

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

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Abstract

Background Intestinal parasites were a major public health problem in many developing countries. It accounts for 1.5 billion infections with one or more causative agents. The national prevalence of helminthiasis in Ethiopia was 29.8% with considerable variability across the different regions. Young children had a high infection rate and suffered with a substantial worm burden of *A. lumbricoides*, *trichuris trichiura* and schistosomes. Parasitic infection has also serious consequences on human health, such as hepatomegaly, bleeding, esophageal varices, delay in physical development. It also decrease the immunity system, level of intelligence, and labor productivity. Therefore, this study was intended to assess mothers' knowledge, attitude and practice on prevention and control of intestinal parasitic infection among their preschool children in Sekota town, Waghimra zone, Ethiopia

Methods A cross sectional study was carried out on 378 mothers who had under six years but over two years old children. Although, 384 mothers were selected using sample size calculation in the year 2019, the data was collected from 378 mother-child pairs. A face to face interview was performed using pretested and structured questionnaire in the urban villages, Sekota town. The level of maternal knowledge, attitude and practice were presented in percentage, frequency and table.

Results The overall level of good knowledge or knowledgeable, positive attitude and good practice of mothers towards intestinal parasites prevention and control in considering their preschool children in Sekota town was 45.2%, 55.3% and 51.1% respectively. Seventy seven 77(20.4%) respondents reported that they knew *Ascaris Lumbricoids*, 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 stool examination previously.

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 very low in this study. According to the median parameter, 50% and above of mothers had both positive attitude and good practice. But mothers who were knowledgeable fall below 50%. Therefore, community awareness about intestinal parasitic infestations prevention and control should be created with special emphasis on mothers.

Introduction

Intestinal parasites (IP) are a major public health problem in several developing countries. IP accounts for 1.5 billion infections with one or more intestinal parasitic agents. Of these, 700 million people infected with *hookworm* and 807 million people infected with *Ascariasis* (1). Particularly, intestinal parasites are more predominant in developing countries and to most in sub-Saharan Africa (2). The national prevalence of helminthiasis in Ethiopia was 29.8% with variable degree of prevalence among the different regions (3).

Young children have a high infection rate and suffer with a substantial worm burden of *A. lumbricoides*, *Trichuris trichiura* and *Schistosomes* (4). These parasitic infections caused reduced growth through impaired nutrient utilization. This hindered children 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 infections had serious consequences on human health, such as hepatomegaly, splenomegaly, esophageal varices, 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 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) with additional factor of parental characteristics such as level of education, and income (12–14). According to these commencements, mothers' characteristics, knowledge, attitude, and practice towards a certain kind of disease play a major role for the occurrence or disappearance of a particular disease. Thus, this study was conducted to assess mothers' knowledge, attitude, and practice towards intestinal infection control and prevention methods in Sekota town, Ethiopia.

Methods

Study area and design

The study was a community-based cross-sectional study, and carried out on mothers' of Sekota town, located in Amhara region. The actual data collection time were from February 15–March 10/2019. Sekota town is known for shortage of water, poor hygiene and sanitation practices. Sekota town has two urban kebelles, and both kebelles 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 previous study was (p = 52.3%) (15). While calculating the sample size, 10% none-response rate, 95% CI and 5% margin of error were 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 kebelles of Sekota town.

Data collection

A pretested and structured interview-based questionnaires were developed in English and then translated to Amharic (local African dialect), and re-translated to English version to record the demographic data, and data associated with knowledge, attitude and practice of mothers. The English version data were also utilized for analysis. All the question were developed in considering prevention and control methods of intestinal parasitic infections.

Assessment of maternal knowledge, attitude, and practice

Mothers who had children greater than or equal to 2 years and less than six years were interviewed for 5 knowledge, 7 attitude and 11 practice questions. The knowledge questions' scoring methods were adapted from Guttman Scale. The attitude questioners were prepared as Likert scales type of questioning. But the practice questions were an ordinal scale, weighted out of 11. Mothers were asked about intestinal parasites, mode of transmissions, symptoms of intestinal infestations, methods of prevention and control, and complications ocured. Each mother was interviewed in local language using closed ended questions. The data collectors selected from the study area, and collected the data under the supervision of the research team.

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 and mothers who had seriously ill children were excluded.

Data analysis

The questionnaires were entered to epi-data version 4.2.0.0 and transferred to SPSS software for windows version 23 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 frequence 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. 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 taking a one day training.

Operational definitions

Preschool children: children whose age is between the first day of year 2 and 6 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, thought about intestinal parasitic infestations prevention and control methods

Positive attitude: mothers who responded below the median value, 15

Negative attitude: mothers who respond above the median value, 15

Knowledge: assessment of what mothers described about intestinal parasitic infestations prevention and control methods.

Knowledgeable: mothers who scored above the median, 2 for the knowledge measuring questions

Non-knowledgeable: mothers who scored below the median, 2 for the knowledge measuring questions

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

Good Practice: mothers who scored above the median, 14 of practice measuring questions

Poor Practice: mothers who scored below the median, 14 of practice measuring questions

Results

Maternal socio-demographic status

A total of 378 mothers were involved in this study and yields a 98.4% response rate. Six of the mothers were excluded because of involuntariness, absenteeism during data collection and re-visiting of the missed houses. Of the participants 98.9% were Amhara in ethnicity, 83.9% were followed orthodox religion, 41.5% of the mothers were unable to read and write, 72.8% of mothers were a housewife, and 87.3% of women were married. Majority of the mothers, 98.9% had no history of abortion and diagnosed diabetic mellitus during the interview time (Table 1).

The mean age of mothers were 29.2 with standard deviation of 5.7, ($\mu_x \pm sd$) (29.2 \pm 5.7). The average number of under-five and under-eleven children in the study town were 1.39 and 1.76 respectively. The maximum, and minimum number of pregnancies among mothers were 8 and 2 respectively (Figure 1).

Maternal knowledge

The data of knowledge was collected using a questionnaire containing 5 requests. While entering and analyzing the data of knowledge, unfavorable questions got 1 point if it is incorrect and 0 point if it is correct according to Guttman Scale as reference. Those five questions have multiple options. From these multiple options, 1 is for the option "I don't know" and 0 is for all other option or options. The participants list at least one correct answers among the alternative to get 0. Therefore, the highest and lowest score would be 5 and 0 point. The median, and mean was calculated and got 2.00 and 2.60 respectively. After the calculation of the central tendency, a group of knowledgeable and non-knowledgeable categorization was made based on median. The results were considered as knowledgeable if the amount of the score was lower than the median and categorized as non-knowledgeable if the amount of the score was higher than the median. According to the median value 54.8% of the women had above the median value and considered as non-knowledgeable, and 45.2% of mothers had below the median value and were knowledgeable about intestinal parasite prevention and control methods in Sekota town.

Knowledge about intestinal parasites

Mothers of children were asked about common parasites they know. Majority of the mothers, 77 (20.4%) reported that they knew *Ascaris Lumbricoids*, 41 (10.8%) knew *E. Histolytica* and 52(13.8%) knew *G. Lambila* (Table 2).

Knowledge about prevention and control of intestinal parasites

The knowledge of mothers about prevention and control mechanisms were also assessed. Of the 378 mothers, 62 (16.4%) mentioned washing vegetables, 42(11.1%) list hand washing, 30 (8%) considered latrine use as prevention and control methods (Table 2).

Knowledge about mode of transmission of intestinal parasites

Regarding the mode of transmission, nearly 75(19.9%) considered soil contact, 29 (7.7%) mentioned contaminated water, and 65 (17.2%) describe contaminated food as 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%) as the sign and symptoms of intestinal parasitic infections (Table 2).

Knowledge about complication of intestinal parasites

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

Attitude

The data of attitude was acquired using a questionnaire containing 7 questions where the point would be worth 4 points if it was “Extremely disagree”, 3 points if it was “Disagree”, 2 points if it was “Extremely agree”, and 1 point if it was “Agree” (Likert Scale). Thus, the highest score would be 28 points and the lowest would be 7 points. A group of positive and negative attitude were categorized based on the median value. The results were considered as positive attitude if the number of the score was lower than the median. On the other hand, those were considered as having negative attitude if the number of the score was higher than the median. The mean and median of attitude was 16 and 15 respectively. Based on the median, 44.7% of mothers have above the median and considered as having negative attitude and 55.3% of mothers have got below the level of the median and considered as having positive attitude (Table 3).

Practice

The data of practice was got using 11 “yes” and “no” questionnaires where the highest and lowest scores were 11 and 0 points (Ordinal Scale) respectively. A group of good and poor practice were categorized based on median. The result was considered as a good practice if the score was higher than the median value and considered as a poor practice if the score was lower than the median. The mean and median of maternal practices were 14.8 and 14 respectively. Based on the median value, 51.1% of mothers were above the median and 48.9% of mothers were below the median. Therefore 51.1% of mothers had good practice and 48.9% had poor practice about the prevention and control methods of intestinal parasitic infestations (Table 4).

Discussion

According to the median value 45.2% of the women were considered knowledgeable and 54.8% of women were non-knowledge about intestinal parasitic infestations prevention and control methods in Sekota town. This is lower than a study reported the knowledge of mothers as 60.3% on prevention and control of intestinal parasites (15). This might be due to use of different operational definitions. This study’s operational definition is categorized as knowledgeable and non-knowlegable but the comparative operationalized as good knowledge, fair knowledge and poor knowledge. The sum of good knowledge and fair knowledge considered as knowlegable. This might deviated to the lower pborder and increase the levele of knowledge.

In this study, contaminated water, contaminated food, uncooked vegetables and unclean fruits, contaminated food and contaminated water were mentioned as major causes, which is similar 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 responsible for intestinal parasitic infections (16).

Mothers mentioned diarrhea, abdominal cramp, vomiting, and anorexia as the major sign and symptoms of intestinal parasites which is similar with a study that mothers mentioned intestinal parasites manifest as diarrhea, vomiting, loss of appetite, abdominal discomfort and an enlarged abdomen (16)

Mothers mentioned malnutrition, anemia, and growth retardation as the major complication of intestinal parasites which is similar with a study that mentioned intestinal parasites were cause 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 the prevention and control of intestinal parasites which is similar with a study that mothers mentioned intestinal parasites can be prevented and controlled by hand washing before eating and feeding, washing after defecation of self and children, regular use of foot wears by self and children, maintained food hygiene and using sanitary latrine to prevent worm infection of 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 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 mothers against others' work and other areas level of KAP, even the previous studies were limited on this title, 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 is low. In particular, the level of knowledge is very low in this study. Based on the median, mothers greater than 50% have positive attitude and good practice but knowledgeable mothers were lower than 50%. Therefore, community awareness about intestinal parasite prevention and control should be created with special emphasis on mothers in Sekota town. This study was not assessed the degree of associations between independent variables and knowledge, attitude or practice. In addition, it was not address the association between knowledge or attitude with practice. Therefore, a further study with large sample size is need to assess the association of knowledge or attitude with practice. The

association of maternal, environmental, socio-economical and others variables with maternal knowledge, or attitude or practice need to be determined.

Limitation of the Study

Since it is a descriptive study, the association of knowledge, attitude and practice was not assessed. Therefore, the impact of knowledge and attitude on practice is not indicated in this study.

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. 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 keblles, 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 recived together with the consent to participate in the study.

Availability of data and materials

The raw materials supporting the conclusions of this research could be available to researchers or policy makers, and any others who need the data to be used for non-commercial purposes through requesting the authors via their e-mails.

Competing interests

The authors declare that they have no any conflicting of interests.

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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.

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Tables

Table 1: Maternal sociodemographic status, behavioral and medical profiles found in Sekota town, Ethiopia, 2018/19

Variables	Categories	Parasite infections		Frequency	Percent
		Negative No (%)	Positive No (%)		
Ethnicity	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
Religion	Widowed	20 (62.5)	12 (37.5)	32	8.5
	Orthodox	228 (71.9)	89 (28.1)	317	83.9
Education	Muslim	37 (60.7)	24 (39.3)	61	16.1
	Unable to read and write	97 (61.8)	60 (38.2)	157	41.5
Occupation	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
	Government employee	34 (69.4)	15 (30.6)	49	13.0
History of abortion	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
	No	261 (69.8)	113 (30.2)	374	98.9
History of diabetes	Yes	4(100)	0	4	1.1
	No	261 (69.8)	113 (30.2)	374	98.9

Table 2: Maternal knowledge about intestinal parasitic infestations prevention and control methods in Sekota town, Ethiopia, 2018/19

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

Table 3: *Maternal attitude about intestinal parasitic infestations prevention and control method in Sekota town, Ethiopia, 2018/19*

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

Table 4: Maternal practices about intestinal parasitic infestations prevention and control mechanisms in Sekota town, Ethiopia, 2018/19

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

Figures

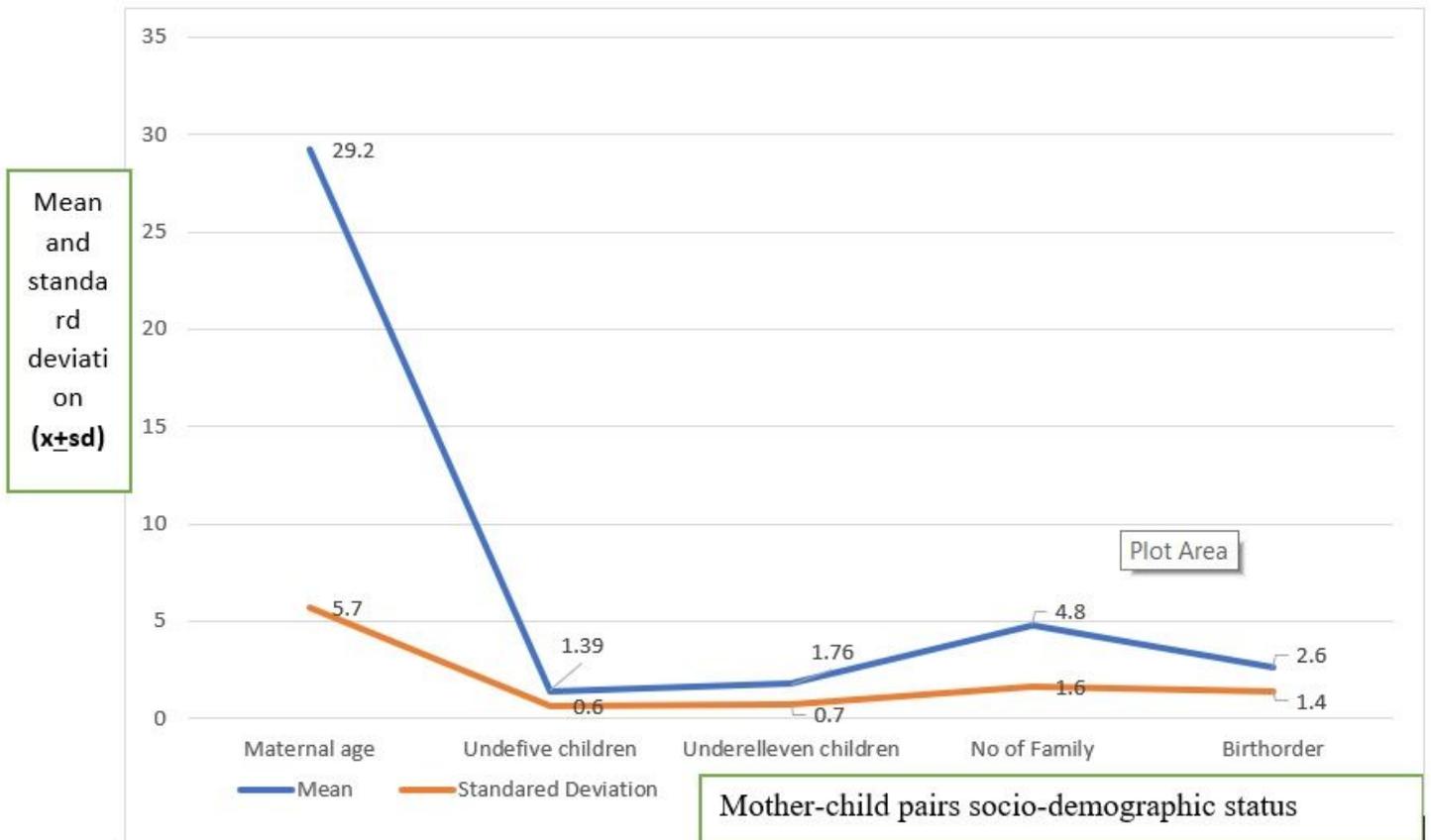


Figure 1

The mean and standard deviation of maternal age, number of family, birth order, and number of children from the households in Sekota town, Waghimra zone, Ethiopia, 2019/2020

Supplementary Files

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

- [Questionary12.docx](#)