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Knowledge and Practice of Primary School Students Regarding Intestinal Parasitic Infestations and Hygienic Measures in Beni-Suef City

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Abstract

Background: Parasitic diseases are a major cause of child morbidity and mortality in most parts of the world. Unhygienic and playing habits make the children particularly vulnerable to parasite infections. Parasite infections have high prevalence rates worldwide, and more than three billion people worldwide are believed to be infected with intestinal parasites **Aim of the study:** Assess knowledge and reported practice of primary school students regarding intestinal parasitic infestations and hygienic measures. **Research Design:** A descriptive research design was applied in this study. **Sample:** Multi-stage random sample was equal to 384 primary students in two primary school students at Beni- Suef city. **Setting:** primary school students at Beni- BeniSuef City, Egypt. **Tools:** One tool used to achieve the aim of this study: Interviewing questionnaire sheet which consisted of four parts to assess demographic characteristics of students, knowledge about intestinal parasitic infestations, reported practices of intestinal parasitic infestations, and reported practices questionnaires about child malnutrition symptom. **Results:** The study showed that 50.0 % of the studied students had a poor level of knowledge regarding intestinal parasitic infestations, and 40.0 % of the studied students had a satisfactory level of self-reported practice about intestinal parasitic infestations. **Conclusion:** There was a highly significant association between studied student knowledge and reported practice scores regarding intestinal parasitic infestations. **Recommendations:** further research about a health education program to increase awareness about avoiding intestinal parasitic infestations among primary students and to enable them to make the right decisions relating to health problems.

Key Words: Intestinal Parasitic Infestations, Hygienic Measures, Primary School Students.

Introduction

Intestinal parasitic infestations are a significant global health concern, particularly in regions with inadequate sanitation and limited access to clean water. These infestations are caused by various types of parasites, including protozoa (such as Giardia lamblia and Entamoeba histolytica) and helminths (like roundworms, tapeworms, and flukes). The parasites typically enter the human body through the ingestion of contaminated food or water or direct contact with infected soil. Once inside the host, can cause a range of gastrointestinal symptoms, including diarrhea, abdominal pain, and malnutrition ***(Alkholy et al., 2024).***

In severe cases, especially among vulnerable populations such as children and immunocompromised individuals, these infestations can lead to significant morbidity and even mortality. Preventive measures, including improved sanitation, health education, and access to safe drinking water, are essential to reduce the prevalence of these parasitic infections ***(Girma & Genet, 2024).***

According to the World Health Organization (WHO), approximately 25% of the world's population has an infection related to an

intestinal parasite. In tropical and subtropical areas with limited access to clean water and sanitation, that number is as high as 50%. Soil-transmitted helminth (STH) infections are among the most common infections worldwide with an estimated 1.5 billion infected people or 24% of the world's population. The prevalence of intestinal parasitic diseases is higher among primary school students due to poor sanitation. In Egypt, 56% prevalence of intestinal parasitic infection among Egyptian primary school students ***(Elsaid et al., 2022).***

Many bad practices can affect primary school children result of living in or visiting an area known to have parasites, water considered safe can contain traces of contaminants in amounts not deemed to be dangerous for human health. water can be contaminated with various types of pollutants that may make it unsafe. Bacteria and parasites, tap water can contain microorganisms like bacteria or parasites that make them sick. If potentially dangerous microorganisms are detected in tap water, local health authorities will likely declare a "boil water advisory." Cryptosporidium, Escherichia coli Infection (E. coli), and Giardia are three harmful organisms that can leak into drinking water through sewage ***(Rubino, 2020).***

Poor hygiene, improving personal hygiene doesn't have to be difficult or costly. Small changes in habits can make a big difference. If concerned, see a physician, as it may reveal an underlying health issue. In the most extreme cases, when left unattended, poor hygiene can breed diseases that can affect students or others. As, not washing your hands after you use the toilet, handle food, or touch dirty surfaces can spread bacteria, viruses, and parasites ***(Kaushik et al., 2021).***

Safe diet and water intake, the following preventive measures help prevent disease in students traveling to endemic areas: avoiding consumption of foods and beverages purchased from street vendors, avoiding consumption of raw fruits and vegetables that cannot be peeled, eating food which is properly cooked and served hot, using hard-cooked eggs, using pasteurized milk products and using boiled or bottled water ***(Bentwich et al., 2021).***

Proper hand-washing with soap is the most effective way to prevent transmission of some organisms causing infectious diseases. For that reason, promote hand-washing in every family. Handwashing is especially important after defecating, after cleaning a child who has a bowel movement, after disposing of a high chair, before preparing or handling food, and before eating ***(Diniz et al., 2021).***

Education students for parasitic infestations, fruits, and vegetables, wash them with clean running water before eating and eat immediately after washing, eat food thoroughly and eat hot, eat food hot or eat Thoroughly wash and dry all cooking and serving utensils before use. Keep food separate from food, wash hands thoroughly with soap before handling food, and protect food from flies with a fly screen. Personal hygiene standards maintain strict standards of cleanliness in food preparation and handling. Ensure food is properly chilled whenever possible, especially salads and other cold foods ***(Nacher et al., 2021).***

Community health nurse has an important role in the prevention and control of parasitic diseases. She educates children and trains them in their care and about personal hygiene measures such as: keeping fingernails short, avoiding scratching of perianal area, and nail biting. As well as washing hands as good hand hygiene is the most effective preventive measure especially after using the bathroom and before eating and avoid sucking the thumb, especially for Ascariasis. Moreover, encourage children to wear shoes and avoid going barefoot, especially for Ancylostomiasis duodena ***(Heba et al., 2018).***

Significance of the Study

Intestinal parasitic infections, around 3.5 billion people are affected and more than 200,000 deaths are reported annually. Around 50000 deaths yearly are caused by intestinal parasites in Ethiopia. As such, intestinal parasites are perceived as global and local burdens to various countries. The risk of food contamination depends largely on the health status of the food handlers, their hygiene, knowledge, and practice of food hygiene. Food handlers with poor personal hygiene and sanitation conditions are the major potential sources of intestinal helminths and protozoa worldwide ***(Sunil et al., 2021).***

In Egypt, children of the age group 10 to 12 years were found extremely infected at 94.2%

while the 4–6-year age group had having minimum ratio of infection at 72%. A current study shows mono parasitism in 50.6% of the students while 22.2% were infected with 2 species and 7.40% were infected with three species of parasites ***(Ahmed et al., 2024).***

The need for standardized parasitic infection prevention and treatment has reduced, and screening and diagnosis are difficult due to low prevalence. However, climate changes due to global warming could likely destroy or modify the natural habitat of parasites. Therefore, long-term planning is needed to overcome parasitic threats. The implementation of systematic healthcare-associated infection surveillance and infection prevention and control programs in combination with efforts to accurately report parasitic diseases will improve the detection and prevention of parasitic diseases ***(Takizawa et al., 2022).***

Therefore, this study was conducted to assess the knowledge and practice of primary school students regarding intestinal parasitic infestations and hygienic measures.

Aim of the Study

This study aimed to assess the knowledge and reported practice of primary school students regarding intestinal parasitic infestations and hygienic measures through the following:

1- Assess students' knowledge about intestinal parasitic infestations and hygienicmeasures.

2- Assess students' reported practice about intestinal parasitic infestations and hygienic measures.

Research questions:

1- What is the level of knowledge and reported practice of primary school students regarding intestinal parasitic infestations?

2- What is the level of reported practice among primary school students regarding hygienic measures?

3- What is the prevalence of malnutrition symptoms among primary school students?

Subjects and Methods

The subject and methods for this study were portrayed under four main designs as the following:

I. Technical Item
II. Operational Item
III. Administrative Item
IV. Statistical Item

I. Technical Item

The technical design includes Study design, setting, subject, and tools for data collection.

Research design:

A descriptive research design was applied to achieve the aim of the study.

Type of sample: Multi-stage random sample was used in this study. In the first stage in the city of Beni Suef which found 11 primary school students. The second stage selected two schools from 11 schools randomly (El Jazeera School for Basic Education, and Shajarat Al Durr Primary School) every school contained about 3 classes in each grade. The third stage, each school, contains two classes for each stage, so the 4th grade of primary school was chosen from each school, which is equivalent to three classes from each school, as the capacity of one class is estimated at 64 students.

Sample size: The sample was conducted in El Jazeera School for Basic Education, and Shajarat Al Durr Primary School, select 3 classes from grade 4 in each school, each class contains about 64 which equals 384 school students' academic year 2022-2023.

Study Setting:

This study was conducted on primary school students in the city of Beni Suef which two schools were chosen multi-stage random sample (El Jazera School for Basic Education, and Shajarat Al Durr Primary School): El Jazera School for Basic Education (It contains six primary stages. Each grade contains three classes the capacity of each class is estimated at 64 students. It consists of five floors. On the first floor there are the offices of the administrators, the headmaster, the children's bathrooms, and a large playground), and Shajarat Al Durr Primary School (It contains six primary stages. Each grade contains three classes. It consists of five floors. On the first floor there are the offices of the administrators, the headmaster, the children's bathrooms, and a large playground).

Tools for data collection:

Tool: A structured interviewing sheet: was used in the study, it's developed by the investigator after reviewing the national and international related literature and contains four parts:

Part 1: Demographic characteristics of primary school students consisted of 12 items such as age, gender, there is sewerage in the house, place of residence, number of family members, number of home rooms, home crowdedness, family monthly income, mother's occupation, mothers' education levels, father's occupation, and fathers' education levels.

B- Past medical history of primary school students consisted of 9 items such as suffer from any intestinal diseases, suffer from any chronic diseases, have you been suffering from constant abdominal pain, suffer from constant high temperature, always use fever-reducing medications or antibiotics, had intestinal parasites, hospitalized before, taken treatment for intestinal parasites before, and taken a stool sample.

Part 2: Assessment of primary school students' knowledge about intestinal parasitic infestations consisted of 12 closed-end questions such as the meaning of intestinal parasites, types of intestinal parasites, transmission of intestinal parasites, signs and symptoms of intestinal parasite infection, intestinal parasite infection is most dangerous when a person has, if symptoms of intestinal parasites appear, diagnosis of intestinal parasites, prevention of intestinal parasite infection, complications of intestinal parasites, treatment for intestinal parasites is through, pharmacological treatment for intestinal parasites, and non-pharmacological treatment for intestinal parasites.

Scoring system:

Each statement was assigned a score according to the student's response: complete correct was scored 2 grades, incomplete correct was scored 1 grade, and incorrect or don't know was scored 0. The total score was 24 grades from 12 questions. The total scores of each item are summed up and then converted into percent scores **as follows:**

- Good knowledge (≥ 75%) = ≥ 18 grades, was considered a high score.
- Average knowledge (50 - < 75%) = 12 - < 18 grades, was considered a moderate score.
- Poor knowledge (< 50 %) = < 12 grades, was considered poor. **(Assemie et al., 2021).**

Part 3: Primary school student's reported practice questionnaires about intestinal parasitic infestations consisted of 3 sub items:

A- Primary school student's reported practices regarding personal hygiene practices for intestinal parasitic infestations consisted of 11 closed ends questions such as wash your hands with soap and water, wash your hands during the day before and after eating, wash your hands before entering the bathroom, wash your hands after leaving the bathroom, use the public bathroom or outside the home, take off your shoes before entering the house, shower at least twice a week, cut your nails weekly, constantly dispose of garbage at home, boil underwear when washing them, and use your tools (such as spoon and cup).

B- Primary school students' reported practices regarding diet for intestinal parasitic infestations consisted of 9 closed ends questions such as washing vegetables and fruits before eating them with water and vinegar, eating preserved foods, washing cooking utensils outside the home with tap water, eating breakfast at home, eat breakfast from street vendors, eat meat meals outside the home, such as Hawaii or casseroles, take drinks outside the home, such as cane juice and other street vendors, boil the water before drinking it, and eat any food if it falls on the ground.

C- Primary school student's reported practices regarding prevention practices for intestinal parasitic infestations consisted of 8 closed ends questions such as take medications to prevent intestinal parasites, take a stool sample for follow-up to prevent infection with intestinal parasites, avoid insect bites, avoid swallowing water when using swimming pools, avoid touching animals or animal waste, use insecticide sprays (permethrin or pyrethrum) in homes, apply insect repellent to exposed areas of skin, and wear long pants and long-sleeved shirts, especially between dusk and dawn, to prevent insect bites.

Part 4: Primary school student's reported practice questionnaires about child malnutrition symptoms consisted of 10 items such as suffering from low body weight, prominent bones, and depletion of fat and muscle, suffer from thin arms and legs with edema in the abdomen and face, suffer from stunted in growth and intellectual development, suffer from weakness, and fatigue, suffer from

irritability, apathy, or lack of attention, suffer from dry, elastic skin, rashes, and lesions, suffer from brittle hair, hair loss, and loss of hair pigment, suffer from frequent and severe infections, suffer from low body temperature and inability to keep warm, and suffer from low heart rate and blood pressure.

Scoring system:

Each statement was assigned a score according to students' responses " always ", " sometimes ", and " rarely ", and was scored 2,1 and 0, respectively. The total score was 76 grades for 38 items. The scores of items were summed up and then converted into percentage scores **as the following:**

- (> 60) was considered satisfactory = ≥ 46 grades.
- (≤ 60) was considered unsatisfactory = ≥ 46 grades **(Nisha et al., 2020).**

Validity and Reliability:

The study tool was designed and submitted to a panel of 5 reviewers & experts from the community health nursing department faculty of nursing. Each one of the experts on the panel was asked to examine the instrument for content coverage clarity, wording, length, format &overall appearance. Modifications of tools were done according to panel judgment the reliability was done by Cronbach's Alpha Coefficient test which revealed that each of the two tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool.

Ethical considerations:

Official permission to conduct the proposed study was obtained from the Scientific Research Ethics Committee Faculty of Medicine Beni-Suef University at 5/3/2023. Participation in the study is voluntary and subjects are given complete full information about the study. The ethical considerations included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, and confidentiality of the information where it not be accessed by any other party without taking permission of the participants. Ethics, values, culture, and beliefs are respected.

II) Operational Item:

Preparatory phase:

It includes reviewing related literature and theoretical knowledge of various aspects of the study using articles, the internet, and magazines to develop tools for data collection.

Pilot study:

A pilot test was conducted on 10 % of the primary school students equal to 38 students under study to assess the feasibility of the study as well as the clarity and objectivity of the tools. The needed modification was incorporated and those subjects were excluded from the actual study sample.

Fieldwork:

- An official letter was issued from the dean of the Faculty of Nursing Beni- -Suef University, official permission will be obtained from the director of the primary school at BeniBeniSuef City, including the aim of the study to obtain permission after establishing a trustful relationship, with each subject interviewed individually by the investigator to explain the study purpose.
- Data collected within 3 months from the first of September until the end of December 2023 two days /week (Tuesday- Wednesday), from 9 am – 2 pm, till the needed sample is completed, interview of nurses, informed consent obtained from nurses after the investigator introduces herself for each nurse, then explain the purpose of the study to assess knowledge, reported practice and attitude of nurses about care of stroke patients. The study was collected through structured face-to-face interviews and the entire tool was filled by the investigator.
- The investigator utilized one tool, which was 20 -30 minutes, and met the students two days per week (Tuesday- Wednesday) from 9 am - 2 pm.
- The investigator took 31 primary school students every two days each week consists about 124 primary school students per month, the total number of students = 384 students.

III- Administrative Item:

Approval to carry out this study was obtained from the Dean of the Faculty of Nursing, Beni-Suef University, and official permission was obtained from the director of primary school at Beni- BeniSuef City.

IV- Statistical Item:

Upon completion of data collection, data was computed and analyzed using Statistical Package for the Social Science (SPSS), version 24 for analysis. The P value is set at 0.05. Descriptive statistics tests as numbers, percentages, and mean ± standard deviation (± SD), are used to describe the results. Appropriate inferential statistics such as the "F" test or "t" test

are used as well.

Significance levels were considered as follows:

- Highly statistically significant P < 0.001**
- Statistically significant P < 0.05*
- Not significant P > 0.05

The collected data were coded and entered into the statistical packages for the social sciences (sps,20.0; Otto, M.: 2023.)

Results

Table (1): Percentage Distribution of the Studied Primary School Students according to Demographic Characteristics (n=384).

Item	No.	%
Gender		
Male	**218**	**56.77**
Female	**166**	**43.23**
Students Age/year		
6 to 8 years	**209**	**54.43**
9 to 11 years	**175**	**45.57**
Mean ± SD	**7.4 ± 4.4 years**	
Place of residence		
Urban	**150**	**39.06**
Rural	**234**	**60.94**
There is sewerage in the house		
Yes	**265**	**69.01**
No	**119**	**30.99**
Number of family members		
< 3	**131**	**34.11**
3-5	**184**	**47.92**
> 5	**69**	**17.97**
X ± S. D = 4.22 ± 0.88		
Number of home rooms		
< 3	**137**	**35.68**
3-5	**190**	**49.48**
> 5	**57**	**14.84**
X ± S. D = 3.99 ± 0.93		
Home crowdedness (no. of rooms/ no. of members)		
2-3	**135**	**35.16**
4-5	**188**	**48.96**
> 5	**61**	**15.88**
Family monthly income		
Safe and sufficient for needs	**120**	**31.25**
Safe and not sufficient for needs	**196**	**51.04**
Not safe and does not meet the needs	**68**	**17.71**
Mother's occupation		
Work	**260**	**67.71**
Housewife	**124**	**32.29**

Mothers' education levels		
Illiterate	**10**	**2.60**
Read and writes	**25**	**6.52**
Basic education	**31**	**8.08**
Intermediate education	**82**	**21.35**
University education	**201**	**52.34**
Others	**35**	**9.11**
Father's occupation		
Work	**350**	**91.14**
Not work	**34**	**8.86**
Fathers' education levels		
Illiterate	**5**	**1.30**
Read and writes	**30**	**7.82**
Basic education	**35**	**9.11**
Intermediate education	**70**	**18.23**
University education	**229**	**59.63**
Others	**15**	**3.91**

Table (1): Shows that, the mean age of studied primary school students was 7.4 ± 4.4 years & 56.77 % of them were male. Moreover, 47.92 % of them had several family members from 3 to 5 members. Additionally, 60.94 % of them were residents in rural areas, 51.04 % of the studied sample's Family monthly income was safe and not sufficient for needs, 32.29 % of them were mothers were housewives and 91.14 % of them were fathers.

Figure (1): Percentage Distribution of the Studied Primary School Students' according to their Place of Residence (n=384).

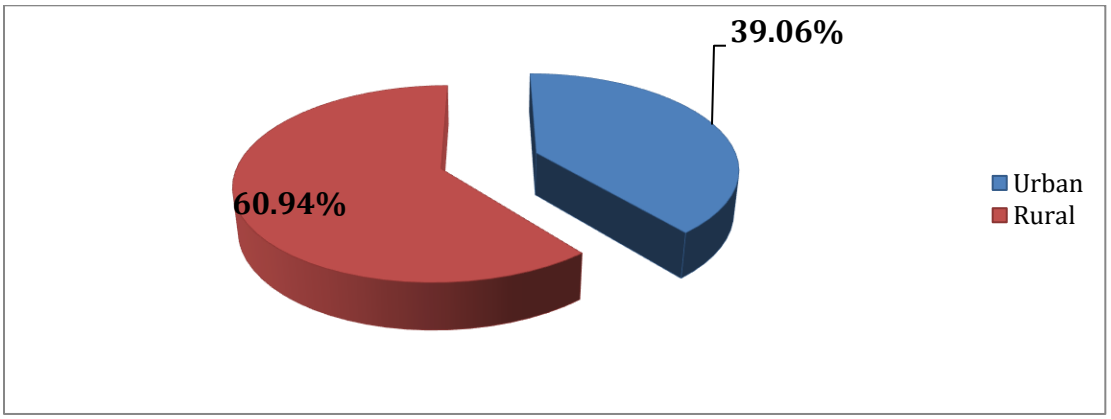

Figure (1): Shows that, 39.06 % of the studied primary school students' place of residence was urban area. While 60.94 % of them had a place of residence in was rural area.

Table (2): Frequency Distribution of Studied Primary School Students Regarding Past Medical History (n=384).

Item	No.	%
Do you suffer from any intestinal diseases?		
Yes	**120**	**31.25**
No	**264**	**68.75**
If yes, what is the disease? (120)		
Protozoa Giardia lamblia	**75**	**62.50**
Annelids worms	**15**	**12.50**
Nematodes worms	**20**	**16.67**
Roundworms	**10**	**8.33**
Do you suffer from any chronic diseases?		
Yes	**64**	**16.67**
No	**320**	**83.33**
If yes, what is the disease? (64)		
Diabetes	**55**	**85.94**
Hypertension	**0**	**0.00**
Kidney diseases	**0**	**0.00**
Heart diseases	**9**	**14.06**
Have you been suffering from constant abdominal pain?		
Yes	**150**	**39.06**
No	**234**	**60.94**
Do you suffer from constant high temperatures?		
Yes	**120**	**31.25**
No	**264**	**68.75**
Do you always use fever-reducing medications or antibiotics?		
Yes	**120**	**31.25**
No	**264**	**68.75**
Have you ever had intestinal parasites?		
Yes	**120**	**31.25**
No	**264**	**68.75**
Have you been hospitalized before?		
Yes	**230**	**59.90**
No	**154**	**40.10**
Have you taken treatment for intestinal parasites before?		
Yes	**230**	**59.90**
No	**154**	**40.10**
If the answer is yes, what is the reason for which you took the treatment (230):		
Protozoa Giardia lamblia	**128**	**55.65**
Annelids worms	**20**	**8.70**
Nematodes worms	**12**	**5.22**
Roundworms	**70**	**30.43**
Have you ever taken a stool sample?		
Yes	**250**	**65.10**
No	**134**	**34.90**
If the answer is yes, what is the reason (250):		

Protozoa Giardia lamblia	**138**	**55.20**
Annelids worms	**25**	**10.00**
Nematodes worms	**12**	**4.80**
Roundworms	**75**	**30.00**

Table (2): Demonstrates that 83.33 % of studied primary school students don't suffer from any chronic diseases. 59.90 % of them have been hospitalized before. While 59.90 % of them had taken treatment for intestinal parasites before. 65.10 % of them take a stool sample.

Table (3): Frequent Distribution of Studied Primary School Student's Knowledge about Intestinal Parasitic Infestations (n=384).

Knowledge Items	Students' knowledge					
	Incorrect answer		Incomplete correct answer		Complete correct answer	
	No	%	No	%	No	%
What was the meaning of intestinal parasites before?	**65**	**16.93**	**169**	**44.01**	**150**	**39.06**
What are the types of intestinal parasites?	**200**	**52.09**	**106**	**27.60**	**78**	**20.31**
Which way intestinal parasites are transmitted?	**214**	**55.73**	**120**	**31.25**	**50**	**13.02**
Signs and symptoms of intestinal parasite infection	**212**	**55.22**	**105**	**27.34**	**67**	**17.44**
Intestinal parasite infection is most dangerous	**180**	**46.88**	**190**	**49.48**	**14**	**3.64**
What to do if symptoms of intestinal parasites appear	**192**	**50.0**	**108**	**28.13**	**84**	**21.87**
Intestinal parasites are diagnosed by doing	**207**	**53.91**	**120**	**31.25**	**57**	**14.84**
Preventing intestinal parasite infection requires	**185**	**48.18**	**190**	**49.48**	**9**	**2.34**
Complications of intestinal parasites	**187**	**48.70**	**170**	**44.27**	**27**	**7.03**
Treatment for intestinal parasites is through:	**208**	**54.17**	**155**	**40.36**	**21**	**5.47**
Pharmacological treatment for intestinal parasites	**202**	**52.60**	**160**	**41.67**	**22**	**5.73**
Non-pharmacological treatment for intestinal parasites	**200**	**52.08**	**165**	**42.97**	**19**	**4.95**

Table (3): Shows that, 55.73 % of studied primary school students had incorrect answers regarding the way intestinal parasites are transmitted, 55.22 % of studied primary school students had incorrect answers regarding signs and symptoms of intestinal parasite infection, 54.17 % of them had incorrect answer regarding treatment for intestinal parasites, 3.64 % of them had complete correct answer regarding intestinal parasite infection is most dangerous, while 2.34 % of them had complete correct answer regarding preventing intestinal parasite infection requires.

Figure (2): Percentage Distribution of the Studied Primary School Student's Knowledge Regarding Intestinal Parasitic Infestations (n= 384).

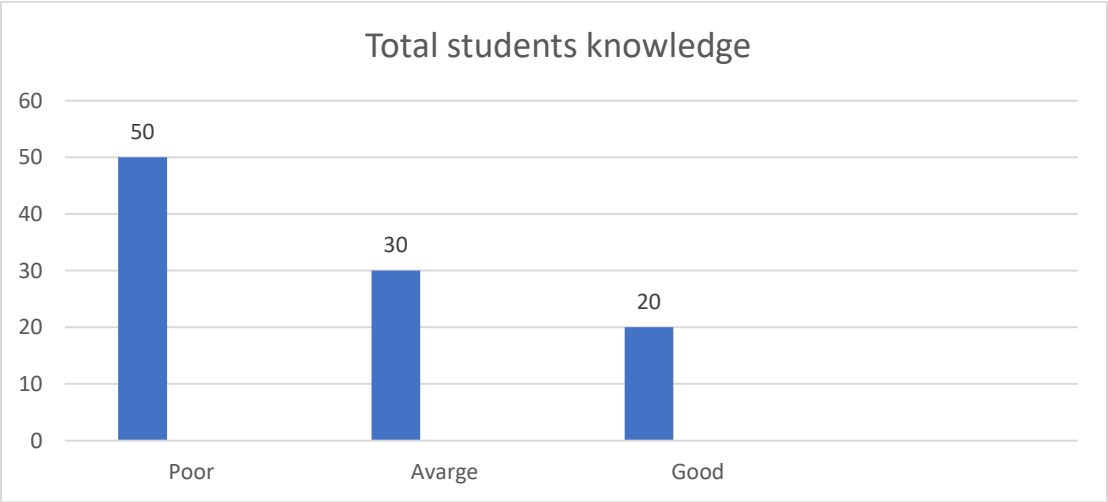

Figure (2): Shows that, 50 % of the studied primary school students had poor knowledge about intestinal parasitic infestations. Also, 30 % of the studied primary school students had average knowledge about intestinal parasitic infestations. While 20 % of them had good knowledge about intestinal parasitic infestations.

Table (4): Frequent Distribution of Studied Primary School Students Reported Practice Regarding Personal Hygiene (n=384).

Items for Personal Hygiene	Rarely		Sometimes		Always	
	No	%	No	%	No	%
Wash your hands with soap and water	212	55.22	105	27.34	67	17.44
Wash your hands during the day before and after eating	250	65.10	60	15.63	74	19.27
Always wash your hands before entering the bathroom	192	50.0	108	28.13	84	21.87
Always wash your hands after leaving the bathroom	210	54.69	95	24.74	79	20.57
Always use the public bathroom or outside the home	198	51.56	101	26.30	85	22.14
Take off your shoes before entering the house	180	46.88	190	49.48	14	3.64
Shower at least twice a week	244	63.55	65	16.92	75	19.53
Cut your nails weekly	205	53.39	95	24.74	84	21.87
Constantly dispose of garbage at home	250	65.10	60	15.63	74	19.27
Boil underwear when washing them	180	46.88	190	49.48	14	3.64
Always use your tools (such as spoon and cup)	192	50.0	108	28.13	84	21.87

Table (4): Shows that, 65.10 % of studied primary school students rarely wash their hands during the day before and after eating, 65.10 % of them rarely constantly dispose of garbage at home, 3.64 % of them always boil underwear when washing them, and 3.64 % of them always take off your shoes before entering the house.

Table (5): Frequent Distribution of Studied Primary School Students Reported Practice Regarding Diet (n=384).

Items for Diet	Rarely		Sometimes		Always	
	No	%	No	%	No	%
Wash vegetables and fruits before eating them with water and vinegar	300	78.12	50	13.02	34	8.85
Eat preserved foods	74	19.27	60	15.63	250	65.10
Wash cooking utensils outside the home with tap water	200	52.09	130	33.85	54	14.06
Always eat breakfast at home	291	75.78	60	15.63	33	8.59
Always eat breakfast from street vendors	65	16.93	169	44.01	150	39.06
Eat meat meals outside the home, such as Hawaii or casseroles	45	11.72	115	29.95	224	58.33
Take drinks outside the home, such as cane juice and other street vendors	40	10.42	100	26.04	244	63.54
Boil the water before drinking it	291	75.78	60	15.63	33	8.59
Eat any food if it falls on the ground	45	11.72	100	26.04	239	62.24

Table (5): Shows that, 65.10 % of studied primary school students always eat preserved foods, 63.54 % of them always take drinks outside the home, such as cane juice and other street vendors, 8.59 % of them always eat breakfast at home, 8.59 % of them always boil the water before drinking it.

Table (6): Frequent Distribution of Studied Primary School Students Reported Practice Regarding Preventive Practices of Intestinal Parasitic Infestations (n=384).

Items for Preventive of Intestinal Parasites	Rarely		Sometimes		Always	
	No	%	No	%	No	%
Take medications to prevent intestinal parasites	291	75.78	60	15.63	33	8.59
Take a stool sample for follow-up to prevent infection with intestinal parasites	244	63.55	65	16.92	75	19.53
Avoid insect bites	300	78.12	50	13.02	34	8.85
Avoid swallowing water when using swimming pools	205	53.39	95	24.74	84	21.87
Avoid touching animals or animal waste	300	78.12	50	13.02	34	8.85
Use insecticide sprays (permethrin or pyrethrum) in homes	250	65.10	60	15.63	74	19.27
Apply insect repellent to exposed areas of skin	256	66.67	60	15.63	68	17.70
Wear long pants and long-sleeved shirts, especially between dusk and dawn, to prevent insect bites	160	41.68	130	33.85	94	24.47

Table (6): Shows that, 78.12 % of studied primary school students rarely avoid insect bites, 78.12 % of them rarely avoid touching animals or animal waste, 75.78 % of them rarely take medications to prevent intestinal parasites, 8.59 % of them always take medications to prevent intestinal parasites.

Figure (3): Percentage distribution of the studied primary school student's total reported practice regarding prevention of intestinal parasitic infestations (n=384).

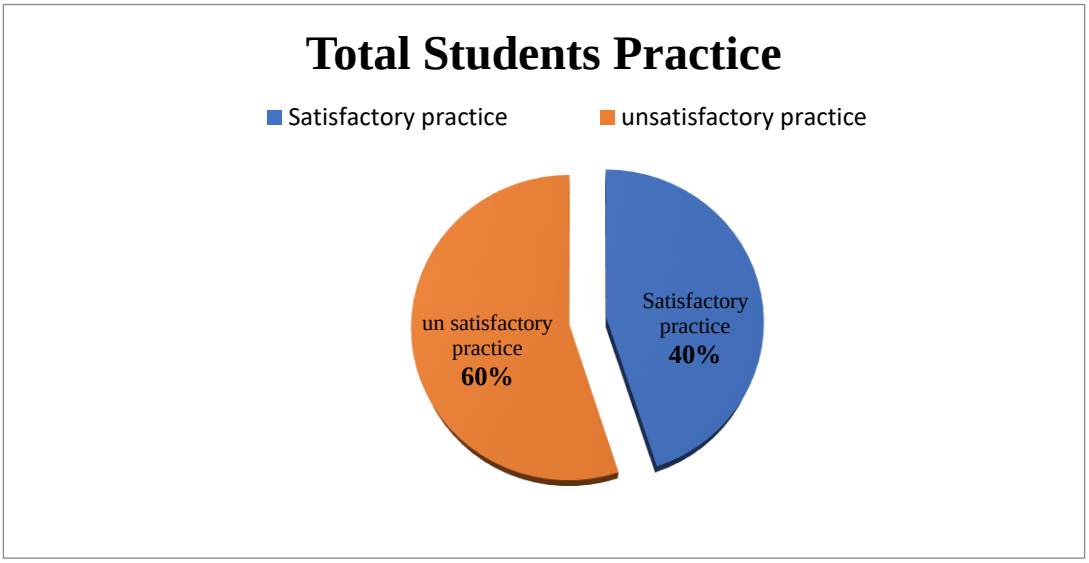

Figure (3): Shows that, 40 % of the studied primary school students had a satisfactory level of reported practices regarding prevention of intestinal parasitic infestations. While 60 % of them had an unsatisfactory level of reported practices regarding prevention of intestinal parasitic infestations.

Table (7): Frequent Distribution of Studied Primary School Students Reported Practice Regarding Prevalence of Malnutrition Symptoms for Intestinal Parasitic Infestations (n=384).

Items for Malnutrition Symptoms	Rarely		Sometimes		Always	
	No	%	No	%	No	%
Suffer from low body weight, prominent bones, and depletion of fat and muscle.	40	10.42	100	26.04	244	63.54
Suffer from thin arms and legs with edema in the abdomen and face.	160	41.68	130	33.85	94	24.47
Suffer from stunted growth and intellectual development	74	19.27	60	15.63	250	65.10
Suffer from weakness and fatigue.	74	19.27	60	15.63	250	65.10
Suffer from irritability, apathy, or lack of attention.	65	16.93	150	39.06	169	44.01
Suffer from dry, elastic skin, rashes, and lesions.	88	22.92	120	31.25	176	45.83
Suffer from brittle hair, hair loss, and loss of hair pigment.	70	18.23	130	33.85	184	47.92
Suffer from frequent and severe infections.	91	23.70	100	26.04	193	50.26
Suffer from low body temperature and inability to keep warm.	60	15.62	120	31.25	204	53.13
Suffer from low heart rate and blood pressure.	78	20.31	102	26.56	204	53.13

Table (7): Shows that, 65.10 % of studied primary school students always suffer from stunted growth and intellectual development, 65.10 % of them always suffer from weakness, and fatigue, 63.54 % of them suffer from low body weight, prominent bones, and depletion of fat and muscle, 53.13 % of them always suffer from low body temperature and inability to keep warm

Table (8): Relation between Studied Primary School Student's Demographic Characteristics and their Total Knowledge about Intestinal Parasitic Infestations (n=384).

Demographic characteristics	Poor		Average		Good		X^2	P – value
	No.	%	No.	%	No.	%		
Gender								
Male	188	86.24	25	11.47	5	2.29	14.020	.000**
Female	98	59.04	40	24.10	28	16.86		
Students Age/year								
6 to 8 years	200	95.69	9	4.31	0	0.00	15.222	.000**
9 to 11 years	135	77.14	35	20.0	5	2.86		
Place of residence								
Urban	110	73.33	25	16.67	15	10.0	11.025	.000**
Rural	200	85.47	30	12.82	4	1.71		
There is sewerage in the house								
Yes	190	71.70	50	18.87	25	9.43	16.325	.000**
No	90	75.63	20	16.81	9	7.56		
Number of family members								
< 3	90	68.70	40	30.53	1	0.77	14.215	.000**
3-5	122	66.31	52	28.26	10	5.43		
> 5	55	79.71	14	20.29	0	0.00		
Number of home rooms								
< 3	110	80.29	20	14.60	7	5.11	15.654	.000**
3-5	130	68.42	30	15.79	30	15.79		
> 5	40	70.18	10	17.54	7	12.28		
Home crowdedness (no. of rooms/ no. of members)								
2-3	110	81.48	20	14.82	5	3.70	12.358	.000**
4-5	140	74.47	40	21.28	8	4.25		
> 5	50	81.97	11	18.03	0	0.00		
Family monthly income								
Safe and sufficient for needs	100	83.33	20	16.67	0	0.00	12.965	.000**
Safe and not sufficient for needs	140	71.43	30	15.31	26	13.26		
Not safe and does not meet the needs	50	73.52	9	13.24	9	13.24		
Mother's occupation								
Work	190	73.08	50	19.23	20	7.69	11.552	.000**
Housewife	100	80.65	24	19.35	0	0.00		

Mothers' education levels								
Illiterate	**7**	**70.0**	**3**	**30.0**	**0**	**0.0**	**14.689**	**.000****
Read and writes	**20**	**80.0**	**5**	**20.0**	**0**	**0.0**		
Basic education	**19**	**61.29**	**7**	**22.58**	**5**	**16.13**		
Intermediate education	**70**	**85.36**	**6**	**7.32**	**6**	**7.32**		
University education	**160**	**79.60**	**30**	**14.92**	**11**	**5.47**		
Others	**25**	**71.44**	**5**	**14.28**	**5**	**14.28**		
Father's occupation								
Work	**261**	**74.57**	**49**	**14.0**	**40**	**11.43**	**17.253**	**.000****
Not work	**30**	**88.24**	**4**	**11.76**	**0**	**0.0**		
Fathers' education levels								
Illiterate	**5**	**100.0**	**0**	**0.00**	**0**	**0.00**	**12.666**	**.000****
Read and writes	**20**	**66.66**	**5**	**16.67**	**5**	**16.67**		
Basic education	**25**	**71.44**	**5**	**14.28**	**5**	**14.28**		
Intermediate education	**40**	**57.14**	**30**	**42.86**	**0**	**0.00**		
University education	**150**	**65.50**	**60**	**26.20**	**19**	**8.30**		
Others	**10**	**66.67**	**5**	**33.33**	**0**	**0.00**		

Table (8): Shows that, there was a highly statistically significant relation between studied primary school students' age, gender, place of residence, mother's occupation, fathers' occupation, and their total knowledge, where (P = < .0001).

Table (9): Relation between Studied Primary School Student's Demographic Characteristics and their Total Reported Practices (n=384).

Demographic characteristics	Unsatisfactory		Satisfactory		X^2	P – value
	No.	%	No.	%		
Gender						
Male	**188**	**86.24**	**30**	**13.76**	**17.021**	**.000****
Female	**98**	**59.04**	**68**	**40.96**		
Students Age/year						
6 to 8 years	**200**	**95.69**	**9**	**4.31**	**14.598**	**.001***
9 to 11 years	**135**	**77.14**	**40**	**22.86**		
Place of residence						
Urban	**110**	**73.33**	**40**	**26.67**	**16.214**	**.001****
Rural	**200**	**85.47**	**34**	**14.53**		
There is sewerage in the house						
Yes	**190**	**71.70**	**75**	**28.30**	**12.368**	**.000****
No	**90**	**75.63**	**29**	**24.37**		
Number of family members						
< 3	**90**	**68.70**	**41**	**31.30**	**15.214**	**.000****
3-5	**122**	**66.31**	**62**	**33.69**		
> 5	**55**	**79.71**	**14**	**20.29**		
Number of home rooms						

< 3	**110**	**80.29**	**27**	**19.71**	**14.001**	**.000****
3-5	**130**	**68.42**	**60**	**31.58**		
> 5	**40**	**70.18**	**17**	**29.82**		
Home crowdedness (no. of rooms/ no. of members)						
2-3	**110**	**81.48**	**25**	**18.52**	**13.698**	**.000****
4-5	**140**	**74.47**	**48**	**25.53**		
> 5	**50**	**81.97**	**11**	**18.03**		
Family monthly income						
Safe and sufficient for needs	**100**	**83.33**	**20**	**16.67**	**16.214**	**.000****
Safe and not sufficient for needs	**140**	**71.43**	**56**	**28.57**		
Not safe and does not meet the needs	**50**	**73.52**	**18**	**26.48**		
Mother's occupation						
Work	**190**	**73.08**	**70**	**26.92**	**11.025**	**.000****
Housewife	**100**	**80.65**	**24**	**19.35**		
Mothers' education levels						
Illiterate	**7**	**70.0**	**3**	**30.0**	**16.325**	**.000****
Read and writes	**20**	**80.0**	**5**	**20.0**		
Basic education	**19**	**61.29**	**12**	**38.71**		
Intermediate education	**70**	**85.36**	**12**	**14.64**		
University education	**160**	**79.60**	**41**	**20.40**		
Others	**25**	**71.44**	**10**	**28.56**		
Father's occupation						
Work	**261**	**74.57**	**89**	**25.43**	**15.669**	**.000****
Not work	**30**	**88.24**	**4**	**11.76**		
Fathers' education levels						
Illiterate	**5**	**100.0**	**0**	**0.00**	**17.220**	**.000****
Read and writes	**20**	**66.66**	**10**	**33.34**		
Basic education	**25**	**71.44**	**10**	**28.56**		
Intermediate education	**40**	**57.14**	**30**	**42.86**		
University education	**150**	**65.50**	**79**	**34.50**		
Others	**10**	**66.67**	**5**	**33.33**		

Table (9): Shows that, there was a highly statistically significant relation between studied primary school students' age, gender, place of residence, mother's occupation, fathers' occupation, and their total reported practices, where (P = < .0001).

Table (10): Relation between Studied Primary School Student's Total Knowledge, and their Total Reported Practices (n=384)

Variables	Total knowledge scores						χ^2	P
	Poor (n =244)		Average (n =75)		Good (n =65)			
	No.	%	No.	%	No.	%		
Total reported practice:								
Unsatisfactory practice (307)	192	78.69	55	73.33	60	92.31	16.427	.000**
Satisfactory practice (77)	52	21.31	20	26.67	5	7.69		

* Significant < 0.05 ** High significant P= < 0.01 p .000**

Table (10): Shows that, there was high statistical significance in the relation between primary school students' total knowledge and total reported practices, where (P = < .0001).

Discussion:

Intestinal parasitic infestations are a significant public health concern, especially in school-aged children, due to their impact on growth, development, and educational performance. These infestations are caused by various parasites, including helminths (worms) and protozoa, which can lead to a range of health issues from mild discomfort to severe malnutrition and cognitive impairment**.** Preventing intestinal parasitic infestations in school students requires a multifaceted approach that combines personal hygiene, environmental sanitation, health education, and community involvement. Schools play a crucial role in promoting hygienic practices and providing a healthy environment conducive to the overall well-being and academic performance of students ***(Martini et al., 2020; Mohammed et al., 2022).***

Children are a vulnerable group in the community, their health is vital to the future of society. School age is a segment of life span that extends from age 6- 12 years of age. School children are the main target of many health problems such as malnutrition, non-infectious diseases, and infectious diseases such as intestinal parasitic diseases. Parasitic diseases are a major cause of child morbidity and mortality in most parts of the world. Unhygienic and playing habits make the children particularly vulnerable to parasite infections. Parasite infections have high prevalence rates worldwide, and more than three billion people worldwide are believed to be infected with intestinal parasites ***(Aschale et al., 2021).***

Regarding to demographic characteristics of the studied sample. The present study findings related that the mean age of students was 7.4 ± 4.4 years **(Table 1).** This result is similar to a study conducted by **Hatam-Nahavandi et al., (2023)**

Concerning the level of education of the studied samples' fathers, the current study result revealed that, more than half of the studied samples' fathers had a university education and more **(Table1).** This result is in the same line with **Amoadu et al., (2023)** they found that 56.3 % of studied samples' fathers had university education and more. From the investigator's point of view, fathers with higher education levels are more likely to secure stable and well-paying jobs. This economic stability often enables them to provide better educational opportunities for their children.

Regarding the studied sample father's occupation, the current study revealed that the most of studied sample fathers were working **(Table).** This finding was by **Băieș et al., (2023)** Concerning the place of residence of the studied sample fathers, the current study result revealed that, less than two-thirds of the studied sample fathers live in a rural area **(Figure1).** This result is in the same line with **Abd El Wahab et al., (2023)**

they found that 61.5 % of the studied sample had life in rural area. From the investigator's point of view, fathers living in rural areas are influenced by a combination of economic, demographic,

social, and historical factors. While urbanization is increasing, many fathers continue to reside in rural areas due to agricultural ties, lower cost of living, strong community bonds, and lifestyle preferences. Understanding these factors provides insight into the demographic patterns observed in rural and urban populations.

The current study shows that more one one-third of the studied sample were suffering from constant abdominal pain **(Table 2).** This result is in the same line with **Gebru et al., (2023)** they found that 37.1 % of the studied sample had suffered from constant abdominal pain. From the investigator's point of view, infections caused by viruses, bacteria, or parasites can lead to stomach pain, often accompanied by diarrhea, vomiting, and fever. Infestations by parasites like Giardia, Ascaris, and hookworms can cause chronic abdominal pain, diarrhea, and other gastrointestinal symptoms.

Regarding having constant high temperature more than two-thirds of the studied sample suffer from constant high temperature **(Table 2).** This result is in the same line with **Nuru et al., (2024)** Concerning the history of intestinal parasites less one-third of the studied sample suffered from intestinal parasites **(Table 2).** This result is in the same line with **Bisetegn et al., (2023)** From the investigator's point of view, young children often have inadequate handwashing habits and are more likely to put their hands and objects in their mouths, increasing the risk of ingesting parasitic eggs or larvae. Children frequently play in soil and other environments where parasitic eggs or larvae are present, such as sandpits, gardens, or unclean water bodies.

Regarding taking treatment for intestinal parasites before more than half of the studied sample had taken treatment for intestinal parasites before **(Table 2).** This result is in the same line with **Nuru (2023)** From the investigator's point of view, children in school settings are frequently exposed to pathogens, leading to repeated infections and consequently recurrent fevers. Immunodeficiencies or conditions that weaken the immune system can make children more prone to frequent infections and fevers.

Concerning taking a stool sample that two third of the studied sample were ever taken a stool sample **(Table 2).** This result is in the same line with **de Almeida Ramos et al., (2023)** From the investigator's point of view, young children often have inadequate handwashing habits and are more likely to put their hands and objects in their mouths, increasing the risk of ingesting parasitic eggs or larvae. Children frequently play in soil and other environments where parasitic eggs or larvae are present, such as sandpits, gardens, or unclean water bodies.

Regarding the meaning of intestinal parasites before, more than one-third of the studied sample had a completely correct answer about intestinal parasites before **(Table 3).** This study is in agreement with a study by **Tadesse et al., (2024)** Concerning the signs and symptoms of an intestinal parasite infection, more than half of the studied sample had incorrect answers about the signs and symptoms of intestinal parasite infection **(Table 3).** This study is in agreement with a study by **Aliyu et al., (2024)** They found that 52.2 % of the studied sample had incorrect answers about the signs and symptoms of intestinal parasite infection. From the investigator's point of view, children may not have received adequate education about health and hygiene, including information about common illnesses like intestinal parasite infections. They may have misconceptions or an incomplete understanding of the signs and symptoms of parasitic infections due to a lack of accurate information.

Regarding the diagnosis of intestinal parasites, more than half of the studied sample had incorrect answers about the diagnosis of intestinal parasites **(Table 3).** This study finding agreement with a study by **Atah et al., (2023)** From the investigator's point of view, children may not fully understand the medical terminology and concepts related to diagnosing parasitic infections. Children may confuse symptoms of parasitic infections with other common illnesses or conditions, leading to incorrect self-diagnosis.

Concerning the complications of intestinal parasites, less than half of the studied sample had an incorrect answer about the complications of intestinal parasites **(Table 3).** This study's findings agree with a study by **Nadia et al., (2023)** schools' children aged 5 to 15 years in the city of Moundou, southwestern Chad". They found that 46.7 % of the studied sample had incorrect answers about complications of intestinal parasites. From the investigator's point of view, Children from underserved communities or

regions with limited healthcare resources may not have access to healthcare providers or complications of parasitic infections.

Regarding the studied samples' total knowledge, the current study revealed that half of them had poor knowledge, less than one-third had average knowledge and less than one-quarter of them had good knowledge **(Figure),** this result agrees with **Alamoudi et al., (2023)**
The feasibility of using smartphone sensors to track insomnia, depression, and anxiety in adults and young adults", they found that 50.2 % of the parents had good total knowledge. Also, 19.3 % had poor knowledge and 32.0 % of them had average knowledge. From the investigator's point of view, parasitic infections might not be adequately covered in the curriculum, or the information provided may be outdated or insufficient. Students from marginalized communities or regions with limited access to educational resources may not have access to accurate information about parasitic infections.

The current study results revealed that when washing hands with soap and water, more than half of the studied sample hadn't washed hands with soap and water **(Table 4).** This study is in agreement with a study by **Nadia et al., (202٣)**
From the investigator's point of view, some children may not fully understand the importance of handwashing with soap and water to prevent the spread of germs and illnesses. Inadequate access to clean water and soap in schools, communities, or households can hinder regular handwashing practices among children.

Concerning the takeoff of shoes before entering the house, less than half of the studied sample sometimes take off shoes before entering the house **(Table 4).** This study's findings agree with a study by **Edelduok et al., (2024)**
They found that 47.9 % of the studied sample sometimes take off their shoes before entering the house. From the investigator's point of view, children taking off their shoes before entering the house could be influenced by cultural practices, cleanliness habits, or comfort preferences. Parents may encourage this behavior to keep the floors cleaner and reduce the need for frequent cleaning. Overall, it varies from family to family and can be influenced by a combination of cultural, practical, and personal reasons.

Regarding showering at least twice a week, less two two-thirds of studied samples rarely shower at least twice a week **(Table 5).** This study is in agreement with a study by **Kihoro et al., (2024)**
They found that 61.3 % of the studied sample rarely shower at least twice a week. From the investigator's point of view, some children have sensitive skin that can become irritated with frequent bathing. In such cases, parents may opt for less frequent showers to avoid skin problems like dryness or rashes. Children who are less physically active may not require frequent showers compared to those who engage in sports or other activities that cause them to sweat more.

Concerning washing vegetables and fruits before eating them with water and vinegar, more than two-thirds of the studied sample rarely take off shoes before entering the house **(Table 5).** This study is in agreement with a study by **Rajab & Bakuza, (2024)**
". They found that 77.9 % of the studied sample rarely washed vegetables and fruits before eating them with water and vinegar. From the investigator's point of view, children may not fully understand the importance of washing fruits and vegetables to remove dirt, pesticides, and bacteria. They might not be aware of the potential health risks associated with consuming unwashed produce. Some children may not like the taste or smell of vinegar on their fruits and vegetables, leading them to avoid using it for washing.

Regarding showering at least twice a week, less two two-thirds of studied samples rarely shower at least twice a week **(Table 5).** This study is in agreement with a study by **Nnamonu et al., (2024)**
They found that 61.3 % of the studied sample rarely shower at least twice a week. From the investigator's point of view, some children have sensitive skin that can become irritated with frequent bathing. In such cases, parents may opt for less frequent showers to avoid skin problems like dryness or rashes. Children who are less physically active may not require frequent showers compared to those who engage in sports or other activities that cause them to sweat more.

Concerning the washing of cooking utensils outside the home with tap water, more than half of the studied sample rarely wash cooking utensils outside the home with tap water **(Table 5).** This study is in agreement with a study by **Yakubu et al., (2023)** who conducted a study in Kubanni about " Seasonal changes in the distribution and infection rate of Schistosoma

intermediate hosts in River Kubanni and its tributaries". They found that 54.9 % of the studied sample rarely wash cooking utensils outside the home with tap water. From the investigator's point of view, children may not fully understand the importance of washing utensils to remove dirt, pesticides, and bacteria. They might not be aware of the potential health risks associated with consuming unwashed produce.

Regarding boiling the water before drinking it, more two two-thirds of the studied samples rarely boil the water before drinking it **(Table 6).** This study is in agreement with a study by **Mahfouz et al., (2020)**

They found that 73.3 % of the studied sample rarely boil the water before drinking it. From the investigator's point of view, that results in the culture and habits of the family, and that should be learned by the family. Also, water boiling kills bacteria and microorganisms and water is healthy.

Concerning taking medications to prevent intestinal parasites, more than two-thirds of the studied sample rarely take medications to prevent intestinal parasites **(Table 6).** This study is in agreement with a study by **Gubernot et al., (2021**

They found that 74.7 % of the studied sample rarely take medications to prevent intestinal parasites. From the investigator's point of view, carelessness in taking medications to prevent intestinal parasites that result from family, and should know the importance of taking medication to kill intestinal parasites and prevent complications.

Regarding the studied samples' total reported practice, the current study revealed that less than two-thirds of them had an unsatisfactory level of total reported practice, while more than one-third of them had satisfactory total reported practice **(Figure 3),** this result agrees with **Elsaid et al., (2022**

they found that 38.9 % of the studied sample had satisfactory level in total reported practice. Also, 61.1 % had unsatisfactory total reported practice. From the investigator's point of view, limited access to healthcare services can prevent families from receiving proper diagnosis, treatment, and education on parasitic infections. Inadequate healthcare infrastructure can lead to delayed or incorrect treatment, further exacerbating the problem.

Concerning the suffering from weakness, and fatigue, two-thirds of the studied sample always suffer from weakness, and fatigue **(Table 7).** This study is in agreement with a study by **Gubernot et al., (2021)**

They found that 66.1 % of the studied sample always suffer from weakness and fatigue. From the investigator's point of view, children in the primary school stage need a high quantity of nutrients with high important elements.

Regarding the suffer from brittle hair, hair loss, and loss of hair pigment, nearly two-thirds of studied samples sometimes suffer from brittle hair, hair loss, and loss of hair pigment **(Table 7).** This study is in agreement with a study by **Adolphus et al., (2021**

They found that 33.4 % of the studied sample sometimes suffer from brittle hair, hair loss, and loss of hair pigment. From the investigator's point of view, the results from malnutrition of children that anemia affects children's hair, especially the children depend on processed food and takeaway and this food contains about low nutrients.

Concerning the suffering from frequent and severe infections, nearly half of the studied sample always suffer from frequent and severe infections **(Table 7).** This study is in agreement with a study by **Gubernot et al., (2021)**

Regarding the relation between the studied sample's socio-demographic characteristics and their total knowledge, the current study revealed a highly statistically significant between the studied sample's age, gender, place of residence, and total knowledge scores **(Table 8).**

This result agrees with the study done by **Adamu et al., (2021**

they found that, a statistically significant relation between parents' age, gender, place of residence, and their total knowledge scores. From the investigator's point of view, many families may not have access to information about parasitic infections. Educational resources on this topic might not be widely available or disseminated, especially in low-income or rural areas. Limited access to healthcare services can hinder the dissemination of information. Families without regular medical consultations may miss out on learning about prevention and treatment.

Regarding the relation between the studied sample's socio-demographic characteristics and their total reported practices, the current study revealed a highly statistically significant between

the studied samples' age, gender, place of residence, and total knowledge scores **(Table 9).** This result agrees with the study done by **Ashtiani et al., (2021)**
Tehran, Iran", they found that a statistically significant relation between parents' age, level of education and occupation, and their total reported practices scores. From the investigator's point of view, traditional beliefs and practices may conflict with recommended health practices, leading families to rely on ineffective or harmful methods for dealing with parasitic infections. In some cultures, there might be a reliance on traditional healers who may not have the knowledge or resources to address parasitic infections effectively.

Conclusion

Based on the results of the present study and research questions, the researcher can conclude that: -

Increasing student awareness regarding intestinal parasitic infestations and hygienic measures will positively affect their practices toward the use of hygienic measures. There was half of the studied students had a poor level of knowledge regarding intestinal parasitic infestations. Besides that more one third of the studied students had a satisfactory level of reported practices about intestinal parasitic infestations and hygienic measures. Finally, there was a highly significant association between the studied students' total knowledge & reported practice regarding intestinal parasitic infestations and hygienic measures.

Recommendations

Based on the previous results of the present study and conclusion, the following recommendations are suggested:

- Increasing the awareness of primary school students about the hygienic measures of getting medical assistance is a very important issue in controlling intestinal parasitic infestations.

In further research:

A health education program to increase awareness about intestinal parasitic infestations among primary school students and to enable them to make the right decisions relating to health problems.

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