

Community's Knowledge, Attitude and Practices on Hydatidosis and Its Public Health Implication in Asella and Adama Areas Central Ethiopia

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Abstract

The study was conducted from November 2011 to March 2012 in Adama and Asella areas of central Ethiopia using a cross-sectional questionnaire survey and hospital based retrospective study. Knowledge, attitudes and practices of the community on hydatidosis were assessed. A total of 336 individuals composed of 226 householders, 50 butchers, 40 abattoir workers and 20 health professional were interviewed. From the total, 174 (51.8%) of respondents have been heard of dog tapeworm. 165(73.0%) of the householders and 23(46.0%) of the butchers had never heard of human hydatidosis. From the total of 174 respondents who had heard of dog tapeworm, 50(28.7%) believed that dog tapeworm is health risk to them, 17(9.8%) did not and 107(61.5%) did not know whether it is a health risk or not to them. The respondents owned an average 15 livestock and 2 dogs. 321(95.5%) of the participants reported to practice back yard slaughter during the holidays, ceremonies and other feasts from which, 283(88.2%) give offal and condemned organs to dogs or threw it on open field and 38(11.8%) of them bury it. From 253(75.5%) who owned dog (s). 180(71.1%) of them considered their dog (s) as stray or semi-stray dog and also 152(60.1 %) deliberately fed offal to their dog but, only 17(6.7%) reported to treat their dog (s) periodically with anti-helminthes. There is some difference on the knowledge and attitude between each categories but it is not as such significant. Case book analysis between September 2007 and August 2011 showed that, out of the total of 35,697 patients admitted for ultrasound examination, 67 hydatidosis cases were registered, giving prevalence of 0.2%. From the total of 67 patients with hydatidosis, 45 (67.2%) were females and 22(32.8%) were males. The present finding has indicated that hydatidosis is an important zoonotic disease in the study area and appropriate control and preventive measures need to be taken.

Keywords: Adama, Asella, central Ethiopia. Hydatidosis, Medical records, public health risk, Retrospective study.

1. Introduction

Cystic Echinococcosis (CE) is recognized as one of the major helminthes zoonoses affecting humans and various animal species in different parts of the world It is caused by larval stage of the dog tapeworm, *Echinococcus granulosus* (*E.granulosus*) (Moro and Schantz,2006).

The life cycle of the parasite involves dogs and other canids as definitive hosts for the intestinal tapeworm and domestic and wild ungulates as intermediate hosts for the tissue invading metacestode (larval stage) (McManus and Thompson,20003).CE is neglected disease of humans and their animals causing significant socioeconomic and public health impacts. It was estimated to cause a minimum of US \$193,529,740 of human and US \$141,605,195 of livestock associated annual economic Losses in the world (Budke *et al.*, 2006). Cystic Echinococcosis is still endemic in sheepherding areas of the world and is a public health problem in Mediterranean, Middle East, Asia, South America and Africa (Eckert and Deplazes, 2004).

In Ethiopia, the abattoir- based studies conducted in different parts of the country showed that hydatidosis is endemic and prevalent in the country. In Adama and Asella areas, the prevalence of hydatidosis in intermediate animal hosts was found to be high. Prevalence of 50.29% was reported from cattle slaughtered in Asella abattoir (Desie, 1992). Similarly, a respective prevalence of 46.8%, 29.3 and 6.7% was reported in cattle, sheep and goats slaughtered in Adama slaughterhouse (Getaw *et al.*, 2010). Moreover, the predominant zoonotic strain of *E. granulosus* (GI) was also reported in animal intermediate hosts from Asella area (Maillard *et al.*,2007)

Few studies conducted in Ethiopia on human CE showed that hydatidosis is a neglected, but common public health problem especially in rural areas of the country. Study performed at Tikur Anbesa Hospital in Addis Ababa indicated that, 234 patients were surgically treated for hydatidosis in 1 years (Minas *et al.*, 2007). A retrospective study performed in Bahir Dar showed that the mean annual incidence rate of CE to be 2.3 cases per 100,000 patients admitted for ultrasound examination. In humans, ultrasound and radiography (x-ray) are commonly used for the diagnosis of cystic echinococcus in Ethiopia (Kebede *et al.*,2010) Presence of large number of dogs infected with *E.granulosus*, feeding behavior of the final and intermediate hosts, legislation on animal movement and trade, farming practices such as increase of smallholder livestock producers and close associations of dogs and other animals on land are some of the major risk factors for emergency and persistence

of *E.granulosus* in a given area (Eckert and Deplazes, 2004).

Information on the knowledge, attitudes and practices (KAP) of the community, occurrence of the disease and the prevailing risk factors in an area is important to developed and impalement disease prevention and control strategies. In Ethiopia, the situation of CE in humans is not well explored. In the absence of sound epidemiological data, Hospital records may provide the best estimate of the occurrence of the disease. Knowledge; attitude and practices of the different segments of the community play a significant role for the maintenance of the life cycle and transmission of the parasite to the different areas of its hosts. A continued transmission of *E.-granulosus* in endemic area is mostly a consequence of poor human knowledge on the Life cycle and biology of the parasite, human behaviour relation to the final and intermediate hosts of the parasite and incorrect practice of the community in the management of the risk factors (Nasieh *et al.*,2003). Though hydatidosis was found to be prevalent in Asella and Adarna areas in different species of intermediate animal hosts and also the predominant zoonotic strain was reported from the area, there is no study performed on assessment KAP of the community towards hydatidosis and occurrence of human hydatidosis. Therefore, this study was performed in Asella, Adamna areas to: Assess knowledge, attitudes and practices of the community in stidy areas on zoonotic importance of hydatidosis and associated risk factors and estimate the occurrence of human hydatidosis in patients admitted for ultrasound examination in Asella and Adama Hospitals.

2. Materials and Methods

2.1. Description of the study area

Asella town is the capital city of Arsi zone, in Oromia regional state located at 175 km to the south east of Addis Ababa. Asella town is geographically located at an elevation of 1650-3000 m.a.s.l. The area has highland escarpment, midland and lowland climatic zones. About 37% of the total area is highland (>2400m), 52% midland (1800-2400m) and 11% is lowland (<1800m) (CPA, 1994) with in 6⁰59' and 8⁰49' latitude and 40⁰44' east longitude while the climatic condition of the area is "weynadega". The area receives an annual range of rain fall from 700-1658 mm and annual average humidity ranging from 43-60%. The area has a bimodal rainfall occurring from March to April (a short rainy season) and from July to October (long rainy season). The annual temperature range is 10-22.6⁰c. Asella town has a total area of 300.21sq.km.

Of this, about 208.43sq.km (69.4%) of the total area is agricultural land, 40.61sq.km (13.5%) pastoral land, 6.74sq.km (2.3%) forest, 39.34sq.km (13.5%) land for construction and 5.08sq.km (1.69%) non-fertile land. Livestock estimate of the year 2010/11 given by the agricultural bureau of Asella woreda indicates that the woreda has 50347 bovines, 16964 equines, 19453 ovine, 6884 are located especially in Asella town, and extensive type of production system is the dominant type of husbandry practice.

The total human population of Arsi area is estimated to be 2,327,009(49.95 males and 50.1% females).The 90.24% of the population live in rural area settlement with a population growth rates of 2.23% in rural and 4.1% in urban area (APEDO,2007). Currently Asella town has, one governmental referral hospital, two governmental health centers and two higher clinics, 13 medium private clinics and also 3 midium NGO clinics

Adama town the capital of eastern Shoa zone of Oromia regional state is located at 98km south east of Addis Ababa at 39.1⁰N and 8.3 ⁰E, at an elevation of 1770m above sea level. It receives an annual rainfall ranging from 400 to 800mm. The temperature range is 13.9 to 27.7 °C (NMSA,2006). Adama is one of the most populous townships in the country. Adama town has,4 governmental health center 1 Referral hospital hospital, other 1 clinic (Adama University Clinic),1 NGO clinic (Fransisco) and 61 private clinic and 3 private hospitals.

2.2. Study population

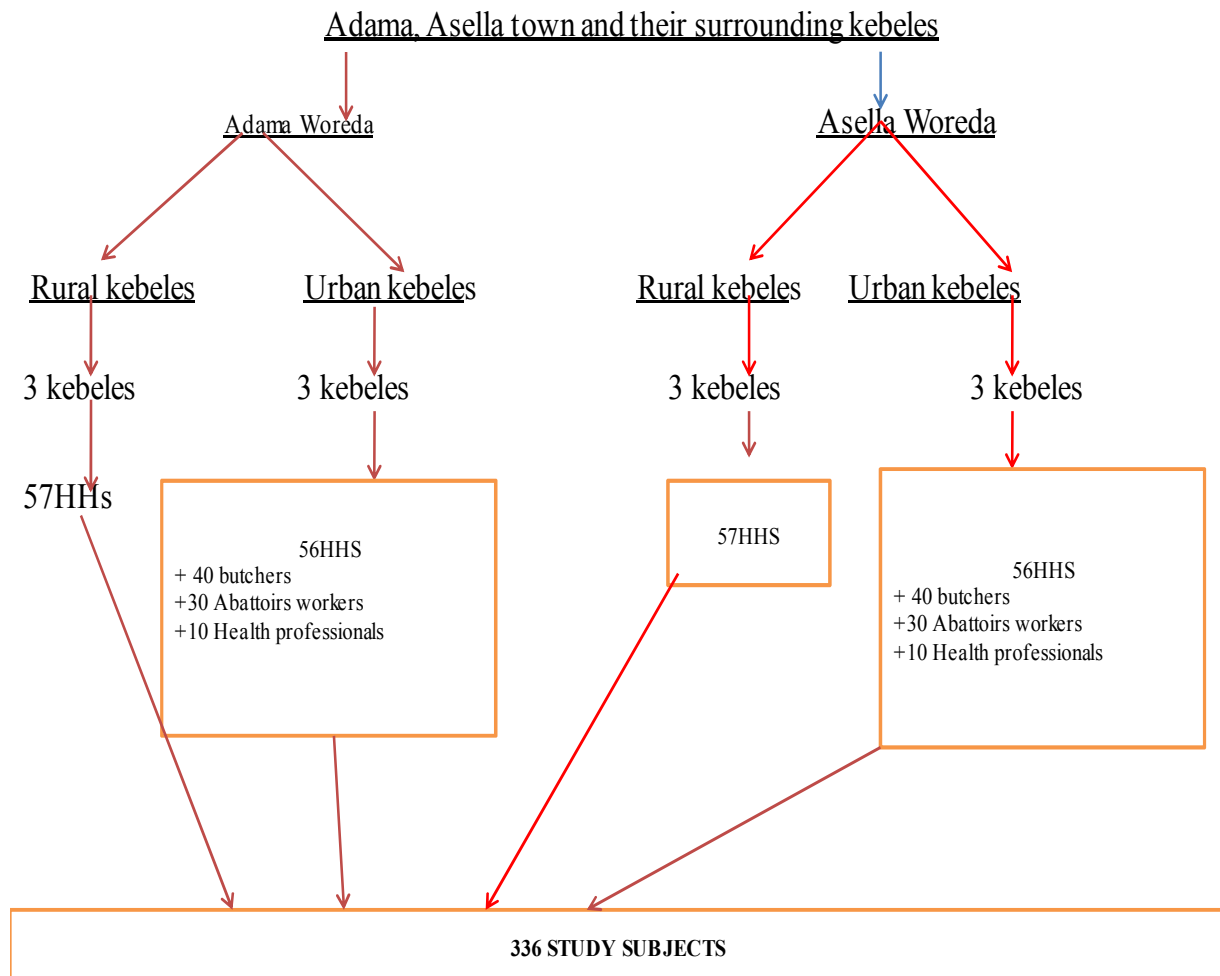
The study population all patients admitted for Ultrasound examination in both hospitals found in the study areas. For questioner survey communities living in the both study areas.

2.3. Study design and sampling technique

Community based cross-sectional and Hospital based retrospective study was conducted in Assela and Adama. Both purposive and simple stratified random samplings were used.

According to a study conducted in Addis Ababa, 8% of households had awareness of hydatidosis (Zelalem,20008). By considered 95% level of significance (Thrusfield, 2005).

$$\frac{n=1.96^2 * pex (1-pex)}{d^2} = \frac{(1.96)^2 * 0.5(1-0.08)}{(0.05)^2}$$
 n=113 for house holders from each areas
for butchers, health professionals and abattoir workers 50 % of the workers were interviewed Kebede *et al.* (2010).



2.4. Data Collection

For interviewing purpose, questioner format was previously developed and tested for this purpose. The questionnaire was prepared in English and then translated into local languages (Afaan Oromoo and Amharic) then, the respondents were asked for their voluntariness to respond the question. Finally, the interviewing process was conducted. For retrospective data collection, legal letter was written from concerned body to Asella and Adama hospitals for permission and then 5years (2007-2011) retrospective data was collected from data kept in ultrasound examination room at the two hospitals. Data was compiled for each patient on the following points; date of Examination, date of secondary data collection, age of the patient at time of diagnosis,sex of the patient, address of the patient, site or organ infected and treatment given.

2.5. Data Analysis

The collected raw data was checked for completeness, clarity and data was entered in to a computer (Microsoft EXCEL 2007), exported and analyzed using SPSS version 16.0 statistical software package. Descriptive statistics was computed using absolute numbers, simple percentages, range and mean as appropriate. The associations and strength of the prevalence or proportions of the different findings with the different risk factors such as age, sex, address and other factors of the study subjects were assessed by using logistic regression with 95%CI and level of precision equal to 5%.

3. Results

Selected knowledge, attitudes and practices of the study participants on hydatidosis and associated risks in Asella, Adama areas, central Ethiopia are summarized in the following two tables (Table 1. and 2). In the current study, 37.2% of the study participants had awareness on hydatidosis (heard of CE). 27.0% of the householders 54.0% of butchers, 60.0% of abattoir workers and 65.0% of health professionals had heard of it.

But except most of health professionals others has no information on means of transmission of CE. So

low awareness. From the total of 174 respondents who had heard of dog tapeworm, 50(28.7%) believed that dog tapeworm is health risk to them while, 17(9.8%) did not believe it while, the remaining 107(61.5%) do not know whether it is a health risk or not to them. A total of 326 (97.0%) respondents believed that dogs leaving in close association with human cause health problems, but, only 60 (18.4%) had awareness about dog tapeworm, while the positive attitudes for the remaining 226(81.6%) was related with other factors than hydatidosis. 94(50.8%) householders,36(83.7%) butchers,21(100.0%) abattoir workers and 1(25.0%) health professionals owned dog(s) were reported to deliberately feed offal to their dogs, regardless of the safety status of the offal. Among 223 (98.7) householders,47 (94.0) butchers 38 (95.0) abattoir workers and13 (65.0) health professionals practice back yard slaughter.

Table 1. Respondents' category and their knowledge on hydatidosis and the means of transmission of the parasite to humans in Asella and Adama areas, central Ethiopia, March, 2012.

Variable	Number & percent		Odds ratio (95% CI)
	Yes (%)	No (%)	
Information on the disease			
Heard of human hydatidosis			
Householders	61 (27.0)	165 (73.0)	1
Butcher	27 (54.0)	23 (46.0)	3.18 (1.69-5.96)*
Abattoir worker	24 (60.0)	16 (40.0)	4.06 (2.02-8.15)*
Health professional	13 (65.0)	7 (35.0)	5.02 (1.92-13.18)*
Means of transmission to humans			
Close contact with infected dogs			
House holders	14 (23.0)	47 (77.0)	1
Butchers	0 (0.0)	27 (100.0)	VSN
Abattoir workers	3 (12.5)	21 (87.5)	18.46 (3.65-93.35)
Health professionals	11 (84.6)	2 (15.4)	0.48 (0.12-1.85)
Drinking water contaminated by dog faeces.			
House holders	23 (37.7)	38 (62.3)	1
Butchers	2 (7.4)	25 (92.6)	0.13 (0.03-0.61)*
Abattoir workers	5 (20.8)	19 (79.2)	0.44 (0.14-1.32)
Health professionals	6 (46.2)	7 (53.8)	1.42 (0.42-4.74)
Uncooked fruits & vegetables			
House holders	20 (32.8)	41 (67.2)	1
Butchers	1 (3.7)	26 (96.3)	0.08 (0.01-0.62)*
Abattoir workers	5 (20.8)	19 (79.2)	0.54 (0.18-1.66)
Health professionals	6 (46.2)	7 (53.8)	1.76 (0.52-5.92)
Environments contaminated by dog faeces			
House holders	12 (19.7)	49 (80.3)	1
Butchers	0 (0.0)	27 (100.0)	VSN
Abattoir workers	2 (8.3)	22 (91.7)	VSN
Health professionals	13 (100.0)	0 (0.0)	VSN

VSN=very small number,*there was statistically significant association

Table 2. Respondents' category with their attitudes and practices on hydatidosis and its prevention in Asella and Adama areas, Central Ethiopia, March, 2012.

Perceived behavior & practice	Number & percent		OR(95 % CI)
	Yes (%)	No (%)	
Dog tapeworm is healthy risk to you			
House holders	21 (43.2)	16 (56.8)	1
Butchers	4 (100)	0 (0.0)	VSN
Abattoir workers	11 (91.7)	1 (8.3)	8.38 (0.98-71.80)
Health professionals	14 (100)	0 (0.0)	VSN
Dog tapeworm is preventable			
House holders	26 (92.9)	2 (7.1)	1
Butchers	15 (93.8)	1 (6.2)	1.15 (0.10-13.82)
Abattoir workers	9 (100)	0 (0.0)	VSN
Health professionals	13 (100)	0 (0.0)	VSN
Dogs living in close association with humans don't cause problem			
House holders	9 (4.0)	217 (96.0)	1
Butchers	0 (0.0)	50 (100)	VSN
Abattoir workers	0 (0.0)	40 (100)	VSN
Health professionals	0 (0.0)	19 (100)	VSN
Leaving dead animals on open farm is harmless			
House holders	14 (6.2)	212 (93.8)	1
Butchers	0 (0.0)	50 (100)	VSN
Abattoir workers	2 (5.0)	38 (95.0)	0.80 (0.17-3.65)
Health professionals	1 (5.3)	18 (94.7)	0.84 (0.11-6.77)
Slaughter animals out Abattoir			
House holders	223 (98.7)	3 (1.3)	1
Butchers	47 (94.0)	3 (6.0)	0.21 (0.04-1.08)
Abattoir workers	38 (95.0)	2 (5.0)	0.26 (0.04-1.58)
Health professionals	13 (65.0)	7 (35.0)	0.03 (0.01-0.11)*
Keeping non restricted dog			
House holders	119 (64.3)	66 (35.7)	1
Butchers	2 (4.7)	41 (95.3)	0.03 (0.01-0.12)
Abattoir workers	9 (42.9)	12 (57.1)	0.42 (0.17-1.04)
Health professionals	0 (0.0)	4 (100)	VSN
Deliberated feed offal to their dogs			
House holders	94 (50.8)	91 (49.2)	1
Butchers	36 (83.7)	7 (16.3)	4.98 (2.11-11.76)*
Abattoir workers	21 (100)	0 (0.0)	VSN
Health professionals	1 (25.0)	3 (75.0)	0.32 (0.03-3.16)

VSN=very small number,*there was statistically significant association, OR=odds ratio

Hospital based ultrasound retrospective survey showed that from a total of 35,697(12,096 at Asella and 23,601 at Adama Hospitals) patients admitted for ultrasound examination, about 67(34 from Asella and 33 from Adama Hospitals) human hydatidosis cases were recorded between September,2007 and August,2011.Age and sex groups of human hydatid cases are described in Table 3.From the total of 67 hydatid cysts recorded during the periods,female 45(67.2%)were much more affected than males 22(32.8%), and the highest prevalence was in the age greater or equal to 41.

Table 3. Age and sex distribution of human hydatid cases in Adama and Asella hospitals, between September 2007 and August 2011.

Variable	Total examined	Number	Prevalence (%)	OR	(95 % CI)
Age(years)					
10<	1,891	1	0.05	1	
11-20	5,965	15	0.25	4.77	0.63-36.09
21-30	11,226	9	0.08	1.52	0.19-11.98
31-40	7,101	9	0.13	2.40	0.30-18.94
>40	9,514	33	0.35	6.58	0.90-48.13
Sex					
Female	20,407	45	0.22	1	
Male	15,290	22	0.14	0.65	0.39-1.09
Total	35,697	67	0.19		

Hydatid cyst was encountered most commonly in the liver 62(92.5%) and followed by lung 3(4.5%) and kidney 2(3.0%). And 51(76.1%) of the patients with hydatidosis were from Arsi zone, while 12(17.9%) and 4(6.0%) were from east Shoa and the neighboring areas of Bale zone, respectively. In line with the treatments given for the patients, data was available only for 30 patients among which 17(56.7%) were treated medically by albendazole. Removal of the cysts by surgery was performed for the remaining 13(43.3%).

4. Discussion

This finding is relatively lower for abattoir workers awareness as compared to the earlier reports from other parts of the country. According to the study of Kebede *et al.*, (2010) none of the householders and butchers had awareness, while 100% of the abattoir workers and 75% of health professionals were found to have awareness of dog tapeworm in Bahir Dar town, Northern Ethiopia. Zelalem, (2008) reported 8.0%, 100% and 16.0% awareness levels of householders, abattoir workers and butchers, respectively on hydatidosis in Addis Ababa. These indicated that the awareness level of the different categories of the community in different parts of Ethiopia except for health professionals and abattoir workers is low. Although most of the slaughterhouse workers had heard about the dog tapeworm, they were also found to have limited knowledge of the diseases sources and means of transmission like those of the householders and butchers.

From those participants who had heard of hydatidosis, only 0.0 to 100.0%, 7.4 to 46.2%, 3.7 to 46.2 and 0.0 to 84.6% of the different categories of the study subjects were able to mention contaminated environment, water, fruits and vegetables and close contacts with infected dogs as the different ways of transmission of the parasite to humans, respectively. (Table 3). These findings are almost similar with the study of Qaqish *et al.*, (2003) only 1.8 to 7% of different components of interviewees in Jordan were able to mention contact with dogs as a source for humans to contract Cystic echinococcosis. As reported by Nasieh *et al.*, (2003), 11.8% householders and 7.1% of slaughterhouse workers in Jordan were able to mention dogs as a source of human infection and the knowledge of the respondents on the infection and transmission of the parasite was reported to be very poor. All these show that the knowledge level of the community in different parts of the world including those of Asella and Adama areas are low.

The practice of most of the study participants were found to be incorrect and were found to be those practices reported to favor the frequent transmission of the parasite 182 (54.2%) of the interviewed individuals raised at least one species of livestock intermediate hosts from which 110 (60.4%) and 34 (18.4%) of them practice extensive and semi intensive management system respectively in Tibete where cystic echinococcosis was reported to be endemic, human rate of infection the parasite was positively related to the number of sheep owned per family Bai *et al.*, (2002) Animal husbandry practice was also reported as one of the factor influencing the prevalence of hydatidosis in humans and their animals in Iraq Saeed *et al.*, (2000)

According to the result of the current study 253 (75.3%) of the participants owned dog (s) from which 180 (71.1%) kept dogs that were free roaming in the vicinity including slaughter areas during the day time and sleep in the compound home during night. 329 (97.9%) of the study participants had reported stray semi stray dog (s) in their working and living areas in west Bank of Palestine, 60.4% of the interviewed individuals raised domestic animals and stray dogs were reported in the area by 75.1% while 29.5% of the families had one or more dogs in the same study the presence of such many stray dogs in the vicinity of the residential working areas

was suggested to contribute to the high sero prevalence and surgical incidence rate of human hydatidosis in the area (Abu-Hassen *et al.*, (2001) Further more the presence of large number of none restricted dogs in living areas and frequent slaughter of animals out of slaughter house was found to be some of the main risk factor for the high prevalence of cystic chnocoocosis in Rio Negro province of central Argentina Larrieu *et al.*, (2002).

152 (60.1%) of the respondents 94 (50.8%) householders, 36 (83.7%) butchers, 21 (100.0%) abattoir workers and 1 (25.0%) health professionals owned dog(s) were reported to deliberately fed offal to their dogs, regardless of the safety status of the offal. According to the study conditioned by Cannona *et al.*, (1998) in florida, Urugay, the type of feed fed to dogs was found to significantly increase the prevalence of cystic echinococcosis in humans. Higher prevalence of cystic echinococcosis was obtained in those communities who fed their dogs raw viscera and in those fed who disposed offal improperly compared to those who did not fed dogs with unsafe offal and who fed offal to pigs and /or cooked offal.

In this study, among the total respondents who owned dogs, only 17 (6.7%) of them were reported to treat their dogs by anthelmintics drugs periodically. But, the frequency of treatment for the majority of them were not as recommended by several authors especially as the majority of them were feeding unsafe offal to their dogs and keep many freely roaming dogs (Table3). For control programmes, treatment interval of infected dogs in endemic areas was suggested to be shortened from 6 weeks interval Moro and Schantz, (2009); Eckert *et al.*, (2001). Moreover, in order to eliminate the infection risk to humans leaving in close association with infected dog, either euthanasia of such dog or chemotherapy (double dose at 1-7 days interval) under strict safety precaution is recommended Eckert *et al.*, (2001)

The majority of the community in the study area practiced back yard slaughter of different species of animals for different reasons including for businesses and slaughterhouses in Asella and Adama town are accessible to dogs, specially Asella slaughterhouse. 321 (95.5%) of study participants whose slaughtered animals out of slaughterhouse were reported to wrongly manage offal, condemned organs and slaughter wastes that they either gave to dogs or threw in open fields. Similarly, 169 (50.3%) of the interviewed livestock owners reported leaving the carcasses of dying animals on open field for dogs, hyena and other vultures. However, the remaining, 17 (5.1%) ,of the respondents burn, and 150 (44.6%) of the respondents claimed to dispose body of died animals in holes, the holes in which they used were not completely out of reach of dogs and other carnivores that are responsible for the maintenance and transmission of *E.granulosus*. These proportions of improper disposal body of died animals and offal is comparable to the case of waste Bank of Palestine, where died animals and condemned offal were thrown in open field by 80.3% of the study participants and where human cystic echinococcosis was found to be endemic Abu-Hassen *et al.*, (2001) In Iraq, the prevalence of human and animal hydatidosis was found to be influenced by hygienic standards of the community, sub optimal slaughterhouse managements and increased practices of an authorized home-slaughtering of livestock. On the other hand, proper control of condemned offal was found to significantly reduce echinococcosis in dogs and intermediate animal hosts in the same country Saeed *et al.*, (2000). Moreover, improperly managed abattoirs and frequent slaughtering of animals out of slaughterhouse were addressed to be the leering reasons for the high prevalence of the *E.granulosus* in dogs in Iran Maleky and Moradkhan, (2000). The high prevalence of *E.granulosus* in dogs results in to the high level of environmental contamination by eggs of dog tapeworm that in turn is reflected by high prevalence of hydatidosis in intermediate animal hosts. This shows the existence of serious threat of human infection particularly to children who play in open places and those who work in open farms and areas Maleky and Moradkhan, (2000).

In endemic area, transfer of eggs through contaminated water and uncooked food and transfer of the infective eggs by flies and arthropods are also suggested to result in infection of humans Moro and Schantz, (2009). According to the study of Fekadu, (1994), the prevalence of bovine and Ovine hydatidosis slaughtered at Asella slaughterhouse were found to be 72.4% & 53.5% respectively and that of Adama slaughterhouse were 46.8% cattle, 29.3% sheep, and 6.7% goats was reported Getaw *et al.*, (2010). Domestic livestock facility as the most sensitive indicators of the environmental contamination with viable eggs of *E.granulosus* and this also shows the existence risk of the parasite to human health Alkarmi Dar, (1997).

The result of the current finding showed that, out of the total of 35,697 patients admitted for ultrasound examination, 67 hydatidosis cases were registered, giving prevalence of 0.2%. This finding is supported by a study conducted by Getahun, (1987) in Arba Minch, Gidole and Yergalem hospitals of Southern Ethiopia, 90 cases of human hydatidosis were reported in 6 years' time. Some 7 years later, Lobago, (1994) reported 20 cases of human hydatidosis in 1 year from Arbaminch hospital. Moreover, 28 cases of human hydatidosis were reported from 8 years data from Asella Hospitals, respectively Olika, (1997) and from Tikur Anbessa hospital 26 cases of human hydatidosis were found in 1 year period Markos, (2010). Human hydatidosis was also reported from Zonal hospital in Tigray National Regional Administration of Northern Ethiopia Kebede *et al.*, (2009c). In the study conducted by Ultrasound imaging in Eastern Africa countries, the prevalence of hydatidosis was found to be 1.8% in Borena areas of Oromiya National Regional Administration Macpherson *et al.*, (1989). George and Fuller, (1981) also reported a prevalence of 4.8% and 6.4% of hydatidosis based on clinical and immunological

tests, respectively in Dassanetch and Nyangatom tribes and found South-west Ethiopia to be a hyper endemic focus of hydatid disease.

The highest prevalence 33(0.13%) cases were in the age group ≥ 41 . This might be due to hydatidosis is asymptomatic also the patients came after the clinical sign have been developed. This finding also correlate with the study reported in Tibetan Western Sichuan province, China, compared with other older groups, the population < 20 years of age had lower infection prevalence (5.4%). In general, prevalence increased with age and reached a peak in the age group of 50 to 60 Litiaoyng *et al.*, 2005). females were much more affected than males, 45 females (67.2%) and 22 males 32.8%). This might be due to females being able to be exposed to the eggs of *E. granulosus* frequently, since they have more contact time with dogs and dogs' houses. This result is similar with the study conducted at Bahir Dar town by Kebede *et al.*, 2010) who found 20 (83.3%) female and 4(16.7%) male.

Form the total of 67 positive patients, only 13 of them were treated with major surgery, (9 in Adama hospital while 4 in Asella hospital) while 17 of them were treated with albendazole (12 of them in Adama and while 5 of them in Asella hospitals) while, for the rest 37 patients, there was no treatment recorded. From all of the 67 positive patients, about 51(76.1%) from Arsi, east Shoa and 4(6.0%) are from Bale zone.

Hydatid disease is generally considered to be a rural disease because of the characteristics of its transmission cycle, which involves domestic herbivores animals (cattle, sheep, pigs, and so on) and dogs. However, it is possible that urban residents may have been in contact with these animals in Ethiopia. This finding indicates the public health importance of hydatidosis in the different parts of Ethiopia including Asella Adama areas. Though this result shows the existence of public health risk of hydatidosis, it represents under estimation of the actual magnitude of the problem in the area. This underestimation of cases might be because of the facts that: the current finding doesn't take in to account those patients who received service from other public and private health services in the region and other parts of the country especially the referral hospital. As stated by George and Fuller, (1981) many cases were found to be referred to the health facilities in Addis Ababa. Currently, hydatidosis is not considered as a disease of public health importance and is not noticeable disease in developing countries in particular and in developed countries in general.

5. Conclusion and Recommendations

Regarding the public awareness, it was found that there was insignificant awareness. The actual practices were found to be those that favor or enhance the persistence of the parasite and the continues transmission of infection among different animal hosts and humans in the locality. Though their attitude seems to be positive, in actual, it was found that it is reverse. There is existence of tremendous risk of hydatidosis to the public health in the study areas. The municipalities are expected to promote construction of abattoir with their appropriate disposal pits, particularly in the rural areas and conduct an obligatory meat inspection services. Public awareness should be created about the situation to make them participate in prevention of continuous cycling of this parasite by giving mass education at school, in the health centers and so on. Multidisciplinary approach via the cooperation of various disciplines involved in human health, veterinary services and municipalities should be also encouraged. The municipalities should formulate policy in collaboration with government on dog keeping and handling activities. Finally, it is highly recommendable to further investigate about the disease by other interested researchers.

6. References

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