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Prevalence of Intestinal Parasites and its Predisposing Factors among Patients Sent for Stool Examination at Ambo General Hospital, Oromiya Region, Ethiopia

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Abstract

Back ground: Intestinal parasitic infections are the most common infection in the world. In Ethiopia there is a high prevalence of intestinal parasites due to lack of personal hygiene and poor environmental conditions.
Objective: The aim of the study was to assess the prevalence of intestinal parasites and predisposing factors among patients who sent for stool examination at Ambo general hospital Ambo Town, West Shewa zone.
Methodology: A cross- sectional parasitological study was conducted August 22, 2021- August 31, 2021 G.C to determine the prevalence of intestinal parasites and its portion formula was used to determine a total sample size and convenient sampling technique was used. After ethical approval taken, patients data was collected by face-to face interviewing and recording method. Stool samples was examined by using direct saline and formal ether concentration techniques. Collected data was analyzed manually, checked and edited to determine the related risk factors of the intestinal parasites.
Result and Conclusion: There was high prevalence of intestinal parasitic infection in the study in which 63.1% of them were found to be positive for at least single intestinal parasite. Total of seven intestinal parasites were identified. From the identified species *G.lambilia* was the most common 110(52.9%) followed by *E.histolytica* 42(20.2%), *A.lambricoids* 16(7.7%), Hook worm 12(5.8%), Tina species 10(4.8%), *T.trichuria* 10(4.8%) and *S.mansoni* 10(4.8%).
Recommendations: Educate the patients and inform the concerned bodies about the risk factors and prevention. This finding from the study could be used as base line data and further investigation should be done to know the problem of intestinal parasitism more in the area by the others.

Keywords: Organism; Intestinal Parasites; Amoebiasis and Trichuriasis; Mortality

Abbreviations: IPS: Intestinal Parasites.

Introduction

Background

Intestinal parasites are living organism living in or having some metabolic dependence on another organism known as host, get its food from or at the expense of its host. There are three main classes of parasites that can cause disease in humans: protozoa, helminths, and ectoparasites [1]. Over half of the world's population is infected with eukaryotic pathogens. Parasitic infections, caused by intestinal helminths and protozoan parasites, are among the most prevalent infections in humans in developing countries. In developed countries, protozoan parasites more commonly

cause gastrointestinal infections compared to helminthes [2]. Intestinal parasitic infections (IPIs), are a highly significant cause of morbidity and mortality in endemic countries. Intestinal parasites (IPs) are present throughout the world in varying degrees of prevalence and have particular relevance as they affect the poorest and most deprived areas in tropical and subtropical regions [3,4]. Parasitic infections caused by intestinal helminths and protozoan are among the most prevalent infections in developing countries carrying a high burden of morbidity and mortality [5]. Ascariasis, hookworm infection, amoebiasis and trichuriasis are the most common IPIs in the world [4].

The burden of diseases associated with IPI is huge. Approximately, 4.5 billion people are at risk, more than two billion people are affected worldwide, of whom 300 million suffer from associated severe morbidity [6,7]. According to the World Health Organization report, there were 800–1000 million Ascarislumbricoides, 700–900 million Hookworm infections, 500 million Trichuristrichuria, 200 million Giardialamblia, and 500 million Entamoebahistolytica/dispar cases globally [8,9]. Many research works indicated different factors had an association with the prevalence of IPIs among suspected individuals, some of these factors related to sociodemographic characteristics and some others might be related to individuals' practices. From sociodemographic characteristics; age, sex, residence and occupation of individuals had associated with IPIs [10-12].

Parasitic infections affect the poorest and deprived communities of low and middle-income countries of the tropical and subtropical regions. The main reasons for the high prevalence of parasite infections in tropical and subtropical countries were increasing population density, poor sanitation conditions, poor public health practices, inadequate toilet facilities, contaminated food and water, malnutrition, low host resistance and environmental changes [13].

In Africa, more specifically Sub-Saharan Africa, parasitic infections are the major public health problem and most of the victims are children [2]. Currently, the protozoan parasite (*Entamoeba histolytica* and *Giardia intestinalis*) and the soil transmitted helminthes (*Ascaris lumbricoides, Trichuris trichiura*, and Hookworm) are the leading intestinal parasites which cause significant morbidity and mortality in the Africa [14]. Intestinal parasites are highly prevalent in developing countries, including Ethiopia mainly related to poverty, poor personal hygiene, environmental sanitation, overcrowding, low level of education and lack of safe drinking water [8].

Intestinal parasites have worldwide distribution being present in almost all Geographic and climatic region except for those with extremes of cold or heat where survival of infectious stages in the environmental is impossible. Approximately, 4.5 billion people are at risk, more than two billion people are affected worldwide, of whom 300 million suffer from associated severe morbidity [6,7]. These infections are regarded as a serious public health problem. As they cause iron deficiency anemia, growth retardation in children after physical or mental health problem [10].

In the developed countries, efficient control, urbanization and other socio-economic factor have created better condition for decline in the prevalence of intestinal helminthes infection. Parasitic infections affect the poorest and deprived communities of low and middle-income countries of the tropical and subtropical regions. The main reasons for the high prevalence of parasite infections in tropical and subtropical countries were increasing population density, poor sanitation conditions, poor public health practices, inadequate toilet facilities, contaminated food and water, malnutrition, low host resistance and environmental changes [13].

Intestinal parasites have worldwide distribution being present in almost all climatic region except for those with extremes of cold or heat where survival of infectious stages in the environmental is impossible. The estimated global prevalence of *A. lumbricoides T. trichuriasis*, and hook worm are 1.8 billion, 1.3 billion and 900 million respectively [15].

In developing countries particularly tropical regions were in the environment socio-economic status and cultural practice favor transmission, intestine helminthes still a major and serious medical and public health concern. The problem is much more pronounced in rural areas of developing countries where the population increases has considerably enlarged the population at risk [16].

The amount of harm caused by intestinal parasite infection to the health and well fare of individual and communities depend on: parasite species, intensity and course of infection, the nature of interaction between the parasite species and concurrent infection and the nutritional and immunological status of the population and numerous socioeconomic factors. In addition to these, there are also determinant factors that contributes more for the intestinal parasite infection such as; Attitude of people towards the use of latrin, Lack of adequate and clean water, the use of sanitary waste disposal, habit of hand washing before and after meal, poor personal hygiene and environmental cleanness [17].

The importance of intestinal parasites to public health is significant and the magnitude of the problem is worldwide. It is highly distributed in our country and has impact on health by; Promotion of malnutrition, Growth retardation, Intestinal obstruction, Chronic blood loss causing anemia,

Dysentery or persistent diarrhea, Liver abscess and also affects economy by; Increase cost of drug, the loss of working days and Increase morbidity and mortality [17].

There was no study done on the area before. The study will help to see which type of parasite is more prevalent. And which type of determinant/risk factors contribute more to the existence of intestinal parasites. It may help as a baseline data and give essential aspects to take measure for prevention and control. Based on the above facts knowledge of the intestinal parasites as well as the predominant species and the associated risk factors is very important for intervention to be taken. There for, this study will be conducted and determine the prevalence and risk factors of intestinal parasitic infection among patients of Ambo Woreda.

Intestinal parasitic infections are among the most common infection worldwide especially in sub-Saharan Africa [18]. The problem is much more pronounced in the rural areas of developing countries [19]. Since Ethiopians is one of the countries found in the region, intestinal parasites are more prevalent in the country [20-25]. The study will help to see which type of parasite is more prevalent and which type of determinant/ risk factors contribute more to the existence of intestinal parasites. It may help as a base line data and give essential aspect of to take measure for prevention and control.

Methodology

Study area, design and period

This study was conducted in Ambo general hospital. This hospital is found in Ambo town, Ambo Woreda, West Shewa Zone, Oromiya region at 109km from Addis Ababa in west direction.

Study design and study period

Across sectional study was conducted at Ambo general hospital from August 22, 2021-August 31,2021.

Population

Source population: All patients seeking medical care at Ambo general hospital during study period.
Study population: All patients, who was sent to laboratory for stool examination during the study period.

Sample Size and Technique

Sample size was calculated as follow.
N= (Za/2)2 (p) (1-q) d2
N= (1-96) x (o.5) (o.5) (0.05)2= 384
Where n- No sample size
Z=level of confidence (95%) =1.96
P =prevalence, since there is no similar study done the prevalence assumed 50%.
d =margin of error
Convenient sampling technique will be used in drawing the sampling from the study population

Data Collection Procedures

Instruments and reagents: Instruments

Microscopic slide, Electric microscopic, Cover slide, Conical test tube, Stool cup, Funnel cup, Gauze, Marker, Plastic bulb pipette, Disposable gloves, Applicator stick
B. Reagents: 10%formalin, 85%Nacl (saline), Diethyl ether, and Iodine solution

Data collecting personnel: Data on socio-demographic and background variables were collected by 1 health professional and me, and laboratory data was collected by 2 laboratory technicians.
Data collection techniques
Data collection: Data on socio-demographic and background variables conducted by interview using pre-designed questioners.
Laboratory data: Stool specimens were collected in clean dry container and processed by direct saline and formal ether concentration techniques.

Study variables

Dependent variables: Intestinal parasitic infection

Age	Education status
Sex	Habit of shoe wearing
Latrine usage	Hand washing
Source of water	Finger nail
Raw meat eating	Waste disposal
Unwashed fruit and vegetables	Occupational status
Undercooked foods	Distance of Latrine from living house
River water contact	

Independent variables.

Data processing and Analysis

The collected data was compiled and analyzed for different variables. Different statically method will be employed and finding will be interpreted. The collected data was checked for completeness and analyzed manually. The analyzed data was expressed using appropriate frequency

distribution and cross tabulation for selected variables. P-value Chi- square test was computed to identify factors significantly associated with participants. After analysis data was interpreted, finally results were compared with other studies and discussed. Data was presented in writing & tables.

Data Quality Management

- **Pre analytical**

Questioners were checked regularly for completeness. Reagents and equipments were checked for availability and functionality.

- **Analytical**

Proper sample preparation and examination.

- **Post analytical**

The laboratory result recording forms were kept properly for checking.

Ethical considerations

Prior to data collection official written letter from JU SRP was submitted to the responsible Hospital administration office. The data was collected after getting permission from the Hospital officials and consent from patients by explaining the objective of the study. The patient information and results were kept confidential and the results were given to the responsible health professional for possible treatment.

Result

In Ambo General Hospital, among patients visiting the hospital during the study period, 244 population were taken as sample population and the sample contain 136(55.7%) females and 108 (44.3%) males. The study population were selected by convenient sample technique at 95% confidence interval. The respondent were interviewed and their stool specimen were examined microscopically. From sampled population 154(63.1%) of patient were positive for at least single infection while 90(36.9%) were negative for any parasites. Therefore, the overall prevalence rate of intestinal among patients sent for stool examination at Ambo General Hospital was 63.1%. From total study population of 244, of which 136(55.7%) females and 108(44.3%) males, 92(37.7%) of female and 62(25.4%) of male patients were found to be positive for intestinal parasitic infection. Even though female patients were affected more than male, there was no statically association between sex and intestinal parasitic infection ($p>0.05$).

Intestinal parasitic infection were high on young age groups and its distribution decreases as age increases. There was statistical association between intestinal parasitic infections and age $p<0.05$ from the study population, 74(30.4%) of them were students and 58(23.7%) of them were farmers, out of this 48(19.7%) of students and 34(13.9%) of farmers were positive for intestinal parasites infections respectively. The rest were merchants 40(16.4%), house wife 26(10.7%), government employees 24(9.8%). There was no statistical association between parasites infection and occupation. $p>0.05$. From total population,64 (26.2%%)of patients were illiterates and 180(73.8%) were literates, out of them 42(17.2%) of illiterates and 112(45.9%) of literates were positive for intestinal parasitic infections. There was statistical association between parasites infection and educational status. $p<0.05$.

Stool examination						p-value	Total	
	Positive			Negative			No	%
		No	%	No	%			
Sex	Male	62	25.40%	46	18.90%	0.25	108	44.30%
	Female	92	37.70%	44	18.00%		136	55.70%
	Total	154	63.1	90	36.9		244	100
Age	0-14	64	26.20%	22	9%	0.001	86	35.20%
	15-29	40	16.40%	30	12.30%		70	28.70%
	30-44	26	10.70%	16	6.60%		42	17.30%
	45-59	18	7.40%	12	4.90%		30	12.30%
	>60	6	2.4	10	4.10%		16	6.50%
	Total	154	63.10%	90	36.90%		244	100%

Occupation	Farmer	34	13.90%	24	9.80%	0.06	58	23.70%
	Govt employ	14	5.70%	10	4.10%		24	9.80%
	House wife	18	7.40%	8	3.30%		26	10.70%
	Merchant	26	10.70%	14	5.70%		40	16.40%
	Student	48	19.70%	26	10.70%		74	30.40%
	Other	14	5.70%	8	3.30%		22	9.00%
	Total	154	63.10%	90	36.90%		244	100%
Education	Illiterate	42	17.20%	22	9.00%	0.008	64	26.2
	1-4 grades	58	23.80%	28	11.50%		86	35.3
	5-8grades	26	10.70%	14	5.70%		40	16.4
	9-12grades	18	7.40%	20	8.20%		38	45.6
	>12grades	10	4%	6	2.50%		16	6.5
	Total	154	63,1%	90	36.90%		244	100%

Table 1: Distribution at intestinal parasite versus socio demographic characteristics among patients who sent for stool examination at Ambo General hospital, Ambo town, Ethiopia, August 22, 2021-August 31,2021.

The source of water for drinking, pipe 172(70.2%), well 40(46.4%), spring 18(7.3%) and river 14 (5.7 %%), from these 102(41.8%) of pipe, 30(12.3%) of well, 14(5.7%) of spring and 8(3.3%) of river water users were positive for intestinal parasitic infections respectively. There was statistical association between parasites infection and source of water. p<0.05. From total well of 40, 34(85%) of them were protected and 6(15%) of them were not protected, out of the patients who uses well as source of water for drinking, 26(65%) from protected well and 4(10%) from unprotected well who uses well as source of water for drinking were positive for intestinal parasitic infections. There was statistical association between parasites infection and source of water. p<0.05. Common form of waste disposal systems were open field 122(50.0%) and burn 54(22.1%), out of them 78(32.0%) and 34(22.1%) of patients were positive for intestinal parasitic infections respectively. There was statistical association between parasites infection and source of water p<0.05.

Stool examination						**p-value**	**Total**	
		Positive		**Negative**			**No**	**%**
		No	%	No	%			
Water source for drinking	Pipe	10	41.80%	70	28.70%	0.04	172	70.5
	Spring	14	5.70%	4	1.60%		18	7.40%
	River	8	3.30%	6	2.50%		14	5.70%
	Well	30	12.30%	10	4.10%		40	46.40%
	Total	154	63.10%	90	36.90%		244	100%
Status of well	Protected	26	65%	8	20%	0.007	34	85%
	Unprotected	4	10%	2	5%		6	15%
	Total	30	75	10	25%		40	100%
Waste dispose	Open field	78	32%	44	18%	0.02	122	50%
	Burn	34	13.90%	20	8.25		54	22.10%
	Compost	26	10.60%	18	7.40%		44	18%
	Other	16	6.60%	8	3.30%		24	9.90%
	Total	154	63.10%	90	36.90%		244	100%

Table 2: Distribution of intestinal parasites versus source of drinking water, status of well, and waste disposal among patients who sent for stool examination at Ambo General hospital, Ambo town, Ethiopia, August 22, 2021- August 31,2021.

From the study population, 8(3.3%%) of them eats raw meat always, 104(42.6%) eats sometimes and 132(54.1%%) never eats, out of them 6(2.5%), 72(29.5%), and 76(31.1%) were positive for intestinal parasitic infections respectively.

There was no statistical association between parasites infection and row meat P>0.05. From the study population, 34(13.9%) of them eats unwashed fruits and vegetables always, 98(40.1%) eats sometimes and 112(45.9%) never eats, out of them 26(10.6%), 34(27.8%) and 60(24.6%) were positive for intestinal parasitic infections respectively. There was statistical association between parasites infection and row meat. P<0.05.

From the study population, 6(2.4%) of them eats undercooked foods always, 38(15.6%) eats sometimes and 200(82.0%) never eats, out of them 4(1.6%), 28(11.5%) and 122(50.0%) were positive for intestinal parasitic infections respectively. There was statically association between parasites infection and row meat. p<0.05.

During the study the patients were observed for finger nail status and 166(68.0%)of the patients finger nails were trimmed and 78(32.0%) were not, out of them 102(41.8%) and 52(21.3%)of them were positive for intestinal parasitic infections respectively. There were statistical association between parasites infection and not trimming their finger nails. p<0.05.

From the study population, 134(63.1%) of them have habit of hand washing always, 86(35.2%),washes sometimes and 4(1.7%) never wash, out of them 86(35.2%), 64(26.2%) and 4(1.7%) were positive for intestinal parasitic infections respectively. There was statistical association between parasites infection and row meat. p<0.05.

Stool examination						p-value	Total	
	Positive			Negative			No	%
		No	%	No	%			
Habit of eating raw meat	Always	6	2.50%	2	0.80%	0.1	8	3.30%
	Sometimes	72	29.50%	32	13.10%		104	42.60%
	Not at all	76	31.10%	56	23%		132	54.10%
	Total	154	63.1	90	36.90%		244	100%
Habit of eating unwashed fruit and vegetables	Always	26	10.60%	8	3.30%	0	34	13.90%
	Sometimes	78	27.80%	30	12.40%		98	40.10%
	Not at all	60	24.60%	52	21.30%		112	45.90%
	Total	164	63.10%	90	36.9		244	100%
Habir of eating undercooked food	Always	4	1.60%	2	0.80%	0.001	6	2.40%
	Sometimes	28	11.50%	10	4.10%		38	15.60%
	Not at all	122	50%	78	32%		200	82%
	Total	154	61.60%	88	36.9		244	100%
Finger nail status	Trimmed	102	41.80%	64	26.20%	0.001	166	68%
	Not trimmed	52	21.30%	26	10.70%		78	32%
	Total	154	63.1	90	36.9		244	100%
Habit of hand washing before ,meal	Always	86	35.20%	68	27.90%	0.00	154	63.10%
	Sometimes	64	26.20%	22	9.0%%		86	35.20%
	Not at all	4	1.70%	0	0%		4	1.70%
	Total	154	63.10%	90	36.9		244	100

Table 3: Distribution of intestinal parasites versus habit of eating raw meat, habit of eating unwashed fruit and vegetable ,habit of eating undercooked food, habit of trimming finger nail and habit of hand washing before meal among patients who sent for stool examination at Ambo General hospital, Ambo town, Ethiopia, August 22,2021- August 31,2021.

From study population, 238(97.6%) uses latrine and 6(2.4%) didn't use latrine, out of them 150(61.5%) and 4(1.6%) of patients were positive for intestinal parasitic infections respectively. There was statistical association between parasites infection and latrine usage. p<0.05.

Latrine usage	Result of stool examination						p-value
	Positive		Negative		Total		
	No	%	No	%	No	%	
Yes	150	61.50%	88	36.10%	238	97.60%	0.009
No	4	1.60%	2	0.80%	6	2.40%	
Total	154	63.10%	90	36.90%	244	100%	

Table 4: Latrine usage versus distribution of intestinal parasites among patients who sent for stool examination at Ambo General hospital, Ambo town, Ethiopia, August 22,2021- August 31,2021.

From study population of 238 patients who uses latrine, the distance of latrine from living house 156(65.6%) were between 10-20m and 62(26.0%) were less 10m, out of them 94(39.5%) and 42(17.6%) of patients were positive for intestinal parasitic infections respectively. There was statically association between parasites infection and distance of latrine from living house p<0.05.

Latrine distance from living house	Result of stool examination						p-value
	Positive		Negative		Total		
	No	%	No	%	No	%	
<10m	42	17.60%	20	8.40%	62	26.00%	0
10-20m	94	39.50%	62	26.10%	156	65.60%	
>20m	14	5.90%	6	2.50%	20	8.40%	
Total	150	63.00%	88	37.00%	238	100%	

Table 5: Distance of latrine from living house versus distribution of intestinal parasites among patients who sent for stool examination at Ambo General hospital, Ambo town, Ethiopia, August 22,2021- August 31,2021.

From the study population, $1_4$6(59.8%) of them have habit of hand after toilet use always, 66(27.1%), washes sometimes and 32(13.1%) never wash, out of them 82(33.6%), 48(19.7%) and 24(9.8%) were positive for intestinal parasitic infections respectively. There was no statically association between parasites infection and row meat. p<0.05.

Habit of hand washing after toilet use	Result of stool examination						p-value
	Positive		Negative		Total		
	No	%	No	%	No	%	
Always	82	33.60%	64	26.20%	146	59.80%	0.02
Some times	48	19.70%	18	7.40%	66	27.10%	
Not at all	24	9.80%	8	3.30%	32	13.10%	
Total	154	63.10%	90	36.90%	244	100%	

Table 6: Habit of hand washing after toilet use versus distribution of intestinal parasites among patients sent for stool examination at Ambo General hospital, Ambo town, Ethiopia, August 22, 2021- August 31,2021.

From the study population, 180(73.8%) of them have habit of wearing shoes always, 54(22.2%) eat wear sometimes and 6(2.4%) never wear, out of them 2(0.8%), 6(2.5%) and 4(1.6%) were positive for intestinal parasitic infections respectively. There was statistical association between parasites infection and row meat. p<0.05.

Shoe wearing habit	Result of stool examination						p-value
	Positive		Negative		Total		
	No	%	No	%	No	%	
Always	2	0.80%	178	73.00%	180	73.80%	0.04
Some times	6	2.50%	48	19.70%	54	22.20%	
Not at all	4	1.60%	6	2.40%	10	4.00%	
Total	12	4.90%	232	95.10%	244	100%	

Table 7: Shoe wearing habit versus hook worm distribution among patients who sent for stool examination at Ambo General hospital, Ambo town, Ethiopia, August 22, 2021- August 31, 2021.

From the study population, 72(29.5%) of them had history of river water contact and 172(70.5%) didn't have, out of them 8(3.3%)and none were positive for intestinal parasitic infections respectively. There was statistical association between parasites infection and row meat. $p<0.05$.

River Water Contact History	Result of stool examination						p-value
	Positive		Negative		Total		
	No	%	No	%	No	%	
Yes	8	3.30%	64	26.20%	72	29.50%	0.003
No	0	0%	172	70.50%	172	70.50%	
Total	8	3.30%	236	96.70%	244	100%	

Table 8: River water contact history versus distribution of Schistosomiasis among patients who sent for stool examination at Ambo General hospital, Ambo town, Ethiopia, August 22, 2021- August 31, 2021.

Total of seven intestinal parasites were identified. From the identified species *G.lambilia* was the mast common 132(52.9%) followed by *E.histolytica* 42(20.2%), *A.lambricoids* 16(7.7%), hook worm 12 (5.8%), Tina species 10(4.8%), *T.trichuria* 10(4.8%) and *S.mansoni* 8(3.8%).

No.	Type of parasite	Frequency of parasite	
		No	%
1	*G. Lambilia*	110	52.90%
2	*E. Histolytica*	42	20.20%
3	*A.Lambricoids*	16	7.70%
4	*Hook worm*	12	5.80%
5	*Tinea species*	10	4.80%
6	*T. Trichuria*	10	4.80%
7	*S. Mansoni*	8	3.80%
Total		208	100%

Table 9: Frequency of intestinal parasite species among patients positive for ova or parasites at Ambo General hospital, Ambo town, Ethiopia, August 22, 2021- August 31, 2021.

Discussion

In the cross sectional study out of the sample population of 244, 154(63.1%) were positive for intestinal parasitic infection while 90(36.9%) were negative for any parasites. Intestinal parasite infection prevalence in the study area was higher when compared with the global prevalence, in which 2 billion people affected and 450 million are ill due to the intestinal parasites [6,7]. The study done in Jimma health center shows prevalence of intestinal parasitic infection was 20.6% which was lower when compared with the study area (29). Also the study conducted in Sudan among Children in Al-kalakla, Khartoum and study done in Sanja Primary Hospital among patients attending at the hospital show lower prevalence of intestinal parasitic infection 30% and 52.9% respectively when compared with the study area [25-28]. This difference on the prevalence of parasitic infection due to: Geographical area which affects the distribution of intestinal parasites. The period at which the study done i.e. seasonal prevalence of parasites. Different socio economic status of peoples on different area of the world. The study population for example children are more affected groups and this may increase the figure if children are taken as the study population. The laboratory methods used.

The most common parasite seen in the study area is *G.lambilia* trophozites 110(52.9%). This prevalence is higher when compared with other studies such as study done in jimma health center 20.6% and in Sanja Primary Hospital 52.9% [28,29]. The prevalence of *G.lamblia* in the area was higher when compared with the study done by kathery H in Sudan which is 12.5% [25]. As well as the prevalence of *G.lamblia* in the area was higher when compared with the study done in Ethiopia among primary school children done by Assemie MA,. which is 9.98 % [26].

This difference could be due to:-the study period may increase the prevalence of parasitic infections which was during the rain period. The above researches were done years back and lack of health information on study area may increase the figures. The prevalence of E. histolytic trophozoites is the second most common 20.2%. The prevalence is lower when compared with other studies such as study done in sanja primary hospital 21.5% [28-32]. This lower prevalence is due to: Route of acquiring the infection is feco-oral and there is improved hygienic way on feeding. The prevalence of *A. lambricoids* in the study area is 7.7% which makes it the third most prevalent intestinal parasite. When compared with other studies done in other part of the world, it is lower in Ethiopian such as the study done by Bismarck NN in a population of school aged children in Cameron shows 8.8% [24]. The study done by Belete YA, Kassa TY, on patients of Jimma health center requested for stool examination in Jimma town was 5.7% which showed lower prevalence than the study area [16]. The highest prevalence of *A.lanbricoids* in the study area compared with the study done on jimma town is due to low socio economic status and poor sanitation in the study area.

Hook worm is the fourth most prevalent intestinal parasite accounting 5.8%. The study conducted in Thailands, Sanja primary hospital among patients attending the hospital and Ethiopia among primary school children showed highest prevalent of hook warm when compared with this study area 10.7%, 13.3% and 12.51% respectively [22,26,28]. Not practicing shoes wearing in the sanja population and primary school children in Ethiopia may be the cause for the highest prevalence of the worm and also they may not dispose waste properly [28]. The prevalence of hookworm in this area was slightly higher when compared with the study done in hawassa university clinic 5.4% [27]. This is because obviously, the urban population practice shoe wearing and they also properly manage waste disposal when compared with the rural population. *Teania saginata* was found in the population which is 4.8% prevalent. Teania species was not detected in all other studies. This indicates that, the population are eating raw meat and they were not aware towards the possibility of being infected from eating raw meat.

There is significant association between educational status and intestinal parasitic infection which is similar with the study done in assam India by Rebecca T. to assess the prevalence and risk factors for soil transmitted helminthes and identified level of education as the risk factors [27]. This may be due to:-Illiterate people have no knowledge on ways of transmission of parasites and how to prevent the transmission. Educated peoples have improved socio economic status and they have knowledge about environmental sanitation. There is also significant association between intestinal parasitic infection and latrine usage, waste disposal, hand washing habit, eating unwashed fruits and vegetables, undercooked foods, raw meat. Which is comparable with study Ethiopia among primary school childrens [27]. This could be due to:-Low socio economic status. Habit of eating unwashed fruits and vegetables, and undercooked foods. Absence of hand washing before meal, especially in children. Lack of knowledge towards the effect of eating raw meat which is more common in adults and older patients. Practicing of open field as waste disposal.

Generally in the study area the prevalence of *G.lamblia* and *E.histolytica* are higher other intestinal parasitic infection. This due to: - Even though there is no significant association between water source and intestinal parasitic infection, there is a problem on water purification system, materials by which they collect and store water. They were practicing open field on waste disposal system. Some patients have no habit of washing hands before meal and after toilet use in the study area. They use fruit and vegetables for consumption without washing and cooking appropriately.

Conclusion

As it expected in developing countries intestinal parasitic infection is very high and common. There was high prevalence of intestinal parasitic infection in the study in which 63.1% of them were found to be positive for at least single intestinal parasite. Total of seven intestinal parasites were identified. From the identified species *G.lambilia* was the most common 132(52.9%) followed by *E.histolytica* 42 (20.2%), *A.lambricoids* 16(7.7%), Hook worm 12 (5.8%), Tina species 10(4.8%), *T.trichuria* 10(4.8%) and *S.mansoni* 8(3.8%). Age, educational status, source of water, age, waste disposal system, habit of eating unwashed fruit and vegetables and undercooked foods, and habit of hand washing and finger nail status were the risk factors for intestinal parasitic infections. But sex and occupation were not the risk factors for intestinal parasitic infections.

Recommendation

The result found from the health center reflects the prevalence of intestinal parasites in the communities of that

area, since they come from the areas around. Therefore, to solve these problems of the high prevalence and to control determinate factors:- Health education should be given for the community. Literacy campaign. Proper environmental sanitation and personal hygiene. Proper usage of latrine and waste disposal system, Safe water supply and proper usage of water with clean materials. Promotion of health services activities and provision of mass treatment and deworming should be given. This finding from the study could be used as base line data and further investigation should be done to know the problem of intestinal parasitism more in the area by the others.

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