

Mother's Awareness Regarding avoiding Parasitic Infection among their children under five years old

Eman Samir Ahmed Mohamed¹, Nahla Ahmed Abd-Elaziz², Nadia Ebrahim Abd-El-Aty³

¹B.Sc., ²Professor of Community Health Nursing, Faculty of nursing- Ain Shams University.

³Lecturer of Community Health Nursing, Faculty of nursing- Ain Shams University.

Abstract

Background: Parasitic worms are organisms that invade other organisms or hosts to survive. Worm infestation remains one of the main problems for children. Mothers play a vital role in developing healthy life style among children. **Aim:** this study aimed to assess the mother's awareness regarding prevention of parasitic infection among their children under five years. **Research design:** A descriptive analytical design was used in this study. **Sample:** A convenience sample of 200 studied mothers were participated. **Setting:** The sample was collected from MCH in East Shubra Al-Khaimah in Bahtim area. **Tools:** Two tools were used in this study: **I:** Structured interviewing questionnaire sheet. **II:** Mother reported practices regarding avoiding parasitic infection questionnaire. **Results:** More than two-thirds (61.0%) of the studied mothers had unsatisfactory knowledge level, while more than one third 39.0% of them had satisfactory knowledge level regarding parasitic infection. **Conclusion:** there was a highly statistically significant difference between demographic characteristics of mothers and total level of knowledge and practice of avoiding parasitic infection. **Recommendation:** Conducting health education programs in the different community health care settings for the public, especially the mothers are highly recommended about the mode of intestinal parasite transmission and prevention.

Key words: Children, mother's awareness & Parasitic infection.

Introduction:

A parasite is an organism that lives on or in a host and gets its food from or at the expense of its host. there are three main classes of parasites that can cause disease in humans: protozoa, helminths, and ectoparasites. Parasitic infections are a big problem in tropical and subtropical regions of the world. Parasitic infections include several types: *E. vermicularis* (pinworm), *Trypanosoma curisi* (the cause of Chagas disease), *Echinococcus* (tapeworm), (passed through dogs and sheep,) *Cysticercosis*, *Toxocariasis* (roundworm), *Amebiasis Sarcodina* – the ameba, e.g., (*Entamoeba* or *giardiasis*) (Gildner & Cepon-Robins, 2023).

Parasites are very common around the world, the infections are transmitted in crowded places like day cares, Also, children in developing countries are usually carrying some type of parasite. Poor sanitation and unsafe water increase the risk of catching parasites (Jiang & Huang, 2023).

Intestinal parasites causing illnesses range from simple and asymptomatic include fever,

abdominal pain, weight loss, diarrhea, anemia, malnutrition, mal-absorption, peri-anal irritation and cough to complex and life-threatening problems such as hepatomegaly, obstruction, appendicitis and pancreatic obstruction, seizures and hydrocephalus. The infections may lead to impaired growth, stunting, physical weakness and low educational performance of infected children. It is also imposing large health and socioeconomic burden on societies (Chelkeba et al., 2022).

For prevention of parasitic infection mothers and their children should acquire the importance of washing hands correctly with soap and running warm water, particularly after using the toilet, after touching animals or dirty things and before eating. Prevention of parasites based on regular anti-parasitic treatment, improved water supply, and sanitation and health education (Charach et al., 2020).

The first five years of a child's life are fundamentally important. They are the foundation that shapes children's future health, happiness, growth, development and learning achievement at school (Haymanot & Kaba, 2022). Common children health issues among children under five years include allergies,

common cold, conjunctivitis, gastroenteritis, mouth disease, impetigo, lice, parasitic infection and worm infestation (Zimmer, 2022).

Community health nurses has major role in the management and prevention of intestinal parasitic infection, their close relationships with mothers of infected children provide Avery good opportunity for health education regarding prevention of infection and re-infection, Recently, in some countries, health promotion and awareness campaigns have used influential individuals to persuade other to adopt new practices, but others to adopt new practices, but this strategy has yet to be applied to prevention and control of intestinal parasitic disease (Al-kafaji & Alsaadi, 2022).

Significance of the study:

In world's population 24% or more than 1.5 billion people are infected with soil-transmitted helminth infections worldwide. Preschool-age children over 267 million live in areas where these parasites are intensively transmitted and are in need of interventions. Global wise over 600 million persons are estimated to be infected by worm, 225 million preschool 3-6yrs (WHO, 2020).

According to the WHO report in 2014, more than 3.5 billion people were infected with intestinal parasitic infection mainly by *Taenia saginata*, *S.stercoralis*, *H.nana*, *A. lumbricoides*, *T.trichiura* and hookworms. Many studies showed that more than two billion people were infected by intestinal parasitic infestation in worldwide. Two third (2/3) of African countries had high risk areas with prevalence of more than 50%. (Gemechu et al., 2022)

The prevalence rate in Egypt is up to 30.2% (El-Badry et al.,2022). intestinal parasitic infections are still a common public health problem in children under five years, the prevalence of these parasites differs from one Arabian country to another, In the Middle East, for instance, reports on intestinal parasites have shown variable prevalence rates of 42.5% in Syria, 33.9% in Qatar, 31.4-32.2% in Saudi Arabia, 28.7% in Yemen, 28.5% in Jordan, 19.3-27.3% in Iran, 16.6- 74.6% in Palestine, 17-90.4% in Sudan, and 12.4% in Lebanon and 27% in Egypt (Bayoumy et al., 2021).

Aim of the Study:

This study aims to assess the mother's awareness regarding avoiding parasitic infection among their children under five years old through:

- 1-Assessing mother's knowledge regarding avoiding parasitic infection among their children under five years old.
- 2-Assessing mother's practices regarding avoiding parasitic infection among their children under five years old.
- 3-Assessing home environmental sanitation from mothers regarding avoiding parasitic infection among their children under five years old.

Research question

- 1- What are the mother's knowledge regarding avoiding parasitic infection among their children under five years old?
- 2- What are the mother's practices regarding avoiding parasitic infection among their children under five years old?
- 3-Is there a correlation between socio economic status of mothers and mother's knowledge regarding avoiding parasitic infection among their children under five years old?
- 4- Is there correlation between socio economic status of mothers and mother's practices regarding avoiding parasitic infection among their children under five years old?

Subjects and Methods

Research design:

A descriptive analytical design was used in this study.

Setting:

The sample was collected from MCH in East Shubra Al-Khaimah in Bahtim area

In East Shubra Al-Khaimah in Bahtim area two centers were chosen, which are called (1, 2) Shubra El Khaimah is the fourth-largest city in Egypt. It locates in the Qalyubia governorate along the northern edge of the Cairo governorate. It forms part of the Greater Cairo agglomeration, also it is considered one of the suburban areas. They are either part of a city or an urban area (Population data taken from the City Population website Archived, 2018).

Subjects of the study:

A convenience sample was obtained and included mothers with their children under five years old, both sex at MCH from East Shubra Al-Khaimah in Bahtim area governorate.

The study subjects included a representative of the children's mothers under five years in attending to MCH attendance rate (N=2600) at Bahtim health center 1 & 2, in the east of Shubra Al-Khaimah; were center during the period 2020. Based on the sample size equation, 200 mothers participated in the study. The sample was (200) to avoid withdrawal and achieve a response rate.

Tools for data collection:

Two were used in this study:

Tool I: Structured interviewing questionnaire sheet: It was designed by the investigator based on reviewing related literature. It was divided into three parts:

Part 1: Demographic data: Demographic characteristics of children under five years (child's age, sex, birth, nursery attendance) and their mothers (mothers' age, educational level, marital status, occupation, monthly income, and number of children residence).

Part 2: Past medical health history of children under five years old: It was modified (Gizaw et al., 2018) from the mother's information health habits such as, diet and exercise.

Part 3: Mother's knowledge regarding avoiding parasitic infection among children under five-year-old: It was adapted from (Masaku J, et al(2017) & Modified by the investigator it includes (80) items.

❖ Scoring system of Knowledge:

Each correct answer was given one degree while the incorrect answer was given zero. The total score of knowledge was 80 degrees, it was considered that: $\geq 50\%$ was the satisfactory level of knowledge (40 – 80 degrees) and $< 50\%$ was an unsatisfactory level of knowledge (0 - 39 degrees).

Tool II: Mother reported practices regarding avoiding parasitic infection questionnaire:

It was adapted from Kassaw et al (2020) & Modified by the investigator, The first part was the mothers' part which includes assessment of personal hygiene (7 degrees), Food and drink hygiene (6 degrees), Diet (11 steps), The cleanliness of the home and the environment surrounding the child (5 degrees), the second part was the children's part which includes: Personal hygiene (6 degrees), Food and drink hygiene (3 degrees) and Play environment for your child (5 degrees).

❖ Scoring system of practice:

Each correct step was given one degree, while the step which was not done was given zero, the total score was 43 degrees, distributed as the following: The total score of nurses ' practice was 43 degrees, it was considered that: 50% was satisfactory level of the nurses ' practice (22- 43 degrees). Also, $< 50\%$ was unsatisfactory level of the nurses ' practice (0 - 21 degrees).

Operational Design:

It included four phases, namely preparatory phase, ethical consideration, pilot study, and fieldwork.

The preparatory phase:

It includes reviewing related literature and the theoretical knowledge of various aspects of the study using books, articles, scientific journals, and the internet to acquire in-depth knowledge about the study. This served to develop the study tools for data collection. During this phase, the researcher also visited the selected places to get acquainted with the personnel and the study setting.

Pilot study:

It was carried out on 10% (20) of the studied mothers to test the applicability and clarity of the questions, and efficiency of the tools. There were no modifications found after the pilot study. So, all (20) mothers were included in the study. The pilot also served to estimate the time needed

for each subject to fill in the questions (30-45 minutes).

Validity of tools:

Revision of the tools was done by a panel of experts composed of 3 professors of community Health Nursing to measure the content's validity of the tools, their opinions elicited regarding the format, layout, consistency, accuracy and relevancy of the tools. The required modifications were done accordingly.

Reliability of tools:

Reliability analysing by measuring of internal consistency of the tool through Alpha Cronbach Reliability

Tool	Cronbach's Alpha	N of Items
Knowledge questionnaire	.890	16
Practice questionnaire	.801	43

Fieldwork:

An approval was obtained from the director of previous setting. A letter was issued to them from the faculty of nursing Ain Shams University. The approval to conduct this study was obtained orally after explaining the aim of the study. Data collection was started and completed in 3 months from the beginning of December 2021 to the end of February 2022. The sample was collected in the first two months from MCH (1), After that the last third month from MCH (2) during the period from **9 am to 12:00 p.m.**, every participant took a time of about 30-45 minutes. The investigator met with about 4-5 mothers per day twice a week (Saturday and Wednesday) for 3 months. The structured interviewing questionnaire sheet was filled out by the investigator from each participant in the study individually and some mothers filled out the questionnaire individually.

Administrative Design:

Approval to carry out this study was obtained from the Director of the **MCH** (1, 2) the east of

Shubra Al-Khaimah. A letter was issued to them from the Faculty of Nursing, Ain Shams University. A letter was issued to them from the faculty of nursing Ain Shams University. The researcher met the MCH director and explained the purpose and methods of the data collection.

Ethical considerations:

The research approval was obtained from the scientific ethical committee at the Faculty of Nursing at Ain Shams University before starting the study.

Statistical analysis:

Collected data were organized, tabulated, and statistically analysed by using (SPSS) version 20. Data were presented using descriptive statistics in form of numbers and percentages, mean, standard deviation, and Qualitative variables were compared using the chi-square test. For the quantitative data, the person correlation coefficient (r) was used for correlation analysis, and the degree of significance was identified. A statistically significant difference was considered if p-value was < 0.05. A highly statistically significant difference was considered if p-value was < 0.001.

Results:

Table (1): Shows that less than half 48.0% of children aged 2 to <4 years with the mean of children age 3.08 ± 1.11 , also more than half 53.0% of them were males and less than half 47.0 % of them were females, while the family members ranged between 4-5 members 58.5% of them. Regarding the ranking of children, one third 30.5% of them were second child and about three quarters 74.0% of the children go to nursery.

Table (2): displays that more than half (52.0%) of studied children have previous disease and most 89.4% of them had infectious disease, more than half (52.0%) of the present parasitic infection, as regard type of infection, more than one third (39.4%) of the studied children are suffering from *Entamoeba histolytica*. In addition, most 94.2% of them had child take the necessary treatment, while less than half 44.2% of them had healed with treatment and more than three quarters

77.9% of them had have family members been infected with the infection.

Figure (1): indicates that more than two thirds (61.0%) of the studied mothers had unsatisfactory knowledge level, while more than one third 39.0% of them had satisfactory knowledge level regarding parasitic infection.

Figure (2): reveals that most (82.5%) of the studied mothers had adequate total reported practice, while less than one fifth 17.5% of them had inadequate total reported practice of avoiding parasitic infection.

Table (3): illustrates that there is a highly statistically significant difference between total

knowledge the level of the studied mother and their education & occupation. There is statistically significant difference between total knowledge the level of the studied mother and their family income.

Table (4): reveals that there is a highly statistically significant difference between total practices level of the studied mother and their family type & residence. There is statistically significant difference between total knowledge the level of the studied mother and their family income.

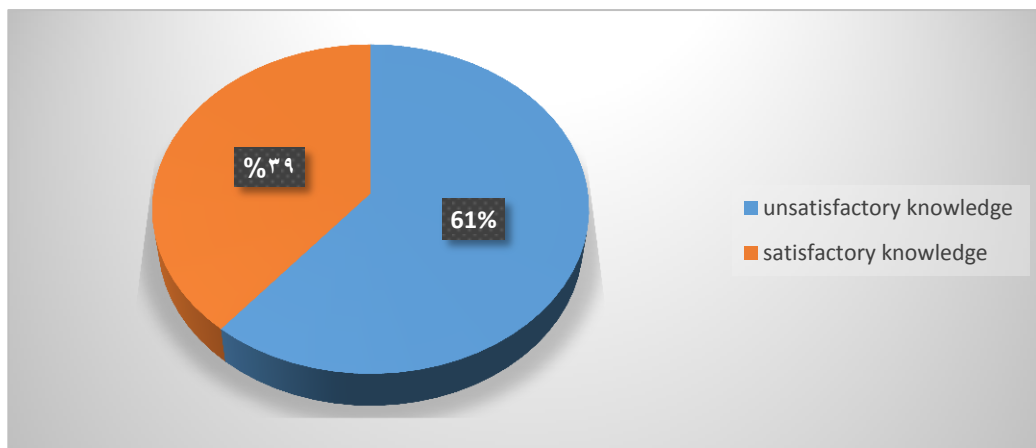
Table (5): - displays that a highly statistically significant difference between demographic characteristics of mothers and total level of knowledge and practice of avoiding parasitic infection.

Table (1): Distribution of studied children regarding their demographic characteristics (n=200).

Children characteristics	No	%
Age		
< 2years	36	18.0
2 to<4 years	96	48.0
≥4	68	34.0
Mean and SD	3.08±1.11	
Gender		
Male	106	53.0
Female	94	47.0
Family members		
3	26	13.0
4-5	117	58.5
>5	57	28.5
Child ranking		
First	40	20.0
Second	61	30.5
Third	52	26.0
Fourth	30	15.0
Fifth	17	8.5
Nursery attendance		
Yes	148	74.0
No	52	26.0

Table (2): Frequency distribution of studied children past medical and health history (n=200).

Past medical health history	No	%
Previous diseases		
Yes	104	52.0
No	96	48.0
Type of disease (n=104)		
Infectious disease	93	89.4
Chronic disease	11	10.6
Parasitic infection		
Yes	104	52.0
No	96	48.0
types of infection (n=104)		
Entamoeba Hostolytica	41	39.4
Giardiasis	6	5.8
Ascaris lumbricoides	14	13.5
Schistosomiasis worms	4	3.8
Hook worms	12	11.5
Hymenolepiasis	1	1.0
Don't know	26	25.0
Did child take the necessary treatment		
Yes	98	94.2
No	6	5.8
Result of treatment		
Healing	46	44.2
Complications	12	11.5
Relapse	3	2.9
Repeating infections	43	41.3
Family members been infected with the infected child.		
Yes	81	77.9
No	23	22.1

**Figure (1):**Percentage distribution of total studied mother knowledge level regarding parasitic infection (N= 200).

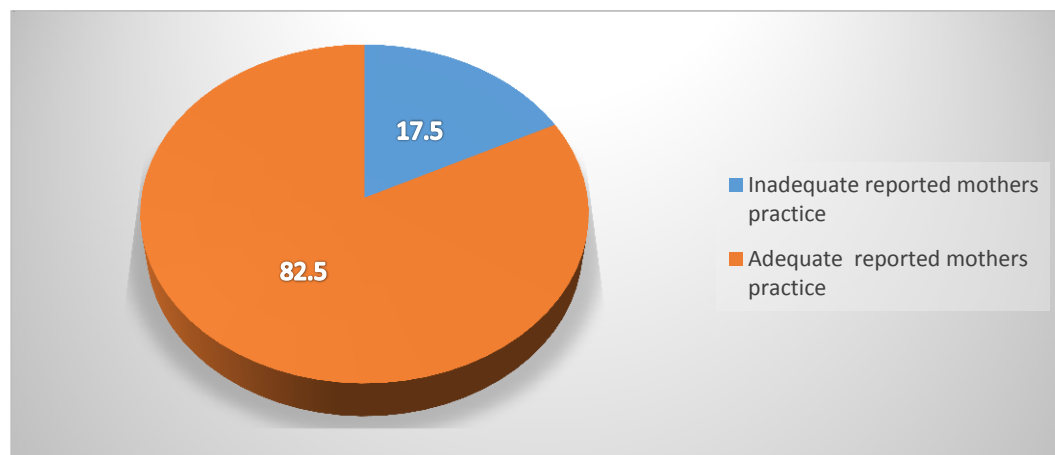


Figure (2): Percentage distribution of total mothers practice level regarding avoiding parasitic infection (n= 200).

Table (3): Relation between demographic characteristics of studied mothers and their knowledge regarding avoiding parasitic infection (n=200).

Items	Unsatisfactory		Satisfactory		χ^2	P value
	No	%	No	%		
Mother's age						
<25 years	13	6.5	3	1.5	6.457	0.091
25-29 years	45	22.5	38	19		
30-34 years	45	22.5	21	10.5		
≥35	19	9.5	16	8		
Mother education						
not read or write	31	15.5	4	2	90.321	0.000
Read and write	27	13.5	3	1.5		
Basic education	32	16	4	2		
Intermediate education	28	14	23	11.5		
Higher education	4	2	44	22		
Occupation						
Worker	19	9.5	51	25.5	51.891	0.000
Not worker	103	51.5	27	13.5		
The marital status						
A						
Married	115	57.5	74	37	MC	0.829
Widowed	4	2	3	1.5		
Divorced	3	1.5	1	0.5		
Family income						
Enough	94	47	70	35	5.195	0.023*
not enough	28	14	8	4		
Family type						
Nuclear	48	24	32	16	0.056	0.813
Extended	74	37	46	23		
Residence						
Urban	7	3.5	1	0.5	2.460	0.117
Sub urban	115	57.5	77	38.5		

(*) Statistically significant at $p < 0.05$. (**) highly statistically significant at $p < 0.01$

Table (4): Relation between demographic characteristics of studied mothers and their practice of about avoiding parasitic infection (n=200).

Items	Inadequate		Adequate		χ^2	P value
	No	%	No	%		
Mother's age						
<25 years	4	2	12	6	1.308	0.727
25-29 years	16	8	67	33.5		
30-34 years	10	5	56	28		
≥35	5	2.5	30	15		
Mother education						
not read or write	8	4	27	13.5	5.712	0.222
Read and write	9	4.5	21	10.5		
Basic education	5	2.5	31	15.5		
Intermediate education	6	3	45	22.5		
Higher education	7	3.5	41	20.5		
Mother job						
Worker	9	4.5	61	30.5	1.608	0.205
House wife	26	13	104	52		
The marital status						
Married	31	15.5	158	79	MC	0.159
Widowed	2	1	5	2.5		
Divorced	2	1	2	1		
Family income						
Enough	24	12	140	70	5.183	0.023
not enough	11	5.5	25	12.5		
Family type						
Nuclear	21	10.5	59	29.5	7.071	0.008
Extended	14	7	106	53		
Residence						
Urban	5	2.5	3	1.5	Fisher test	0.005
Sub rural	30	15	162	81		

(*) Statistically significant at $p < 0.05$. (**) highly statistically significant at $p < 0.01$

Table (5): Relation between the studied mothers' knowledge and practice of avoiding parasitic infection (n=200).

Demographic characteristics of mothers	Unsatisfactory		Satisfactory		χ^2	P value	Sig
	No	%	No	%			
Total level of knowledge	122	61	78	39	79.358	0.000	HS
Total level of practice	35	17.5	165	82.5			

(*) Statistically significant at $p < 0.05$. (**) highly statistically significant at $p < 0.01$

Discussion:

The awareness of parasitic infection among the general public is an integral part of prevention-oriented approach. In view of high incidence of parasitoids in the pediatric age group and the

complications due to these, steps need to be taken for their prevention and prompt treatment, especially in developing countries where malnutrition is coexistent. Therefore, gathering information on mothers' perceptions and behavior

related to child care helps in the design and implementation of a community-based control programs (**Tripura et al., 2020**).

According to characteristics of the studied children, the current study result showed that less than half of children aged 2 to <4 years with the mean of children age 3.08 ± 1.11 table (1). This finding was in the same line with **Zemene & Shiferaw (2019)**, in a study of 320 children to assess prevalence of intestinal parasitic infections in children under the age of 5 years attending the Debre Birhan referral hospital, Ethiopia who found that, less than half of children aged 2 to <4 years. On the other hand, this result is in disagreement with the study of **Gebretsadik et al., (2018)**, in a study of 232 children entitled " Prevalence of intestinal parasitic infection among children under 5 years of age at Dessie Referral Hospital in Ethiopia " they founded that, about one quarter of children aged 2 to <4 years. These may be due to that this age had more activities in contact with water and earth put them at frequent risk of infection.

Regarding child sex, more than half of them were males and less than half of them were females, table (1). This result was consistent with **Gebretsadik et al., (2018)**, who found that, more than half of them were males and less than half of them were females.

Also, the current study, table (1) revealed that more than half of the studied children family members were ranged between 4-5 members. Regarding the ranking of children, nearly one third of them were the second child and about three-quarters of the children go to nursery. This finding was in accordance with **Nassar et al., (2016)** who conducted study on 230 children in port said city which entitled "Nursing management plan for children suffering from intestinal parasite infection in health care setting" and stated that one third of the studied children were second in ranking. Conversely, this finding contradicted with **Gebretsadik et al., (2018)** who found that more than one half of the studied children family members were less than three members. This finding may be due to the mother take care

of other siblings and heavy responsibilities of them.

As regard to past medical and health history of the studied children, the current study clarified that, more than half of the studied children have previous disease, most of them had infectious disease, and more than half of them had parasitic infection, table (2). This result was consistent with **Mohammed et al. (2019)** who conducted a study which entitled " Parasitic Infestation and Its Effect on Growth of Primary School Children in Hehia Center on a sample of 200 children (100 infected study group, and 100 not infected) at Hehia primary schools, Zagazig City, Sharkia Governorate and found that more than half of the studied children had history of parasitic infection. While, this result was in disagreement with **Melika et al., (2017)**, who found that majority of the studied children had history of parasitic infection. This may be due to not fully developed immune systems among preschool children in addition to their playing and poor hygiene practices put them at frequent risk of infection.

As regards to the type of infection, more than one third of the studied children are suffering from *Entamoeba histolytica*, table (2). This finding was in the same line with **Hussein et al., (2021)**, who conducted which entitled "Current status and associated risk factors of intestinal parasitic infections among primary school children" a study on 325 school children in Al Qurain district, Sharkia governorate and found that, *E. histolytica* was the most prevalent parasitic species among children with variable prevalence rates.

In addition, the current study revealed that most of the studied children took the necessary treatment, while less than half of them had healed with treatment and more than three-quarters of them had family members been infected with the infection, table (2). This finding was similar to the study done by **Mohammed et al. (2019)** who clarified that majority of the siblings been infected with the infection. On the other hand, this result is in disagreement with the study of **Bakarman et al., (2019)**, which entitled "Prevalence, characteristics, risk factors, and impact of intestinal parasitic infections on school

children" on 277 school children in Jeddah, Western Saudi Arabia and they founded that, about one third of family members had been infected with the infection. From the researcher point of view family members' infection could be related to lack of awareness among parents and siblings about causes of parasitic infestation, modes of transmission, treatment and methods of prevention, and also due to the low socioeconomic standard, also due to bad health habits especially hygienic habits.

In relation to total knowledge level of the studied mother figure (1), the current study indicated that more than two thirds of the studied mothers had unsatisfactory knowledge level, while more than one third of them had satisfactory knowledge level regarding parasitic infection. This result was in the same line **Kasimayan et al., (2021)**, who found that more than two thirds of the studied mothers had unsatisfactory total knowledge level about parasitic infection. Conversely, this finding disagrees with the study done by **Lewetegn et al., (2019)** who stated that more than half of the studied mothers had satisfactory total knowledge level about intestinal parasitic infection. This might be due to lack of health education concern about parasitic infection in MCH unit.

As regard to total practice level of the studied mother regarding avoiding parasitic infection, figure (2), the current finding reveals that most of the studied mothers had adequate total reported practice, while less than one fifth of them had inadequate total reported practice of avoiding parasitic infection. this finding agrees with the study done by **Pathak et al., (2018)**, who clarified at their study "Practice on Water, Sanitation and Hygiene among 342 Mothers of Under-5 Years Children in Urban Slum of Butwal Sub-Metropolitan City, Nepal" most of the studied mothers had adequate total practice regarding avoiding parasitic infection. Conversely, this finding disagrees with the study done by **Kassaw et al., (2020)**, who found slightly more than half of mothers were had good practice, and less than of mothers were had poor practice about intestinal parasitic infections prevention and control methods on their preschool children. From the researcher point of view this finding may be

attributed to most of them had satisfactory level of knowledge regarding role in prevented and avoided of parasitic infection; satisfactory knowledge can improve mother practice.

Concerning the relation between demographic characteristics of the studied mothers and their knowledge regarding avoiding parasitic infection, table (3), the current study illustrated that there is a highly statistically significant difference between total knowledge level of the studied mother and their education & occupation. Also, there is statistically significant difference between total knowledge the level of the studied mother and their family income.

The current study findings were in the same line with the findings conducted by **Ahmed & Abu-Sheishaa (2022)**; they reported that mothers' educational level was factor affecting mother's knowledge about preventive behaviours of parasitic infection. On the other hand, the current findings were in contradiction with the findings of a study conducted by **Yones et al., (2019)**, who conducted a study which entitled Prevalence of gastrointestinal parasites and its predictors among rural Egyptian school children on 630 students enrolled in primary and preparatory school. And they reported that mother's education wasn't factor affecting mother's knowledge about preventive behaviours of PIs. This may be due to the fact that educated households might have awareness about the transmission and prevention methods of infectious diseases. Education encourages changes in healthy behaviours at the household level.

According to relation between demographic characteristics of studied mothers and their practice of about avoiding parasitic infection, table (4), the current study reveals that there is a highly statistically significant difference between total practices level of the studied mother and their family type & residence. Also, there is statistically significant difference between total knowledge the level of the studied mother and their family income. These finding was in accordance with **Gebreyohanns et al., (2018)**, who conducted their study about " Prevalence of intestinal parasites versus knowledge, attitude and

practices with special emphasis to *Schistosoma mansoni* among individuals who have river water contact among 512 caregivers at India " and found that there is a highly statistically significant difference between total practices level of the studied sample and their family type and residence. This finding disagrees with the study done by **Masaku et al., (2019)**, which entitled " Knowledge, practices and perceptions of geo-helminths infection among parents of pre-school age children " on 203 parents of preschool children in coastal region in Kenya that there was no statistically significant difference between total knowledge level of the studied mother and their family income. From the researcher point of view, this finding may be due to family type and residence affect health habits and facilities that can improve mothers practice.

Concerning relation between the studied mothers' knowledge and practice of avoiding parasitic infection, table (5), the current study displayed that a highly statistically significant difference between demographic characteristics of mothers and total level of knowledge and practice of avoiding parasitic infection. This finding supported by **Niazi, (2018)**, who conducted a study about "Assessment of mother knowledge towards intestinal parasites among children at school age" on 323 mother of school age children at Ethiopia and stated that there was statistically significant difference between demographic characteristics of mothers and total level of knowledge and practice of avoiding intestinal parasites.

Conclusion:

Based on the findings of this study, it can be concluded that, there was a highly statistically significant positive relation between the total studied mothers' knowledge and total practice of avoiding parasitic infection. More than two-thirds of the studied mothers had unsatisfactory knowledge level, while more than one third of them had satisfactory knowledge level regarding parasitic infection. More than half of studied children had adequate practices level regarding avoiding parasitic infection and more than two fifths of them had inadequate reported practices regarding avoiding parasitic infection.

Recommendations:

- Provide health education about food, personal, and environmental hygiene for both children and their mothers.
- Planning and conducting health education programs in MCH units for mothers about the mode of intestinal parasite transmission and prevention.
- Improve sanitation of environment to reduce contamination of water and soil.
- Counseling mothers of children with parasitic worms about parasitic worm's management and healthy home precautions for their children.
- Disseminating health education brochure to increase mothers' awareness about parasitic worms and healthy home precautions at outpatient clinics.
- Necessary to carrying out the study on large sample and in other setting for generalization.

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