregivers who was excluded from the sample. The aim of pilot study is to test the clarity of the tool and to estimate the time required to fill the sheet.

3.6. Field Work:

Each interview took about 20-30 minutes. Throughout this interview relative information was recorded in the designed sheet depending upon the response of the participant. The data collected in the period from first October 2011 until the end of October 2012.

3.7. Data Analysis

The data obtained were reviewed, prepared for computer entry, coded, analyzed and tabulated. Descriptive statistics (i.e., frequencies, percentage, mean, standard deviation, etc) was done using computer program SPSS version 11. Chi-square and T-test, test used to compare differences in the distribution of frequencies among different groups. All statistical analyses were mainly computerized. The probability of less than 0.05 was used as a cut off point for all significant tests.

4. RESULTS:

Table (1): shows that the percentage distribution of demographic characteristics for the school child and caregivers. The mean age of children was 6.9 ± 0.6 , more than half 54.0 % of them were males and 46.0 % were females. Also this table illustrates that less than half 48.0%of caregivers have 4-6 children and 65.0% of children were first, as regards the order of the child in the family while 10.0% of them came last 59.0 % of caregivers from urban area and 41.0% from semi urban. Regarding the levels of educations, it was clear that 28.0% of fathers were illiterate and 36.0% of them have secondary educational level while 45.0% of mothers were illiterate and only 10.0% have basic level of education. Regarding fathers occupation, 73.0% of fathers are workers, while only 5.0% un-employed and 73.0% of mothers were house wives.

Table (1): percentage distribution of demographic characteristics for caregivers and school children, n=100

| Items | No | % |
|----------------------------|-----------------------------|-------|
| Child age | | |
| 6-> 7 | 12 | 12.0 |
| 7-8 | 88 | 88.0 |
| Mean \pm SD | 6.9 \pm 0.6 years(5-8) | |
| Gender of child | | |
| Male | 54 | 54.0% |
| Female | 46 | 46.0% |
| Number of siblings: | | |
| 1-3 | 42 | 42.0 |
| 4-6 | 48 | 48.0 |
| 7-10 | 10 | 10.0 |
| Mean \pm SD | 4.1 \pm 1.7 years(1-10) | |
| Birth order: | | |
| 1-3 First | 65 | 65.0 |
| In the middle 4-6 | 25 | 25.0 |
| 7-10 Last | 10 | 10.0 |
| Mean \pm SD | 3.1 \pm 2.1 years | |
| Age of mother | | |
| 20- | 26 | 26.0 |
| 30- | 51 | 51.0 |
| 40- | 23 | 23.0 |
| Mean \pm SD | 34.2 \pm 7.1 years(22-25) | |
| Residence | | |
| Urban | 59 | 59.0 |
| Semi urban | 41 | 41.0 |
| Mother education | | |
| Illiterate | 45 | 45.0 |
| Basic | 10 | 10.0 |
| Secondary | 29 | 29.0 |
| University or Higher | 16 | 16.0 |
| Mother job | | |
| worker | 27 | 27.0 |
| House wife | 73 | 73.0 |
| Father education | | |
| Illiterate | 28 | 28.0 |
| Basic | 17 | 17.0 |
| Secondary | 36 | 36.0 |
| University or Higher | 19 | 19.0 |
| Father job | | |
| Farmer | 22 | 22.0 |
| worker | 73 | 73.0 |
| Unemployed | 5 | 5.0 |

Table (2): It shows majority 97% of houses have electricity source, and 89% present ventilation in the house, regarding the source of water in the house 94% of the caregivers are using the tap water, and only 6.0% of them are using the pump water, 93% of the caregivers drinking water directly from the tap, and only 1.0% of them boiling the water before drinking it, and also the same number 1.0% of them drinking the distilled water, related to the type of toilet, 81.0% house toilet ordinary and 19.0% are modern. Regarding the source of water in the toilet, about two thirds 61.0% of the caregivers using the tap water directly in the toilet, while 39.0% of them are using the water in the container, regarding the sewage 92.0% present sewage in the house, and only 8.0% not present.

Table (2): percentage distribution regarding housing sanitation no=100

| Items | No | % |
|---------------------------------------|----|------|
| Lighting(electricity) | | |
| Present | 97 | 97.0 |
| Absent | 3 | 3.0 |
| Housing ventilation | | |
| Present | 89 | 89.0 |
| Absent | 11 | 11.0 |
| Sources of water | | |
| Tap | 94 | 94.0 |
| Pump | 6 | 6.0 |
| Source of drinking water | | |
| Drinking directly from the tap | 93 | 93.0 |
| Connect filter in the tap | 5 | 5.0 |
| Boil water before drinking | 1 | 1.0 |
| Mineral water or distilled | 1 | 1.0 |
| Bath room type | | |
| Modern | 19 | 19.0 |
| Ordinary | 81 | 81.0 |
| Sources of water in toilet | | |
| From tap directly | 61 | 61.0 |
| In the container or utensil | 39 | 39.0 |
| Presence of sewage in the home | | |
| Present | 92 | 92.0 |
| Not present | 8 | 8.0 |

Table (3): shows that more than half 53.0% of the caregivers having animals in the home. Regarding animal's wastes disposal, 60.4.0% disposes the animal wastes at the front in home and only 7.5% by governmental cares. 68.0% of the caregivers don't use any basket or container for home trash, 87.5.0% of those baskets did not cover. Regarding frequency dispose of home trash more than half 54.0% of the caregivers dispose the trash daily and only 11.0% weekly. Regarding housing sanitary condition this table illustrates that 61.0% of houses bad, 32.0% good and only 7.0% very good housing sanitary conditions

Table (3): percentage distribution regarding housing conditions, (presence of animals/animal waste disposal, rubbish disposal and sanitary condition), n=100

| Items | No | % |
|---|------|------|
| Presence of animals at home | | |
| Yes | 53 | 53.0 |
| No | 47 | 47.0 |
| Animal waste disposal | | |
| Collect at the front in the home | 32 | 60.4 |
| In the Farm | 17 | 32.1 |
| By governmental cars | 4 | 7.5 |
| Presence of basket for home trash(rubbish) | | |
| Present | 32 | 32.0 |
| Not present | 68 | 68.0 |
| - If present it | | |
| Covered | 4.0 | 12.5 |
| Un covered | 28.0 | 87.5 |
| -When dispose the home trash(rubbish) | | |
| Daily | 54 | 54.0 |
| Day after day | 35 | 35.0 |
| Weekly | 11 | 11.0 |
| -Housing sanitary conditions | | |
| Bad | 61 | 61.0 |
| Good | 32 | 32.0 |
| Very good | 7 | 7.0 |

Table (4): shows that about one quarter 24.0 % of the caregivers know definition of intestinal infestations. Regarding the types of intestinal parasites, 54.7% of the caregivers don't know any type of intestinal parasite. Also this table shows that 76.0% of caregivers analyze stool for their children, 68.0% of the caregivers didn't know the types of intestinal parasite presence in. Regarding treatment of infected children, 57.3% administer treatment 54.7% of them go to general hospital. Regarding causes of no treatment more than three quarter of them 78.2% complain form reinfection and 21.8% due to socioeconomic causes.

Table (4): knowledge of caregivers regarding intestinal parasitic infestation, n=100

| Knowledge | No | % |
|---|----|-------|
| 1-Define intestinal parasite | | |
| -know | 24 | 24.0 |
| - Don't know | 76 | 76.0 |
| 2- Types * | | |
| - Bilharzias | 14 | 12.1 |
| -Ascaris | 18 | 15.7 |
| - Pin worm | 12 | 10.4 |
| - Enclestoma and giardia | 8 | 6.9 |
| - Do not know | 63 | 54.7 |
| 4-Does the child done stool analysis | | |
| - Yes | 76 | 76.0% |
| - No | 24 | 24.0% |
| 4-peresence worms in child stool | | |
| - Yes | 75 | 98.7 |
| - No | 1 | 1.3 |
| 5- If yes what this worm * | | |
| -Ascaris | 9 | 12.0 |
| - Pin worm | 13 | 17.3 |
| - Giardia lmbilia | 2 | 2.7 |
| - Do not know | 51 | 68.0 |
| 6-Administer treatment | | |
| - Yes | 43 | 57,3 |
| - No | 32 | 42.7 |
| 7-Health system for treatment | | |
| -Health unit | 8 | 10.6 |
| -General hospital | 41 | 54.7 |
| -Medical center | 11 | 14.7 |
| -Special physician | 10 | 13.3 |
| -Pharmacy | 5 | 6.7 |
| 8- Causes for no treatment | | |
| -socioeconomic | 7 | 21.8 |
| -Reinfection | 25 | 78.2 |

* More than one answer

Table (5): Found that less than one quarter 23.0 % of caregivers know definition of Ascariasis.Regarding to Ascariasis description only 4.0% of the caregivers didn't know it. Regarding to complaint of Ascariasis 40.0% of caregivers didn't know any complaints. As regards to the diagnostic methods about two third 62.0% of the caregivers know stool analysis, 24.0% of caregivers didn't know any methods for. Regarding to the methods of prevention, 52.0% of caregivers used personnel hygiene. 21.0% used food sanitation, also 21.0% go to the doctor and 33.0% didn't know any preventive methods.

Table (5): distribution of caregiver's knowledge about Ascariasis

| Knowledge | No | % |
|------------------------------------|----|-------|
| 9- Define Ascariasis | | |
| -know | 23 | 23.0 |
| -Don't know | 77 | 77.0 |
| 10- Ascariasis description | | |
| -know | 4 | 4.0 |
| - Don't know | 96 | 96.0 |
| 11- Mode of transmission* | | |
| -Food borne | 29 | 29.0 |
| -Feco-oral | 14 | 14.0 |
| - Flies | 14 | 14.0 |
| - Don't know | 84 | 84.0% |
| 12-Complaint of Ascariasis* | | |
| -Pneumonia | 20 | 20.0 |
| -Recurrent pain | 32 | 32.0 |
| -Nausea and vomiting | 15 | 15.0 |
| - Diarrhea | 15 | 15.0 |
| -Intestinal blockage | 19 | 19.0 |
| - Lack of concentration | 17 | 17.0 |
| -Loss of appetite | 22 | 22.0 |
| - White appearance in feces | 23 | 23.0 |
| - Don't know | 40 | 40.0 |
| 13- Diagnostic Methods * | | |
| - Stool analysis | 62 | 62.0 |
| - Physical examination | 22 | 22.0 |
| -X- rays | 11 | 11.0 |
| - Endoscopes | 11 | 11.0 |
| - Don't know | 24 | 24.0 |
| 14- Methods of prevention* | | |
| -Personal hygiene | 52 | 52.0 |
| -Food sanitation | 21 | 21.0 |
| -Follow-up at the doctor | 21 | 21.0 |
| - don't know | 33 | 33.0 |

* More than one answer

Table (6): shows that less than one quarter 22.0% of caregivers knows the definition of pinworm infestations. Regarding pinworm infestation description only 7.0% of caregivers knows the. Regarding the mode of transmission half 50.0% of caregivers didn't know any mode of transmission. Regarding the complaint of pinworm infestations 35.0% of caregivers didn't know any complaint .Show that more than one quarter 30.0% of caregivers show worm by naked eye around the anus 44.0% of caregivers know stool analysis methods, while 28.0% of them didn't know any methods of diagnosis. Regarding the methods of prevention, 57.0% of caregivers take medication, 27.0% of them didn't know any method of prevention.

Table (6): caregivers knowledge's about pinworm infestations, n=100

| Knowledge | No | % |
|---|----|------|
| 15-Define of pinworm infestations | | |
| -know | 22 | 22.0 |
| -Don't know | 78 | 78.0 |
| 16-Pinworm descriptions | | |
| -know | 7 | 7.0 |
| -Don't know | 93 | 93.0 |
| 17- Mode of transmission * | | |
| - Feco- oral | 36 | 36.0 |
| - Food borne | 18 | 18.0 |
| -Contact with bed sheets and linen | 22 | 22.0 |
| -Don't know | 50 | 50.0 |
| 18- Compliant of pinworm infestations * | | |
| -Pain in the stomach and cramps | 13 | 13.0 |
| -Sickness | 7 | 7.0 |
| -Vomiting | 6 | 6.0 |
| -Loss of appetite | 12 | 12.0 |
| -Bloating & acidity | 11 | 11.0 |
| -Appearance bloody faeces | 6 | 6.0 |
| -Itching in the anal area | 28 | 28.0 |
| -Anxiety and tension during sleep | 10 | 10.0 |
| -Lack of academic achievement | 12 | 12.0 |
| -Don't know | 35 | 35.0 |
| 19- diagnostic Methods* | | |
| -show worm by naked eye around the anus | 30 | 30.0 |
| -Stool analysis | 44 | 44.0 |
| -X-rays | 5 | 5.0 |
| -Don't know | 28 | 28.0 |
| 20- Methods of prevention* | | |
| -Take medication | 57 | 57.0 |
| -Use of white precipitate ointment paint around the anus | 16 | 16.0 |
| -Treat all people in the house at one time | 1 | 1.0 |
| -Soaked clothes of the children in disinfected solution , and washing daily | 16 | 16.0 |
| -Wash hands before eating with soap and water | | |
| -Wash vegetables, fruits, and soaked in vinegar before eating | 18 | 18.0 |
| -Cut nails usually | 14 | 14.0 |
| -Don't know | 12 | 12.0 |
| | 27 | 27.0 |

Table (7): shows that two thirds (67.0%) of caregivers washing hands before preparing the food. Regarding to hands washing after eating more than half 52.0% done and 48.0% not done , 47.0% of caregivers wash hands after leave the toilet while 36.0% of caregivers wash hands with water only, 54.0% with water and soap , only 10.0% use disinfected solution, The majority 94.0% of caregivers didn't wash hands after dispose the home and animals wastes. Regards cut nails and hygiene, 17.0 % of caregivers done 83.0% not done.

Table (7): distribution of caregivers regarding practices of personal hygiene, n=100

| Practice | No | % |
|---|----|------|
| 1- Wash hands before preparing food | | |
| -Done | 67 | 67.0 |
| -Not done | 33 | 33.0 |
| 2- Washing hands before eating | | |
| -Done | 40 | 40.0 |
| - Not done | 60 | 60.0 |
| 3- Washing hands after eating | | |
| -Done | 52 | 52.0 |
| -Not done | 48 | 48.0 |
| 4- Washing hands after leave the toilet | | |
| -Done | 47 | 47.0 |
| - Not done | 53 | 53.0 |
| 5-Washing hands after leave the toilet | | |
| -With water only | 36 | 36.0 |
| -With soap and water | 54 | 54.0 |
| -Use disinfectant solution | 10 | 10.0 |
| 6- washing hands after dispose home and animals wastes | | |
| -Done | 6 | 6.0 |
| - Not done | 94 | 94.0 |
| 7- Dried hands after washing | | |
| -Done | 59 | 59.0 |
| -No done | 41 | 41.0 |
| 8- Cut down nail and cleansed | | |
| -Done | 17 | 17.0 |
| - Not done | 83 | 83.0 |

Table (8): shows that the difference between residence and caregivers knowledge's about parasite, shows no statistical significant differences between the residence and knowledge

Table (8): Difference between residence and caregivers knowledge about intestinal parasite, n=100

| Knowledge | Urban=59 | | Semi urban=41 | | Fisher exact | P |
|-----------|----------|------|---------------|------|--------------|-----|
| | No | % | No | % | | |
| poor | 0 | 0.0 | 24 | 58.5 | 4.4 | 0.1 |
| fair | 38 | 64.0 | 14 | 34.1 | | |
| good | 21 | 35.6 | 3 | 3.0 | | |

Table (9): shows that the difference between knowledge's about parasitic infestations, with no statistically significant differences between caregivers and their knowledge's.

Table (9): Scores of caregiver knowledge about intestinal parasitic infestation, n=100

| Knowledge | | | F | P |
|-----------|----------|----------|------|-----|
| poor | Fair | Good | | |
| 33.9±7.6 | 34.4±6.3 | 35.3±7.2 | 0.08 | 0.9 |

Table (10): shows that more than half 53.2% of illiterate caregivers have poor score and only 9.7% of university levels have poor score, no statistical significant differences between educational level of mothers and intestinal infestations.

Table (10): Difference among educational level of the mothers and intestinal infestations

| Knowledge | Mother Education | | | | | | | | Fisher-exact | P |
|-----------|------------------|------|-------|------|-----------|------|------------|------|--------------|-----|
| | Illiterate | | Basic | | Secondary | | University | | | |
| | No | % | No | % | No | % | No | % | | |
| Poor | 33 | 53.2 | 7 | 11.3 | 16 | 25.8 | 6 | 9.7 | 9.5 | 0.1 |
| Fair | 12 | 34.3 | 3 | 8.6 | 11 | 31.4 | 9 | 25.7 | | |
| Good | 0 | 0 | 0 | 0 | 2 | 66.7 | 1 | 33.3 | | |

Table (11): shows that the Difference between income and caregiver knowledge, their with statistically significant difference (p value =0.01).

Table (11): Difference between income and caregiver knowledge, n=100

| Knowledge | Income | | | | | | Fisher-exact | P |
|-----------|----------|------|--------------|------|----------|------|--------------|-------|
| | <399= 32 | | 400- 799= 38 | | More =30 | | | |
| | No | % | No | % | No | % | | |
| Poor | 23 | 37.1 | 28 | 45.2 | 11 | 17.7 | 12.7 | 0.01* |
| Fair | 8 | 22.9 | 10 | 28.6 | 17 | 48.6 | | |
| Good | 1 | 33.3 | 0 | 0.0 | 2 | 66.7 | | |

5. DISCUSSION

The epidemiology of the intestinal infestations is a major health problem, and estimated to affect 3.5 billion people, most of whom are children residing in developing countries (*WHO, 2000*).

Pinworm is an intestinal infection caused by tiny parasitic worms; one of the most common roundworm infections, pinworm infestations affects millions of people each year, particularly children (*Horne, 2002 and Mayo Clinic, 2013*). Since the first evidence shows that pin worm infection was from Roman-occupied Egypt.

Ascaris lumbricoides is the largest and the most common helminthes parasite in the human intestine and currently infects about 1 billion people world wide this is the most common human worm infection , it has wide distribution, and children are most often infected (*Mehraj et al., 2008*).

Concerning to socio demographic characteristics of the children the finding of the present study showed that the mean ages of the children was 6.9 ± 0.6 years in the first year in primary school. These results are supported by *Macariola et al., (2002)* who found that the children between the ages of 4-10 years are the most frequently affected with intestinal parasite. While more than half 54.0 % of children were males and 46.0 % were females.

From the epidemiological point of view the present study showed that more than half 59.0 % of the caregivers were living in urban area and the rest of them 41.0% were living in semi urban. Concerning their educational level, it was clear that 28.0% of fathers were illiterate and 36.0% of them had secondary educational level while 45.0% of mothers were illiterate and only 10.0% had basic level of education. This results are agree with *EL- Masry et al., (2010)* who showed that low level of parents education, low level of parents occupation and low social class were significant risk factors for intestinal infestations.

The findings of the present study showed that about three quarters (73.0%) of fathers are workers, 73.0% of mothers were house wives while only 5.0% un-employed. As regards to the income 38.0% of the caregivers earn for 400-799 pounds a month and 30.0% of them earn more than 800 pounds/ month, this results are similar with *Mahmoud, (2000) & EL- Masry et al., (2010)* who showed that low social classes were significant risk factors for intestinal infestations .

Concerning the percentage distribution regarding housing sanitation presented in (tab,2) clear that the majority 97% of houses have electricity source, and 89% present ventilation in the house, regarding the source of water in the house 94% of the caregivers are using the tap water, and only 6.0% of them are using the pump water, 93% of the caregivers drinking water directly from the tap, and only 1.0% of them boiling the water before drinking it, and also the same number of them drinking the distilled water, related to the type of toilet, 81.0% of the caregivers using ordinary toilet and 19.0% using modern toilet , in spite off low present but presence dangerous on the health, this might be interpreted that using the modern toilet may contribute to spread of infection with intestinal infestations.

This results are accordance with *Cuevas et al.,(2007) and Jombo,& Akosu, (2007)* were noticed that it is already known that environmental sanitation and hygienic practices have been associated with the incidence of intestinal infestations , improved water supply and the use of toilet facilities have contributed to the reduction of infections with intestinal infestations.

Regarding the source of water in the toilet, about two thirds of the caregivers 61.0% using the tap water directly in the toilet, while 39.0% of them are using the water in the container, regarding the sewage 92.0% present sewage in the house, and only 8.0% not present. Intestinal infestation depends on the hygiene and sanitation of people involved, water contamination, health education status etc. The caregivers and children were advised to treat the well water prior to consumption either by filtering or boiling or both. This finding is consistent with *Shrestha, (2002)* who reported a higher rate of intestinal infestation in general school going children 70.5 % and 70 % compared to boarding school going children 44% and 40 % who used the latrines built by Family Planning Association Nepal, in Kathmandu and Sunsari respectively

As regards percentage distribution regarding housing conditions, the current result presented in table (3) reveals that 68.0% of the caregivers don't use any basket or container for home trash, (87.5%) of those baskets did not covered. Regarding frequency of home trash disposal more than half 54.0% of the caregivers dispose the trash daily and only 11.0% weekly this results may be interpreted that the housing condition may contribute and assist the spread of infection with intestinal infestations this result is consistent with *Abordo et al., (2010)* who stated that all 100% caregivers frequently adhered to some garbage disposal practices, in their homes, they would use garbage containers and place them away from the reach of animals, food and water containers. Regarding housing sanitary condition 61.0% of houses present bad, 32.0% good and only 7.0% very good housing sanitary conditions. accordance with (WHO) who reported that standard score about environment and housing sanitation.

Concerning the caregiver's knowledge about intestinal infestations, about one quarter 24.0 % of the caregivers know the definition of intestinal infestation Three quarter 98.7.0% of the children, parasite presences in their stool analysis .Also this finding supported with *Okyay et al., (2004)* who make a survey in the eastern part of

Turkey conducted among 1001 children in four elementary schools in Sanliurfa found parasites in 88% of the stool samples examined.

Regarding the types of worm presence in child stool, 17.3% of the children infected with pinworm. This result supported with the study demonstrated by *El-Gammal et al., (1995)* who found that 40.4% of children infected with *Enterobius vermicularis*. Also this finding is consistent with *Rim et al., (2003)* who stated that by cellophane anal swab detected *Enterobius vermicularis* in 35.7% of school children aged 6-8 years. Also these results are in the same line with *El-Masry et al., (2010)* who reported that 16.6% of the studied school children infected with *Enterobius* in El-Huridyh village, a randomly selected village in Tahta District, Sohag Governorate. According to the (Ministry of Health in EL-Minia governorate, 2011) which reported that the prevalence of Pinworm in EL-Minia governorate during year 2011 as follows, Diermawas district were 12.41%, Malawi, 4.12% Abo- querqus 4.71%, EL-Minia 22.05%, Samalot 4.96%, Mataye 4.12%, Banimazar 3.66%, Makaka 31.02%, and EL-edwa 5.04%.

Concerning the *Ascaris* worm presence in child stool in 12.0% of the children infected with Ascariasis, these findings are consistent with *Okyay et al., (2004)* who made a survey in the eastern part of Turkey conducted among 1001 children in four elementary schools in Sanliurfa found that 50% of children infected with *Ascaris lumbricoides*, in another region from the eastern in an elementary school age group, found that 48.12% of children infected by *Ascaris lumbricoides*.

In the same line with *El-Masry et al., (2010)* who reported that 6.5% of children infected with Ascariasis in El-Huridyh village, a randomly selected village in Tahta District, Sohag Governorate and the same results through the researcher and (Direction of Health in EL-Minia governorate, 2011) which found that the prevalence of Ascariasis in EL-Minia governorate during year 2011 as follows, Diermawas district 1.61%, Malawi, 0.57% Abo- querqus 1.61%, EL-Minia 5.38%, Samalot 0.88%, Mataye 1.04%, Bani Mazar 1.25%, Makaka 1.01%, and EL-edwa 0.93% Direction. Concerning the causes of no treatment one quarter 78.2.0% of the caregivers complain for reinfection and 21.8 % due to socioeconomic causes. Concerning the knowledge of the caregivers about Ascariasis presented found that less than one quarter 23.0 % of them know definition, the majority of the caregivers 96.0% didn't know the Ascariasis description.

Concerning the mode of transmission of Ascariasis the current study revealed that 84.0% of the caregivers didn't know any mode of transmission in pre test, 14.0% know feco- oral transmission and also the same number by flies and 29.0% transmitted through contaminated food, this result agrees with *Farag et al., (1993)* who shows that water contact activities and unhygienic measures represented significant risk of parasitic infestation, also similar result with *Belizario, et al., (2010)* who found that poor personal hygiene encourages person-to-person transmission, and also poor food handling hygienic measures, presence of flies, feco-oral and contaminated water encourage and increase mode of transmission of parasitic infestation, and also the study conducted by *Dold and Holland., (2011)* which indicated that *Ascaris lumbricoides* is one of the most common parasites in the world, transmitted by the feco-oral route and infecting of school children.

As regards to complaint of Ascariasis the current study noticed that 40.0% of the caregivers didn't know any complaint. This indicates that the educational intervention was successful in improving the caregiver's knowledge about Ascariasis.

Our findings highlighted that 20.0% of caregivers know Pneumonia is the most common complaint of Ascariasis, followed by 32.0% recurrent pains, 15.0% nausea and vomiting, 15.0% diarrhea, 19.0 % intestinal blockages, 17.0% lack of concentration, 22.0% loss of appetite, 23.0%, white appearance in face.

This finding is similar with *Holland, (2009) and Neira et al., (2011)* which stated that the infection among school children is associated with appetite loss, maldigestion, impaired weight gain, and a reduction in cognitive abilities, large numbers of worms may give rise to allergic symptoms and eosinophils can accumulate in the lungs in response to Ascariasis, (1-3) human hosts infected with *A. lumbricoides* tend to experience acute lung inflammation, difficulty in breathing and fever, abdominal distension and pain, nausea and diarrhea are also typical symptoms.

Regarding to the methods of prevention about Ascariasis the current study illustrated that 52.0% of the caregivers follow the personnel hygiene, 21.0% of them used food sanitation, 21.0% go to the doctor when infected and 33.0% didn't know any method of prevention, the possible explanation regarding to the methods of

prevention could be interpreted that improving personal and environmental hygienic measures, regular screening and treatment on big number of students in rural and urban areas of Egypt and health education for caregivers & students may be encourage and improve the methods of prevention of Ascariasis infestations.

Concerning the knowledge of the caregivers about the pinworm infestations the current study illustrated that less than one quarter 22.0% of the caregivers know the definition of pinworm infestations This result implies the importance of an educational intervention to rising of the caregiver's awareness about the pin worm infestations. As regards the mode of transmission of pinworm infestations the current study found that half of the caregivers 50.0% didn't know any mode of transmission. 36.0% of the caregivers know transmitted by feco oral rout 18.0% by contaminated food 22.0 % by contaminated sheets and linen this finding is consistent with *Kandeel, (2000) and EL-Masry et al., (2010)*, which record that sheets and hands contamination can cause auto infections, and assist of secondary transmission of infection, the caregivers for school children in rural areas of Qalubia denoting the role of personal hygiene especially when contact with infected individuals in the school or within their families.

Regarding the complaint of pinworm infestations the current study shows that 35.0% of the caregivers didn't know any complaint, 13.0% of caregivers know the causes of stomach pain, 7.0% ill , 6.0% vomiting, 12.0% loss of appetite, 11.0% bloating, 28.0% itching in the anal area, 10.0% anxiety and restlessness , 12.0% lack of academic achievement there is dangerous indicators because more of children arrive iron deficiency anemia and other complication without know the real causes this result is consistent with *Hurst, (2008)* who noticed that the physical conditions of the infected children showed some pallor, cough/colds, abdominal pain, loss of appetite, body weakness, and few had BMI below-normal. These physical conditions may be indicative of the presence and effects of the pinworm infestations, also *WHO, (2002)* recorded that no doubt the pin worm infestations that cause, iron deficiency anemia are closely linked to diminished of educational performance of school children .

Accordance to *Abordo et al., (2010)* who recorded that the community health nurses' during physical assessments for infected children reported that most of them had cough, (92.3%) colds and (92.3%), manifested pallor abdominal pain (61.54%) suffered body weakness (69.23%) , experienced loss of appetite (38.46%), body mass index below the normal range (30.77%) based on the Philippine body mass index standards.

Regarding the methods of prevention of pinworm infestations , the present study illustrated that more than half of caregivers (57.0%) take medication when infected with it, while 27.0% of them didn't know any method of prevention, only 12.0% cut nails usually, this result implies that the important part about intestinal infestation beside the medical treatment this may due to without applied preventive measures, infection & reinfection is still continues.

In the same line with *Anane, (2006)* who noticed that caregivers should be wash bed sheets, nightclothes, underwear, and towels in hot water to help kill pinworm eggs, avoid scratching the anal area, trim your child's fingernails so there's less space for eggs to collect, discourage nail biting, clean toilet seats daily this helps remove the eggs, wash your hands to reduce your risk of getting or spreading an infection, wash your hands thoroughly after a bowel movement or changing a diaper and before eating.

Also this finding supported with *Belizario et al., (2010)*who reported that the human is the only host of pinworm infestations and some methods help to prevent the spread of pinworm reinfection include: showering in the morning because pinworms lay their eggs at night, washing the anal area in the morning can help reduce the number of pinworm eggs on your body, help avoid possible recontamination in bath water, change underwear and bed linen daily and wash with hot water this helps remove pinworm eggs.

Concerning to hand washing practices the current study illustrated that two thirds 67.0% of the caregivers washing hands before preparing the food, also 40% of the caregivers washing hands before eating 48.0% don't washing hands after eating, this finding in consistent with *Campos et al., (2009)*, who found that about three quarter 74.1% of caregivers did not receive periodic training, about 51.9% did not undergo annual health examinations and 100% did not practice proper hand hygiene, a situation that reflected significantly $p < 0.05$ in hand contamination, in which fecal coli forms were detected on 55.6% of the hands analyzed, who concluded that the schools studied did not have appropriate hygienic conditions, suggesting the need for interventions that ensure the quality of houses of the caregivers of school children. As regards use liquid soap for hand washing

22.0% of the caregivers are using it, this finding in the same line with *Fung and Cairncross, (2009)* who found that hand washing with soap may be one of the most cost-effective means of preventing intestinal infestations in developing countries. This study revealed that 36.0% of the caregivers wash hands with water only, 54.0% with water and soap, only 10.0% use disinfected solution, 20.0% of them rub finger circular

These findings are consistent with study conducted by *Mayo Clinic staff, (2010)* who estimated that only 17% of child caregivers wash hand with soap after the toilet, make plans' involving hand washing included to improve family health and to teach the caregivers and their children as hand washing with good manners. Also in the same line with *Sehgal et al., (2010)*, who sharing with candidate strategies for promoting hand washing with soap include creating social norms, highlighting disgust of dirty hands and teaching the caregivers and their children as hand washing with soap good manners, environmental barriers were few as soap was available in almost every household, as was water, because much hand washing is habitual.

Regarding the difference between residence and caregiver's knowledge's about intestinal infestations their no statistically significant differences. Regarding educational level of mothers, their with statistically significant difference (p value= 0.01). According to the *Chomel, (2008)* who cleared that environmental and ecological modifications need to be implemented to reduce not only the intestinal parasitic load, but also the risk of parasite transmission. Finally, education and behavioral changes are essential for the success of both control and prevention of these diseases. However, financial resources specifically allocated to prevention and control of emerging intestinal infestation need to be contributed by local and national authorities as well as through international cooperation in order to successfully control and prevent these infestations.

6. CONCLUSION

Based on the results of the present study it can be concluded that more than three quarter of caregivers don't know intestinal parasitic infestation and 54.7% of them don't know any type of intestinal parasite. Regarding to Ascariasis and Entrobiosis this study found that more spread between school children at EL-Minia city

7. RECOMMENDATIONS

Based on the results of the present study, the researcher came up with the following recommendations : increase of public awareness about the knowledge of intestinal parasitic infestation and its prevention by community leaders, mass media, and others especially at rural area. Improving personal and environmental hygienic measures and regular screening and treatment for parasitic infestation and more studies on big number of students in rural and urban areas at Upper Egypt, and health education for primary school students regards parasitic infestation

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