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Knowledge, attitude and practice of the community for zoonotic fasciolosis in and around Kemissie, Amhara Ethiopia

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Abstract
A cross-sectional study was conducted from October, 2015to April, 2016 to determine and assess the knowledge, attitude and practices of the public towards its zoonotic importance in and around Kemissie, Ethiopia. In assessment of knowledge, attitude and practice of the study groups 49.3% (N=74) knows that the causative agent of fasciolosis of which 62% (N=31) and 80% (N=8) are human and animal health professionals respectively. Among the respondents 81% (N=122) and 53.3% (N=80) believes that human can acquire the disease from consumption of raw vegetables and raw meat respectively while 24% (N=37) believes that the disease can transmitted to human by bat. Though, most of the respondents recommend patient to attend clinics not few believe that the disease is curable with holly water. In general this study reveals that fasciolosis is one of the important neglectedzoonotic disease in the study area which requires more attention and development of strategies for effective control and prevention.In conclusion, practice of community are mostly favourable for prevention and control activities, despite their mistaken knowledge low level of atitude for fasciolasis among members of the community.

Keywords: Ethiopia, fasciolosis, Kemisse, Zoonoses, KAP

Introduction
The public health importance of human fascioliasis has, however, increased in recent years, as shown by the high number of human cases recorded over the period 1970±90: 2594 infected persons in 42 countries located on all continents (Chen and Mott, 1990) [4].
Fascioliasis is a disease of ruminants caused by two major parasitic trematodes, *Fasciola hepatica* and *F. gigantica*. Over the past two decades human fascioliasis has gained notice as a disease of primary importance. Human fascioliasis is currently classified as a plant/food-borne trematode infection, commonly acquired by eating metacercaria encysted on leaves that are eaten as vegetables. There is a high prevalence of fascioliasis among herding communities in low income countries because of their constant close association with livestock that they keep (Mramba and Abdul, 2015) [8].
A survey to determine knowledge, attitudes and practices about fasciolosis was administered to 62 mothers from a rural endemic zone of Cajamarca's Andean Region, Peru. Of the respondents 56.5% knows that the disease affects the liver in the humans and 85.5% knows affects also animals and 75.6% have domestic animals considered host for the parasite (Rivera *et al*. 2010) [9].
The current trend towards food sufficiency is through the use of irrigation as the means to increase food productions to cope up the rapidly increasing of the country. Thus, one of the problem associated with irrigation is its potential facilitate transmission of water born human and animal diseases. Aquatic and amphibian intermediate host transmit disease such as malaria, fasciolosis and schistosomiasis. In fact the shift from a rain fed to an irrigation agriculture system favors the development and propagation of water born infection to both human and livestock (ESTS, 1997) [5]. Mostly the diseaseis an infection caused by the liver fluke *Fasciola* Spp. have traditionally been considered to be an important veterinary disease. In contrast, human fasciolosis has always been viewed as a secondary disease (Boray *et al*. 1982) [2].

Transmission in humans is linked to their dietary habits since individuals, particularly children, supplement their diet with aquatic plants during daily animal husbandry. The main types of aquatic plants are 'berro berro' (watercress), algae, kjosco and totora. Drinking untreated water may be a source of infection due to the presence of free-floating metacercarial cysts. Vegetables washed in contaminated water may also become a source of infection. The incidence of infection is almost inevitably aggregated within familial groups that share contaminated food anddrink from a common water source. The prevalence of animal and human fasciolosis corresponds to snail distribution (Mas-Coma *et al*. 2005) [7].

There is a high prevalence of fasciolosis among herding communities in low income countries because of their constant close association with livestock that they keep. The prevalence of fasciolosis in humans is usually measured based on data from hospital diagnosis. However, it may be very difficult to clinically differentiate fasciolainfection from other hepatic diseases in humans since it is neglected tropical and subtropical disease. Diagnostic techniques, including direct parasitological, indirect immunological and other non-invasive methods, as well as response to antiparasitic treatment may help confirming clinical diagnosis (Marcos *et al*. 2008) [6].

Despite the recent developments in diagnostic and surveillance techniques, some countries are still completely lacking in data on human fasciolosis. This may be because the disease is not endemic but is more likely due to underreporting/diagnosis especially in the resource limited settings. Although suitable environment and interactions for transmission have been established in many potentially endemic areas, reliable diagnostic and surveillance methods to establish presence of human fasciolosis are usually lacking. Animal fasciolosis causes significant disease among sheep and cattle, causing severe physical wasting. Human fasciolosis also causes significant illness and morbidity, mainly among low income, farming communities. To date, no human deaths have been directly associated with fasciolosis. This fact accords the disease a low priority and contributes to its neglect as a significant cause of public health concern (Mramba and Abdul, 2015) [8].

The distribution of fasciolosis is worldwide. *F. hepatica* is distributed in all continents, whereas *F. gigantica* appears restricted to Africa and Asia. Both fasciolids follow a similar two-host life cycle, in which freshwater snails of the family Lymnaeidae act as intermediate or vector hosts and a broad spectrum of mammals, mainly herbivorous large-size species, act as definitive hosts, including humans (Bernardand Darwin, 2007) [1]. However, ecologically the distribution of *F. hapatica* is limited to temperate areas and high lands of tropical and subtropical regions (Soulsby, 1986) [10]. The definitive hosts for *F. hepatica* are most mammals, among which sheep and cattle are the most important once. The geographical distribution of trematodes species is depending on the distribution of suitable species of snails. The genus *Lymnea* in general and *L. Truncatula* in particular are the most common intermediate host for *F. hepatica*. This species of snail was reported to have a worldwide distribution (Urquhart *et al*. 1996) [11].

No continent is free from fasciolosis, and it is likely that where animal cases are reported, human cases also exist. Until recently, human fasciolosis cases occurred occasionally but are now increasingly reported from Europe, the Americas and Oceania (where only *F. hepatica* is transmitted) and from Africa and Asia (where the two species overlap). WHO estimates that at least 2.4 million people are infected in more than 70 countries worldwide, with several million at risk. (WHO, 2012) [12]. the types of control measures depend on the setting (such as epidemiologic, ecologic, and cultural factors). Strict control of the growth and sale of watercress and other edible water plants is important. Individual people can protect themselves by not eating raw watercress and other water plants, especially from endemic grazing areas. As always, travelers to areas with poor sanitation should avoid food and water that might be contaminated (tainted). Vegetables grown in fields that might have been irrigated with polluted water should be thoroughly cooked, as should viscera from potentially infected animals (CDC, 2013) [3].

Therefore, the objectives of this study are:

- To assess the knowledge, attitude and practices of the public in the study area towards zoonotic importance of fasciolosis.
- To see the possible risk factors and their associations.

Materials and Methods

Study area

The study was conducted from October 2015 to April 2016 on purposively selected health centers and veterinary clinics in and around Kemissie town, Oromia zone in Amhara region which is located North east part of Ethiopia 325 km from Addis Ababa. Based on the 2007 national census conducted by the Central Statistical Agency of Ethiopia (CSA), Kemissie has a total population of 457,278 of whom 227,328 are men and 229,950 women. The majorities of the inhabitants are Muslim, with 76.29% reporting that as their religion, while 21.24% of the population practiced Orthodox Christianity. The townhas a latitude and longitude of 10°43′N 39°52′E, 10.717°N 39.867°E with an elevation of 1424 meters above sea level and annual temperature range from 18-25c^0. About 78% of the land falls within the lowland zone. Crop cultivation and livestock grazing are the major land use activities. Other land uses include forest and bush land. Mixed farming is the main livelihood activity, with sorghum as the dominant crop. Vegetables, fruits, maize, nug, bean, groundnut, chat and sesame are emerging as important cash crops. Livestock production equally is important in the district, accounting for as much as 50% of household incomes. The major livestock owned include cattle, goats and sheep (Kemissie zone agricultural office).

Study population

The study was conduct on those people who have a habit of eating raw vegetables and meat mainly liver and practicing irrigation system in the cummunity.

Questionnaire survey

Structured questionnaire were designed and administered toknow people's habit and practices on feeding, drinking, livestock husbandry practices and fasciolosis control practices.The study population includes students (grade 9th-12th), teachers, medical professionals, farmers and veterinarians. The questioner survey were implemented following purposive stratified sampling method in selected private and governmental health centers and also schools.

Data analysis

After collecting, the data was cleaned and checked for its completeness. After complete check-up the data was coded and entered to Microsoft Excel and transport to SPSS version 16.0 statistical packages for windows and analysis made. The

frequency distribution of both dependent and independent variables were worked out by using descriptive statics techniques. Association between independent variables and KAP scores on fasciolosis were calculated using Pearson's Chi square.

Result

Knowledge, Attitude and Practice assessment

A total of 150 respondents were responded to the questioner, which yields a response rate of 100%. More than half 95(63.3%) of the interviewed were males. Regarding age group, 87(58.0%) of the study participants were between 15-35 years old. The majority of the respondents 86(57.3%) were Muslim followed by Orthodox 48(32%). Concerning educational status, 59(39%) of the participants were secondary school. From the total respondents about 70(46.7%) were government employees (Table 1).

Table 1: Socio-demographic information of study participants in Kemissie town (N=150).

Demographic Characteristics	Frequency	percent
Sex		
Male	95	63.3
Female	55	36.7
Age		
15-30years	87	58
31-45 yrs	44	29.3
46-55yrs	18	12
>55yrs	1	0.7
Address		
Urban	82	54.7
Perurban	30	20
Rural	38	25.3
Educational level		
Not educated	6	4
High school	59	39
Certificate	2	1.3
Diploma	49	32.7
1st degree	32	21.3
More than 1st degree	1	0.7
Others	1	0.7
Job		
Farmers	14	9.3
Business	20	13.3
Government employee	70	46.7
Others	46	30.7
Profession		
Human health	50	57.3
Animal health	10	6.7
Teacher	19	12.7
Student	50	33.3
Others	21	14
Religion		
Muslim	86	57.3
Orthodox	48	32
Protestant	16	10.7

Assessments of KAP were performed in 150 residents of Kemissie that includes various professionals and religious groups settled in urban, per urban and rural areas. Among the various groups 49.3% (N=74) knows the causative agent of fasciola. Of which 62% (N=31), 80% (N=8), 26.3% (N=5) and 46% (N=23) are human health professionals, animal health professionals, teachers and students respectively. Statically number of respondents 82% (N=123) knows that fasciolosis can couse a disease in human and 70% (N=105) respondents know that the disease affect liver in animals (Table 2).

Similarly 80.2% (N=69), 87.5% (N=42) and 75% (N=12) for Muslims, orthodox and protestant respectively know that fasciolosis can infest human and 92% (N=138) the disease is treatable. (Table 3).

Most of the respondants 81% (N=122) agree that human can acquire the disease from consumption of raw vegetables and 53.3% (N=80) believes that human can also acqair the disease from consumption of raw meat while not few respondents 24% (N=37) believe that the disease can transmitted by bat. Though, none of health professionals believe that the disease can be transmitted by bat (Table 4 and 5).

Table 2: Knowledge of study population to fasciolosis versus their settlement and profession

Knowledge questions on Fasciolosis	Settlement				Profession					
	Urban	Per urban	Rural	Statistical value	Human Health	Animal Health	Teacher	Student	Other	Statistical value
Heard about fasciolosis:										
Yes	33	11	19	$X^2_{(2)}$ =1.452 p=0.484	31	8	10	8	6	$X^2_{(4)}$ =30.449 p=0.000
No	49	19	19		19	2	9	42	15	
Coues of fasciolosis:										
Parasite	50	9	15	$X^2_{(8)}$ =19.955 p=0.011	31	8	5	23	7	$X^2_{(16)}$ =33.545 p=0.006
Bacteria	5	2	0		4	0	0	2	1	
Virus	2	0	0		1	0	0	1	0	
Worms	3	5	7		0	1	7	5	2	
I don't Know	12	14	16		14	1	7	19	11	
Area affected by fasciola										
wet area	29	6	12	$X^2_{(4)}$ =3.500 p=0.478	21	9	6	6	5	$X^2_{(8)}$ =40.617 p=0.000
Both Wet &Dry	8	4	2		9	0	0	2	3	
I Don't Know	45	20	24		20	1	13	42	13	
Infest animals?										
Yes	56	19	25	$X^2_{(2)}$ =0.261 p=0.878	30	10	14	31	15	$X^2_{(4)}$ =7.125 p=0.129
No	26	11	13		20	0	5	19	6	
Infest humans?										
Yes	74	22	27	$X^2_{(2)}$ =8.388 p=0.015	46	8	12	46	11	$X^2_{(4)}$ =23.854 p=0.000
No	8	8	11		4	2	7	4	10	
Is it treatable?										
yes	76	27	35	$X^2_{(4)}$ =3.478 p=0.481	48	10	17	45	18	$X^2_{(8)}$ =5.451 p=0.708
No	6	3	3		2	0	2	5	3	
Saw sick people										
yes	0	0	0	$X^2_{(2)}$ =2.967 p=0.227	0	0	0	0	0	$X^2_{(4)}$ =2.013 p=0.733
No	82	30	38		50	10	19	50	21	
Animal organ affected										
stomach	3	2	3	$X^2_{(6)}$ =5.733 p=0.454	1	0	0	6	1	$X^2_{(12)}$ =26.565 p=0.009
Liver	59	23	23		45	9	13	24	14	
Intestine	0	0	1		0	0	0	1	0	
No idea	20	5	11		4	1	6	19	6	
Human organ affected?										
stomach	2	1	1	$X^2_{(6)}$ =14.887 p=0.021	1	0	0	3	1	$X^2_{(12)}$ =46.924 p=0.000
Liver	72	22	22		47	8	13	42	6	
Intestine	0	1	1		0	0	0	1	1	
No idea	8	6	13		2	2	6	4	13	

Table 3: Knowledge of study population to fasciolosis versus their Job and religion

Knowledge questions on Fasciolosis	Job					Religion			
	Farmer	Business	Government Employee	Other	Statistical value	Muslim	Orthodox	Protestant	Statistical value
Heard about fasciolosis?									
Yes	5	7	45	6	$X^2_{(3)}$ =30.734 P=0.000	33	24	6	$X^2_{(2)}$ =1.859 p=0. 395
No	9	13	25	40		53	24	10	
What is the cause of fasciolosis?									
Parasite	5	9	39	21	$X^2_{(12)}$ =14.501 P=0.270	41	24	9	$X^2_{(8)}$=4.992 p-value=0.758
Bacteria	0	0	5	2		6	0	1	
Virus	0	0	1	1		1	1	0	
Worms	1	1	10	3		9	4	2	
I dont Know	8	10	15	19		29	19	4	
Area affected by fasciola?									
wet area	3	5	35	4	$X^2_{(6)}$ =30.505 P=0.000	24	18	5	$X^2_{(4)}$=1.543 p-value=0.819
Both Wet & Dry	1	4	7	2		8	4	2	
I don't know	10	11	28	40		54	26	9	
Infest animals?									
Yes	10	9	53	28	$X^2_{(3)}$ =7.642 P=0.054	54	35	11	$X^2_{(2)}$=1.456 p-value=0.483
No	4	11	17	18		32	13	5	
Infest humans?									
Yes	6	18	56	43	$X^2_{(3)}$ =19.696	69	42	12	$X^2_{(2)}$=1.697

No	8	2	14	3	P=0.000	17	6	4	p-value=0.428
Is it treatable?									
yes	13	19	65	41	$X^2_{(6)}$ =2.597	78	46	14	$X^2_{(4)}$=2.187
No	1	1	5	5	P=0.857	8	2	2	p-value=0.701
Saw sick people?									
yes	0	0	0	0	$X^2_{(3)}$ =2.276	0	0	0	$X^2_{(2)}$=.749
No	14	20	70	46	P=0. 517	86	48	16	p-value=0.688
Animal organ affected?									
stomach	2	0	1	5		5	3	0	
Liver	8	17	58	22	$X^2_{(9)}$ =23.121	60	33	12	$X^2_{(6)}$=1.825
Intestine	0	0	0	1	P=0.006	1	0	0	p-value=0.935
No idea	4	3	11	18		20	12	4	
Human organ affected?									
stomach	2	0	1	2		3	1	1	
Liver	3	18	56	39	$X^2_{(9)}$ =37.222	65	38	13	$X^2_{(6)}$=2.516
Intestine	0	1	0	1	P=0.000	2	0	0	p-value=0.867
No idea	9	1	13	4		16	9	9	

Table 4: Attitude of study population to fasciolosis in relation to their locality in Kemissie

Settlement	Response rate to specific question					X^2	p-value
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
A							
Urban	24	34	4	16	4	8.715	0.367
Per urban	12	13	3	2	0		
Rural	15	13	4	6	0		
B							
Urban	1	13	16	48	4	20.553	0.008
Per urban	0	1	12	17	0		
Rural	5	5	11	15	2		
C							
Urban	1	4	5	68	4	10.580	0.227
Per urban	0	1	2	27	0		
Rural	4	2	3	27	2		
D							
Urban	0	12	38	32	0	13.367	0.038
Per urban	0	5	22	3	0		
Rural	1	3	23	11	0		
E							
Urban	17	40	22	2	1	9.713	0.286
Per urban	3	11	14	2	0		
Rural	8	14	16	0	0		
F							
Urban	24	24	17	16	1	12.050	0.149
Per urban	10	3	7	9	1		
Rural	10	10	3	12	3		
G							
Urban	12	44	19	6	1	10.799	0.213
Per urban	3	11	14	2	0		
Rural	7	12	17	2	0		
H							
Urban	51	13	5	10	3	18.181	0.020
Per urban	16	7	3	2	2		
Rural	13	4	4	11	6		

Remark

A= Human Acquire From Drinking Water	D= Animal Acquire From Common Grazing	G= Common Utensils Can Transmit
B= Human Acquire from Raw Meat	E= Directly Human to Human	H= Holly Water Can Cure
C= Human Acquire from Raw Vegetable	F= Bat Can Cause Fasciolosis	

Table 5: Attitude of study population to fasciolosis in relation to their Profession

Profession	Response rate to specific question					X^2	p-value
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
A							
Human health	26	21	1	2	0	70.665	0.000
Animal health	5	4	0	1	0		
Teacher	3	0	6	8	2		
Student	6	29	2	12	1		
Others	11	6	2	1	1		
B							
Human health	1	6	19	24	0	48.040	0.000
Animal health	2	3	2	2	1		
Teacher	0	5	6	5	3		
Student	0	4	7	38	1		
Others	3	1	5	11	1		
C							
Human health	1	1	0	47	1	38.073	0.001
Animal health	1	0	1	7	1		
Teacher	0	2	4	11	2		
Student	0	3	1	44	2		
Others	3	1	4	13	0		
D							
Human health	0	1	26	23	0	37.074	0.000
Animal health	0	6	1	3	0		
Teacher	0	3	9	7	0		
Student	1	6	34	9	0		
Others	0	4	13	4	0		
E							
Human health	9	30	10	1	0	66.748	0.000
Animal health	9	1	0	0	0		
Teacher	6	7	6	0	0		
Student	3	24	20	2	1		
Others	1	3	16	1	0		
F							
Human health	30	17	3	0	0	88.025	0.000
Animal health	7	2	1	0	0		
Teacher	1	7	3	7	1		
Student	4	11	14	20	1		
Others	2	0	6	10	3		
G							
Human health	8	34	6	2	0	46.038	0.000
Animal health	4	4	1	1	0		
Teacher	3	10	6	0	0		
Student	6	16	21	6	1		
Others	1	3	16	1	0		
H							
Human health	41	9	0	0	0	83.801	0.000
Animal health	6	0	0	1	3		
Teacher	2	2	3	7	5		
Student	30	5	4	10	1		
Others	1	8	5	5	2		

Remark

A= Human Acquire From Drinking Water	D= Animal Acquire From Common Grazing	G= Common Utensils Can Transmit
B= Human Acquire from Raw Meat	E= Directly Human to Human	H= Holly Water Can Cure
C= Human Acquire from Raw Vegetable	F= Bat Can Cause Fasciolosis	

Among the various religious groups 83.7% (N=72) Muslims, 75% (N=36) Orthodox and 87.5% (N=14) protestant believes that human acquire fasciolosis from consumption of raw vegetables though 24.4% (N=21) Muslims, 28.3% (N=13) Orthodox and 18.8% (N=3) protestants believed the disease can be transmitted by bat. Likewise, even though 69.33% (N=104) did not believe that holly water can cure fasciolosis not few 22.7% (N=34) believed that holly water can cured fasciolosis (Table 6).

Table 6: Attitude of study population to fasciolosis in relation to their Religion

Religion	Response rate to specific question					X^2	P-value
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
A							
Muslim	27	34	7	16	2	8.087	0.425
Orthodox	18	16	4	8	2		
Protestant	6	10	0	0	0		
B							
Muslim	1	11	27	46	1	21.773	0.005
Orthodox	5	8	7	23	5		
Protestant	0	0	5	11	0		
C							
Muslim	1	3	7	72	3	8.358	0.399
Orthodox	4	3	2	36	3		
Protestant	0	1	1	14	0		
D							
Muslim	1	12	49	24	0	4.910	0.555
Orthodox	0	8	23	17	0		
Protestant	0	0	11	5	0		
E							
Muslim	12	34	35	4	1	10.701	0.219
Orthodox	13	21	14	0	0		
Protestant	3	10	3	0	0		
F							
Muslim	29	21	13	21	2	5.094	0.748
Orthodox	11	11	10	13	3		
Protestant	4	5	4	3	0		
G							
Muslim	9	39	30	7	1	9.432	0.307
Orthodox	8	19	18	3	0		
Protestant	5	9	2	0	1		
H							
Muslim	56	13	7	8	2	46.299	0.000
Orthodox	9	10	5	15	9		
Protestant	15	1	0	0	0		

Remark

A= Human Acquire From Drinking Water	D= Animal Acquire From Common Grazing	G= Common Utensils Can Transmit
B= Human Acquire from Raw Meat	E= Directly Human to Human	H= Holly Water Can Cure
C= Human Acquire from Raw Vegetable	F= Bat Can Cause Fasciolosis	

Among three religious groups 95% (N=82) Muslims, 91.6% (N=44) Orthodox and 100% (N=16) Protestant recommended to modern hospitals if they encounter person sick with fasciolosis. Similarly among Muslims 46.51% (N=40) of them were going to traditional healer if they think infested by fasciolosis. Among 14 farmers 57.14% (N=8) of them were preventingtheir animals from fasciolosis by purchasing anthelmentics from merchants (Table 7).

Table 7: Practice of study population to fasciolosis versus their job and religion

Practical question on fasciolosis	Job				Statistical value	Religion			Statistical value
	Farmer	Business	Government employer	Others		Muslim	Orthodox	Protestant	
Where do you recommend peoples sick with fasciolosis?									
• To modern health center	13	20	66	43	X2(6)=6.638 p-value=0.356	82	44	16	X2 (4)=5.082 p-value=0.279
• Traditional healer	0	0	0	2		2	0	0	
• No idea	14	20	70	46		2	4	0	
Have you used to eat raw vegetables?									
• Yes	13	20	65	46	$X^2(3)=4.911$ p-value=0.178	83	45	16	$X^2(2)=1.358$ p-value=0.507
• No	1	0	5	0		3	3	0	
What people commonly do if they think infested with fasciola?									
• Immediately go to hospital	3	8	36	25	$X^2(9)=15.144$ p-value=0.088	40	23	9	$X^2(6)=8.117$ p-value=0.230
• Go to traditional healer	8	8	24	21		40	16	5	

• Do nothing	0	1	1	0		0	2	0	
• No idea	3	3	9	0		6	7	2	
What People do for prevention of fasciolosis?									
• Drain wet area	4	8	21	5		22	11	5	X^2 (8)=6.549 p-value=.586
• Treat watering spot with chemicals	0	0	4	0	$X^2_{(12)}$=24.147	3	1	0	
• Provide anthihelmentics from merchants	8	5	15	14	p-value=0.019	27	14	1	
• Take animals to vet. clinics	1	7	23	23		27	18	9	
• No idea	1	0	7	4		7	4	1	

In relation to their settlement of the study population, among 38 rural people's 52.63% (N=20) were more prone to going to traditional healers followed by per urban 46.7% (N=14) if they think infested with fasciolosis. All human health and animal health professionals were recommended to modern health center if they see sick people with fasciolosis followed by students 94% (N=47). For prevention of fasciolosis not few members of religious groups said providing anthihelmentics by purchasing from merchants 28% (N=42) (Table 8).

Table 8: practice of study population to fasciolosis versus their Address and professionals

Practical question on fasciolosis	Settlements			Statistical value	Professionals					Statistical value
	urban	Per urban	Rural		Human health	Animal health	Teacher	Student	others	
Where do you recommend sick with fasciolosis?										
To modern health center	76	29	37	$X^2_{(4)}$=2.104	50	10	16	47	19	$X^2_{(2)}$=15.545
Traditional healer	2	0	0	p-value=0.717	0	0	0	2	0	p-value=0.49
No idea	4	1	1		0	0	3	1	2	
Have you used to eat raw vegetables?										
Yes	80	29	35	$X^2_{(2)}$=2.056	50	9	15	50	20	$X^2_{(4)}$=19.524
No	2	1	3	p-value=0.358	0	1	4	0	1	p-value=0.001
What people commonly do if they think infested with fascioa?										
Immediately go to hospital	50	11	11		21	5	12	25	9	
Go to traditional healer	27	14	20	$X^2_{(6)}$=15.011	21	4	3	25	8	$X^2_{(12)}$=23.310
Do nothing	1	0	1	p-value=0.20	1	1	0	0	0	p-value= 0.025
No idea	4	5	6		7	0	4	0	4	
What people do for prevention?										
Drain wet area	24	6	8		17	7	2	7	5	
Treat watering spot with chemicals	1	0	3	$X^2_{(8)}$=26.192	0	0	3	0	1	
Provide Anthihelmentics from merchants	13	12	17	p-value=0.001	10	2	4	16	10	$X^2_{(16)}$=57.021
Take animals to vet. clinics	38	11	5		23	1	5	23	2	p-value=0.000
No idea	6	1	5		0	0	5	4	3	

Discussions

Some member of the community have incorrect knowledge about the fact that liver fluke infection is associated with cholangiocarcinoma and different forms of hepatitis in humans. Those with misbelieve should be considered as the important target group that needs to promote their knowledge on transmission of liver fluke and related diseases so as to remove the potential barriers in control of liver fluke in the community.

A survey to determine knowledge, attitudes and practices about fasciolosis in, Peru was conducted. Of the respondents, 56.5% knows that the disease affects the liver in the humans and 85.5% knows affects also animals (Rivera *et al*. 2010) [9]. In contrast to this the present study reveals that from the total respondents 70% of them had knowledge in fasciola parasite infest liver of bovine and 77.33% of the respondents had information on the disease affects humans. This is may be due to they have good knowledge to the disease fasciolosis which infests liver of humans more affected than animals and most of the respondents were educated who an exposure to the information whereas in Peru most of the respondents were illiterate mothers. On the other hand there may be overlapping of information to that of various forms of hepatitis disease.

Among various groups of professionals 49.3% (N=74) know the causative agent of fasciola. Of which 62% (N=31) were medical persons and 80% (N=8) were veterinarians the rest were teachers and students. This is due to;fact that from all respondents majorly interviewed persons covers educated one who have some information. 38% (N=19) of medical persons had not information on faciolosis. From those interviewed people nobody has seen person with fasciolosis. This is due to the fact that the disease fasciolosis has low prevalence rate and neglected tropical disease and it also due to methods of diagnosis of the patients which is not related to investigate eggs of fasciola. In other cases it correlated to the ideas that the disease fasciolosis is only concerned to veterinary importance and no visible data are available to all concerned body for its zoonotic importabce.

Among 82 peoples who lived in urban area, 45(54.87%) of them did not know which area is mainly infested with fasciolosis. This may be due to lack of data on this particular disease and not exposed to the area in which the parasite and intermediate hosts are available. From those peoples interviewed, 69.33% (N=104) did not believe in holly water in which the disease fasciolosis be cured. But significant

number of respondents 22.7% (N=34) believe by holly water which used to cure in fasciolosis. This is probably the mind set of them to believeand the habit at which they simply follow traditional things.

In relation to their settlement of the study population, among 38 rural people's 52.63% (N=20) were more prone to going to traditional healers followed by per urban 46.7% (N=14). This is due to reasons of peoples living in remote area have low access to the information which is cured by medical way and have low potential to implement drugs usage habits and also peoples in rural area have worry about they spent for treatment and addicted to the traditional healers.From religious groups 95% (N=82) Muslims, 91.6% (N=44) Orthodox and 100% (N=16) Protestant recommended to modern hospitals if they encounter person sick with fasciolosis. This is due to the fact that when peoples become modernized each and every case has sent to health centers except an evil conduct disease. Similarly at this time, peoples are improving their knowledge, attitude and practice through education.

Conclution and Recommendations

The persons studied have a low to moderate level of liver fluke knowledge and attitude. However, improvement is required regarding food hygiene specifically with hygienic defecation at the field level and consumption of undercooked vegetables. Large amount of cattle population, Poor hygiene and the habit of eating fresh and undercooked irrigated vegetables plants contributes high infection rate in livestock anda reservoir for human infection. There is a gap between those persons living in the rural and urban areas as well as in religion followers for the disease fasciolosis in all perceptions of knowledge, attitude and practice of it. This KAP study showed that more than half of respondents know the causative agent of fasciolosis and had awareness at which fasciola infest liver of both animals and human beings. But there were some negative practices with association of in adequate attitude towards the parasite fasciola.

Based on the above conclusions the following recommendations are forwarded:

- The Amhara Regional Health Bureau should design accurate Community based education program with emphasis on mode of transmission, clinical signs and benefits of control and prevention mechanisms of fasciolosis.
- Different workshops should be prepared to enhance the awareness and attitude regarding nature of the disease for farmers, customers', abattoir workers and medical professionals and its public health importance of the disease in this area.
- The butchers and meat sellers should be trained and should be made aware about meat borne diseases.
- This is the new research which conduct in the area so that further studies should be carried out in zoonotic aspect of fasciolosis.

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