

# Knowledge, Attitude and Practice of Mothers on Prevention and Control of Intestinal Parasitic Infestations in Sekota Town, Waghimra Zone, Ethiopia

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## Research article

**Keywords:** Knowledge, Attitude, Practice, Parasites, Infestation, Mothers, Children, Sekota, Ethiopia

**Posted Date:** December 30th, 2019

**DOI:** <https://doi.org/10.21203/rs.2.15248/v2>

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**Version of Record:** A version of this preprint was published at Pediatric Health, Medicine and Therapeutics on June 1st, 2020. See the published version at <https://doi.org/10.2147/PHMT.S229610>.

# Abstract

**Background:** Intestinal parasites are a major public health problem in several developing countries. It accounts for 1.5 billion infections with one or more intestinal parasitic agents. The prevalence of helminthiases in Ethiopia was 29.8%. Specially, young children have a high infestation rate and suffer from a substantial burden of *Ascaris lumbricoides*, *Trichuris trichiura*, and *Schistosomes*. Therefore, this study was intended to assess mother's knowledge, attitude and practice on prevention and control of intestinal parasitic infestations among their pre-school children in Sekota town, Ethiopia, 2019.

**Methods:** A community based cross-sectional study was designed to be conducted on 384 mothers using simple random sampling method. But the data were collected from 378 mother-child pairs which gave a response rate of 98.4% using an interview-based questionnaire in the urban villages, Sekota town. The findings were presented in percentage, frequency and tables. In order to assure the quality of data, in all of the data collection, data analysis, and write up, a standard operational procedure was followed.

**Results:** The overall level of good maternal knowledge, positive attitude, and good practice in preventing and controlling intestinal parasitic infection with a considering of their pre-school children was 45.2%, 55.3%, and 51.1% respectively. Seventy-seven (20.4%) respondents reported that they knew *Ascaris lumbricoides*, 62 (16.4%) participants wash vegetables as a means of intestinal prevention, and 252 (66.7%) of participants stated that their children had at least one history of stool examination.

**Conclusions:** The overall level of optimum knowledge, attitude and practice of mothers on prevention and control of intestinal parasites is low. In particular, the level of optimal knowledge is significantly low. Therefore, community awareness about intestinal parasitic infestations prevention and control should be created through campaign or well-designed training and health education.

**Keywords:** Knowledge, Attitude, Practice, Parasites, Infestation, Mothers, Children, Sekota, Ethiopia

## Introduction

Intestinal parasites (IP) were a major public health problem in several developing countries (1). It accounts for 1.5 billion infections with one or more intestinal parasitic agents (1). Of these, 700 million people were infected by hookworm and 807 million people were infected with Ascariasis (1). Particularly, intestinal parasites are more predominant in developing countries and to most in sub-Saharan Africa (2). The prevalence of helminthiases in Ethiopia was 29.8% with a variable degree of prevalence among the different regions (3). Young children have a high infestations rate and suffer with a substantial burden of *Ascaris lumbricoides*, *Trichuris trichiura* and *Schistosomes* (4). Due parasitic infections children were exposed for reduced growth through impaired nutrient utilization, decreased from using their full potential in physical performance and education (5,6).

Helminthiasis prevention is based on regular anti-helminthic treatment, improved water supply, and sanitation and health education (7). However, the control measures are difficult to implement in developing countries due to lack of clean water, poor sanitation and low coverage of education (8). Intestinal parasitic infestations had serious consequences on human health; such as hepatomegaly, splenomegaly, esophageal varices, and delay in physical development. Parasitic infestations also lower the immunity system, decrease the level of intelligence, and decrease labor productivity (9,10). The societal level of healthiness is influenced by four factors. Knowledge, attitude, and practice are the most dominant and significant factors on the dynamicity of society's level of healthiness (11). The additional factor for community healthiness is parental characteristics such as level of education, and income (12–14). According to these commences, mothers' characteristics, knowledge, attitude, and practice towards a certain kind of illness play a major role in the occurrence or disappearance of a particular disease. In Ethiopia, only a few studies have been conducted on related to intestinal infestations control and prevention methods. Additionally, data on intestinal infestation was so limited in the town and there was no published research in the study area before. Therefore, this study was intended to assess mothers' knowledge, attitude, and practice about intestinal infestations control and prevention methods in Sekota town, Ethiopia. Because, if there is no data about KAP, there will not health related programme that can be further implemented or it will be effective as it should be until the assessment of knowledge of target population is not done. Thus, to ensure a clear message to be delivered, the knowledge, attitude and practice of mothers that are more prone to prevent intestinal infections on their children must be taken into consideration.

## Methods

### Study area and design

The study was a community-based descriptive cross-sectional study, and carried out on mothers of Sekota town, which is located in the Amhara region. The data collection period was from February 15 – March 10/2019. Sekota town is known for a water shortage, which is a cause for poor hygiene and sanitation practices. Sekota town has two urban kebeles, and both kebeles were included in this study.

### Sampling and study population

#### Sample size determination and sampling procedure

The sample size, which is 384 was determined using single population proportion formula:  $[n = Z^2_{\alpha/2} * (P(1-P)/d^2)]$ . The population proportion used for calculation from the previous study was (p=52.3%) (15). While calculating the sample size, 10% non-response rate, 95% CI and 5% margin of the error was considered. Simple random sampling technique with proportional allocation was used to include 384 mothers, who have children aged between 2 and 6 years old from both urban kebeles of Sekota town.

### Data collection

A pretested and structured interview-based questionnaire were developed in the English and then translated to Amharic, and re-translated to English version to record and analyze the demographic data, and data allied with knowledge, attitude and practice of mothers. This back and forth translation were checked by research experts and senior researchers to keep consistency the questionnaire. All the questions were developed in considering prevention and control methods of intestinal parasitic infestations.

### **Assessment of maternal knowledge, attitude, and practice**

Mothers who had children from two years to six years were interviewed for 5 knowledge, 7 attitudes, and 11 practice questions. The knowledge questions' scoring methods were performed as per Guttman Scale. The attitude questioners were prepared in Likert scales type of questioning and reported in such fashion. But the practice questions were formulated in ordinal scale, that weighted out of 11. In all of these sections, mothers were asked about types of intestinal parasites, mode of transmissions, symptoms of intestinal infestations, methods of prevention and control, and infestation complications.

Each mother was interviewed in their local language using closed-ended questions. The data collectors selected from the study area and collected the data under the supervision of the researchers.

**Eligibility criteria:** mothers with their children, aged 2 to 6 years and lives in Sekota town at least for 6 months were included. Mother-child pairs whose children took standard treatment for intestinal parasites in the last 6 months. Mothers with their children lived at least 6 months in this study area to be included in this study.

**Exclusion criteria:** Mother-child pairs whose children didn't take standard treatment for intestinal parasites in the last 6 months and mothers who had seriously ill children were excluded.

### **Data analysis**

The questionnaires were entered into epi-data version 4.2.0.0 and transferred to SPSS version 23 software for analysis. Frequency and cross-tabulation were used to summarize descriptive statistics of the data. The level of maternal knowledge, attitude and practice were reported as percentage and presented in tables.

### **Data quality**

For each step standard operational procedures (SOP) were followed. The socio-demographic questionnaire was pretested on 5% (20 mothers) of the sample in Woldia town. The measurement techniques used for the data of knowledge, attitude, and practice were also validated and pretested before the actual data collection in Woldia town. The interview guide was edited accordingly for actual data collection. The data was checked for its completeness, and missing information at each point by all investigators and data collectors. The data collectors were also taking a one-day refreshment training.

## Operational definitions

**Pre-school children:** children whose age is between the first day of year 2, and completed 5 years but not attending their 6 years of birthday.

**Intestinal parasites:** are parasites that can infect gastrointestinal tracts of the human body.

**Attitude:** assessment of mothers' opinion or thought about intestinal parasitic infestations, its prevention and control methods

**Positive attitude:** mothers who responded below the median value for attitude questions, that was 15 in this study

**Negative attitude:** mothers who respond above the median value for attitude questions, that was 15 in this study

**Knowledge:** assessment of what mothers described intestinal parasitic infestations, its prevention and control methods.

**Knowledgeable:** mothers who scored above the median value for knowledge questions, that was 2 in this study

**Non-knowledgeable:** mothers who scored below the median value for knowledge questions, that was 2 in this study

**Practice:** assessment of the mother's actual exercises to prevent and control intestinal parasitic infestations

**Good Practice:** mothers who scored above the median value for practice questions, that was 14 in this study

**Poor Practice:** mothers who scored below the median value for practice questions, that was 14 in this study

**Kebele:** is the smallest administrative unit of Ethiopia. Each kebele consists of at least five hundred families, or the equivalent of 3,500 to 4,000 persons.

## Results

### Maternal socio-demographic status

From total of 384 mothers, 378 (98.4%) mothers were voluntary to give response about this study. Of the participants, 374 (98.9%) participants were Amhara in ethnicity, 317 (83.9%) study subjects were followed orthodox religion, 157 (41.5%) mothers were unable to read and write, 275 (72.8%) mothers were a

housewife and 330(87.3%) women were married. Majority of the mothers 374(98.9%) had no both history of abortion and diagnosed diabetic Mellitus during the interview time (Table 1).

The mean age of mothers was 29.2 with a standard deviation of 5.7, ( $\mu_x \pm sd$ ) (29.2 $\pm$ 5.7). The minimum and maximum age of mothers were also 20 and 42 respectively. The mean age of children (2-6 years) was 3.15. The maximum and minimum number of pregnancies among mothers were 8 and 2 respectively (Figure 1).

## **Maternal knowledge**

According to the median value 207(54.8%) women had above the median value and considered as non-knowledgeable, and 171(45.2%) mothers had below the median value and were knowledgeable about intestinal parasite prevention and control methods in Sekota town.

### **Knowledge about intestinal parasites**

Majority of the mothers,77 (20.4%) reported that they knew *Ascaris lumbricoides*, 41 (10.8%) knew *e. histolytica* and 52(13.8%) knew *Giardia lamblia* (Table 2).

### **Knowledge about prevention and control of intestinal parasites**

From 378 mothers, 62(16.4%) mothers mentioned washing vegetables, 42(11.1%) list hand washing, 30 (8%) considered latrine utilization as prevention and control methods of IP (Table 2).

### **Knowledge about the mode of transmission of intestinal parasites**

Regarding the mode of transmission nearly75(19.9%) considered soil contact, 29(7.7%) mentioned contaminated water and 65 (17.2%) describe contaminated food as a mode of transmission (Table 2).

### **Knowledge about sign and symptoms of intestinal parasites**

Mothers list diarrhea 66(17.5%), abdominal cramp 38 (10%), and vomiting 19 (5%) in the sign and symptoms of intestinal parasitic infections part (Table 2).

### **Knowledge about the complication of intestinal parasites**

Regarding the complication of intestinal parasitic infection, malnutrition was considered by 58 (15.4%), growth retardation by 20 (5.3%) mothers, and 32(8.4%) mothers were considered both malnutrition and growth retardation as a complication of parasitic infestations (Table 2)

## **Attitude**

The mean and median of attitude was 16 and 15 respectively. Based on the median, 169 (44.7%) mothers have above the median and considered as having negative attitude and 209 (55.3%) mothers have got below the level of the median and considered as having a positive attitude (Table 3).

## **Practice**

The mean and median of maternal practices were 14.8 and 14 respectively. Based on the median value, 193(51.1%) mothers were above the median and 185(48.9%) mothers were below the median. Therefore 193(51.1%) of mothers had a good practice and 185(48.9%) of them had poor practice about the prevention and control methods of intestinal parasitic infestations (Table 4).

## **Discussion**

Intestinal parasitic infection acquired in any age yet young children are more susceptible, the reason is because weak immune system, and high malnutrition. Though, intestinal parasitic infection is a global problem, it is more devastating in developing countries, particularly Ethiopia, where there is chronic shortage of basic hygiene facilities, lack of knowledge about IP mode of transmission and its preventive measures.

According to this study, 45.2% of the women were knowledgeable about intestinal parasitic infestations prevention and control methods in Sekota town. This finding was lower than a study done in Senbete and Bete towns, north Shoa, Ethiopia that reported 60.3% (15). This might be due to the use of different operational definitions. It might also depend on the categories used as no knowledge, fair knowledge, and good knowledge. This might deviate from the lower border and increase the level of knowledge. In this study, contaminated water, contaminated food, uncooked vegetables, and unclean fruits, contaminated food, and contaminated water was mentioned as major causes of intestinal parasitic infestation. This study finding was in lined with a study done in Wondo genet, in which mothers responded that drinking river water, chewing sugar cane, feeding a child with uncooked cabbage and green pepper were associated with intestinal parasitic infections (16). Mothers mentioned diarrhea, abdominal cramp, vomiting, and anorexia as the major sign and symptoms of intestinal parasites in this study. This study finding was aligned with the study done in Wondo genet(16).

Mothers mentioned malnutrition, anemia, and growth retardation as complication of intestinal parasites which is similar with a study that mentioned intestinal parasites were causing serious health problems including growth retardation, and malnutrition unless treated (17, 16). Mothers mentioned using latrine, washing vegetables, avoid food and water contamination as the prevention and control of intestinal parasites which is similar to a study that mothers mentioned intestinal parasites can be prevented and controlled by hand washing before eating and feeding, washing after toilet use, regular use of footwears by self and for their children, maintained food hygiene and using sanitary latrine to prevent worm infestations on their children (18).

The overall level of positive attitude of mothers in Sekota town towards intestinal parasite was 55.3%, which is similar with a study done in Senbete and Bete towns that reported 56.1% of mothers had positive attitude and 43.9% had a negative attitude towards the prevention and control of intestinal parasites (15).

The overall level of good practice among mothers live in Sekota town towards intestinal parasitic infestation prevention and control was 51.1%, which is in line with the study done in Astha block (54%) (19) and higher than a study done in from Ichhawar (2%) (20). In general, this study indicated the level of knowledge, attitude and practice of Sekota's town mothers against others' work and other areas level of KAP. Although, the previous studies were limited on this title, and cause to have restricted discussion.

## **Conclusion**

The overall level of knowledge, attitude, and practice of mothers on prevention and control of intestinal parasites in Sekota town were significantly low. The level of knowledge was exclusively low in this study. More than half of mothers have a positive attitude and good practice. Therefore, community awareness about intestinal parasitic infection prevention and control should be created through community mobilization like weekend campaign or structured training for mothers.

### **Limitation of the Study**

Since it is a descriptive study, the association of knowledge, attitude, and practice were not assessed. Therefore, the impact of knowledge and attitude on practice is not indicated in this study. In addition to this, different factors that may be indicators of knowledge, attitude, and practice are not addressed. This may limit the strength of the conclusion and recommendation forwarded to the community.

## **Abbreviations**

IP-Intestinal parasites, SOP-standard operational procedures, SPSS- Statistical package for social science, KAP- knowledge, attitude and practice

## **Declarations**

### **Ethics approval and consent to participate**

The ethical clearance was obtained from Institutional Review Board of Woldia University (IRBWUC 0910/2019). A support letter was also obtained from Woldia University, research directorate office. Then after, a subsequent contact was made with the chairmen of the Sekota town administration and each kebeles. Written permission was got from the heads of each kebeles, Sekota zonal health department, and Sekota town health office. Written informed consent was obtained from mothers, who have been involved in the study after explaining the aim of the study. Anonymity and confidentiality were maintained by allowing opposition and or discontinuation of the interview and omitting the name and personal identification of respondents, because it was not compelled to the study.

## **Consent for publication**

Participants were informed and gave their written consent to publish the findings in repeatable international journal. The consent for publication were received together with the consent to participate in this study.

## **Availability of data and materials**

The data that supports the conclusions of this research could be available to researchers or policy makers, and any others who need it to be used for non-commercial purposes through requesting one of the authors.

## **Competing interests**

The authors declare that they have no conflicting of interests.

## **Funding**

This study was supported by Woldia University, college of health science, research and community service office. The funder had not contributed in collecting, analyzing and writing the paper except the financial support.

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## **Authors' contributions**

Conceived the title and designed the study: MWK, AMA, BBA, ABZ, and AMK. Field study: MWK, ABZ, AMA, and BBA. Analyzed the data: MWK, AMK, and ABZ. Critically revising the work: MWK, and BBA. Writing the final paper: MWK, AMA, ABZ, and BBA. In finalizing this paper, all authors had read and approved the final version of this manuscript with a consideration accountability.

## **Acknowledgments**

This is our pleasure to express the appreciation to Woldia University, college of health science, research and community service office for full sponsorship of the research though annual call for research grant. We are extending our gratitude to Mr. Solomon Moges, and Getnet Kumie for their active participation in developing the proposal. We are also acknowledging the data collectors, and participants, who were directly involved in producing this data set.

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## Tables

***Table 1: Maternal sociodemographic, behavioral and medical status of the included mothers in Sekota town, Ethiopia, 2018/19 (n=378)***

Variables	Categories	Parasite infections		Frequency	Percent
		Negative	Positive		
		No (%)	No (%)		
Region	Amhara	265 (70.9)	109 (29.1)	374	98.9
	Tigray	0	4(100)	4	1.1
Marital status	Single	0	4 (100)	4	1.1
	Divorced	12 (100)	0	12	3.2
	Married	233 (70.6)	97 (29.4)	330	87.3
	Widowed	20 (62.5)	12 (37.5)	32	8.5
	Orthodox	228 (71.9)	89 (28.1)	317	83.9
Religion	Muslim	37 (60.7)	24 (39.3)	61	16.1
	Unable to read and write	97 (61.8)	60 (38.2)	157	41.5
Education	Read and write	35 (92.1)	3 (7.9)	38	10.1
	Primary	63 (76.8)	19 (23.2)	82	21.7
	Secondary	32 (80.0)	8 (20.0)	40	10.6
	Above secondary	38 (62.3)	23 (37.7)	61	16.1
	Housewife	188 (68.4)	87 (31.6)	275	72.8
Occupation	Government employee	34 (69.4)	15 (30.6)	49	13.0
	Private employee	7 (63.6)	4 (36.4)	11	2.9
	Merchant	36 (83.7)	7 (16.3)	43	11.4
	Yes	4(100)	0	4	1.1
Knowledge	No	261 (69.8)	113 (30.2)	374	98.9
	Yes	4(100)	0	4	1.1
Attitudes	No	261 (69.8)	113 (30.2)	374	98.9
	Yes	4(100)	0	4	1.1

**Table 2: Maternal knowledge about intestinal parasitic infestations prevention and control methods in Sekota town, Ethiopia, 2018/19 (n=378)**

**Table 3: Maternal attitude about intestinal parasitic infestations prevention and control**

No	Variables	Categories	Frequency	Percent
1	Which intestinal parasite you know (n=378)	<i>Ascaris Lumbricoids</i>	77	20.4
		<i>E. Histolytica/dispar</i>	41	10.8
		<i>G. Lambila</i>	52	13.8
		<i>Hookworm</i>	17	4.5
		<i>G. Lambila</i> and <i>E. Histolytica/dispar</i>	23	6.
		<i>Hookworm</i> and <i>E. Histolytica/dispar</i>	9	2.4
		<i>Ascaris Lumbricoids</i> and <i>G. Lambila</i>	32	8.5
		I don't know	127	33.6
2	Which prevention mechanisms you know (n=378)	Hand washing	42	11.1
		Using latrine	30	8
		washing vegetables	62	16.4
		Avoid food and water contamination	6	1.6
		Hand washing and Using latrine	29	7.7
		washing vegetables and Using latrine	18	4.8
		I don't know	187	49.5
3	Which mode of transmission you know (n=378)	soil contact	75	19.9
		contaminated water	29	7.7
		contaminated food	65	17.2
		Uncooked vegetables and unclean fruits	17	4.5
		contaminated food and contaminated water	9	2.4
		Contaminated food and soil contact	20	5.3
		Uncooked /unclean vegetables and fruits and soil contact	15	3.9
		I do not know	148	39.1
4	Which sign and symptoms of IP you know (n=378)	Diarrhea	66	17.5
		Abdominal cramp	38	10
		Vomiting	19	5
		Anorexia	9	2.4
		Diarrhea and Vomiting	24	6.4
		Abdominal cramp and Diarrhea	17	4.5
		I do not know	205	54.2
5	Which complication you know (n=378)	Malnutrition	58	15.4
		Anemia	12	3.2
		Growth retardation	20	5.3
		Malnutrition and Growth retardation	32	8.4
		Growth retardation and Anemia	7	1.9
		I do not know	249	65.8

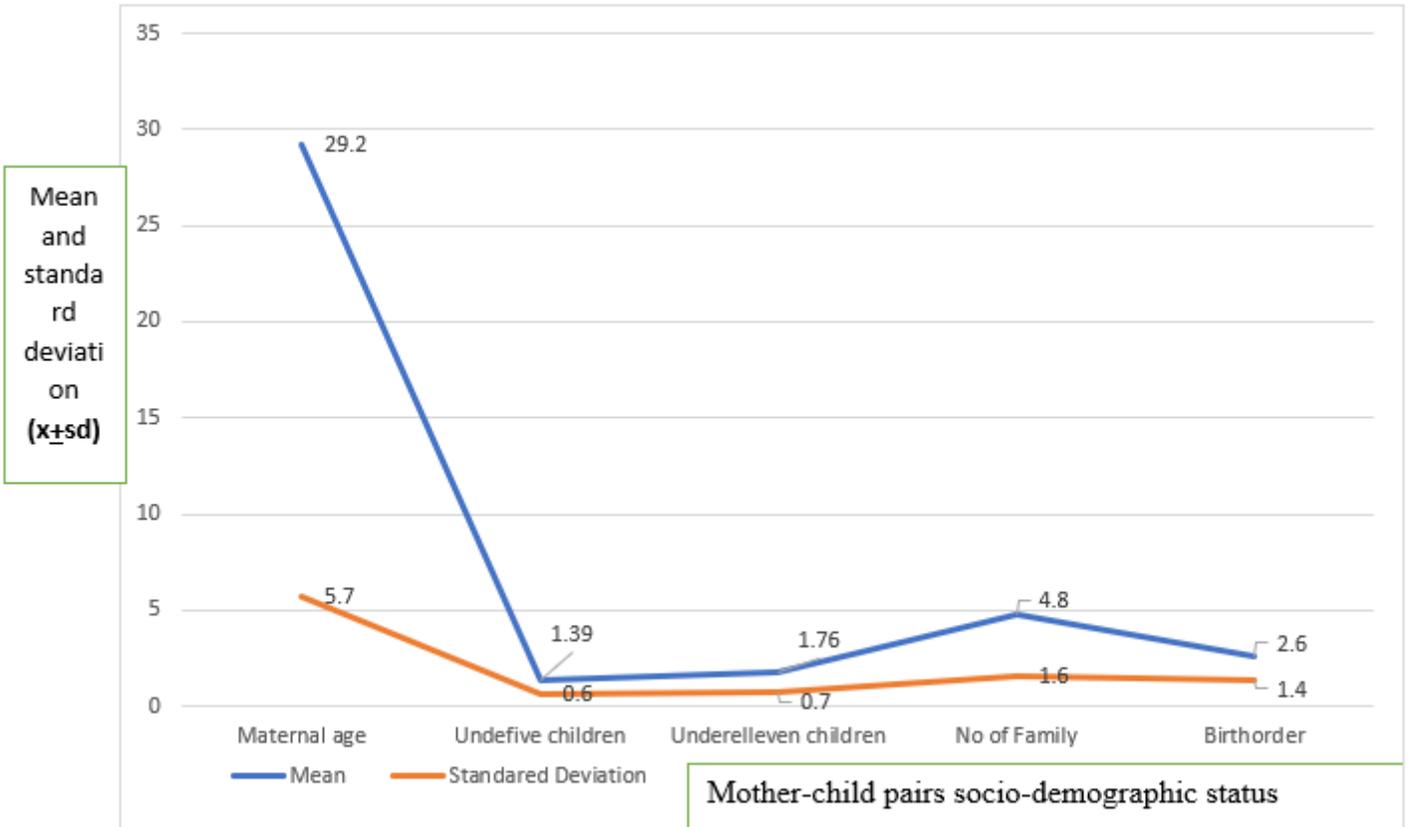
*method in Sekota town, Ethiopia, 2018/19 (n=378)*

S.no	Variable	Categories	Frequency	Percent
1	Lack of hygiene is the cause of intestinal parasitic infections	Extremely	101	26.7
		Agree	164	43.4
		Neutral	44	11.6
		Disagree	51	13.5
		Extremely	18	4.8
2	Intestinal parasites can be prevented and treated	Disagree	135	35.7
		Extremely	168	44.4
		Agree	24	6.3
		Neutral	25	6.6
		Disagree	26	6.9
3	Health education can reduce the prevalence of intestinal parasitic infections	Extremely	108	28.6
		Agree	173	45.8
		Agree	37	9.8
		Neutral	34	9.0
		Disagree	26	6.9
4	One of the complications of intestinal parasite is growth retardation	Extremely	93	24.6
		Agree	202	53.4
		Agree	36	9.5
		Neutral	34	9.0
		Disagree	13	3.4
5	Uses of soap while washing hand or face can prevent intestinal parasitic infections	Extremely	104	27.5
		Agree	173	45.8
		Agree	24	6.3
		Neutral	38	10.1
		Disagree	39	10.3
6	Raw food consumption is the cause of worm infestation	Extremely	75	19.8
		Agree	171	45.2
		Agree	63	16.7
		Neutral	42	11.1
		Disagree	27	7.1
7	Foods prepared in outdoor are risks for intestinal parasitic infections	Extremely	66	17.5
		Agree	145	38.4
		Agree	60	15.9
		Neutral	56	14.8
		Disagree	51	13.5

**Table 4: Maternal practices about intestinal parasitic infestations prevention and control mechanisms in Sekota town, Ethiopia, 2018/19 (n=378)**

Variables	Categories	Frequency	Percent
Did your child had any stool examination history previously?	Yes	252	66.7
	No	126	33.3
Do you wash your child hand before any meal time?	Yes	295	78.0
	No	83	22.0
Do you wash your child hand after any meal time?	Yes	286	75.7
	No	92	24.3
Do you shorten your child nails?	Yes	248	65.6
	No	130	34.4
Do you give drug for your child for prevention of intestinal parasite?	Yes	197	52.1
	No	181	47.9
Do you use chemically treated/tap water to prevent intestinal parasitic infection?	Yes	278	73.5
	No	100	26.5
Do you wash your child hand after defecation?	Yes	243	64.3
	No	135	35.7
Had your child ever been diagnosed for intestinal parasitic infection	Yes	94	24.9
	No	284	75.1
Do you use soap to clean utensils	Yes	243	64.3
	No	135	35.7
Do you wash before cooking meal	Yes	327	86.5
	No	51	13.5
Do you wash fruits and raw vegetables thoroughly before eating	Yes	269	71.2
	No	109	28.8

## Figures



**Figure 1**

The mean and standard deviation of maternal age, number of family, birth order, and number of children from the households included to the study in Sekota town, Waghimra zone, Ethiopia, 2018/19

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Questionary12.docx](#)