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ASSESSMENT OF COMMUNITY KNOWLEDGE, ATTITUDE AND PRACTICES ABOUT RABIES AND RISK FACTORS: THE CASE IN DAWURO ZONE LOMA DISTRICT, SOUTHERN ETHIOPIA

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Abstract

This study was conducted in Dawuro Zone Loma District, from January, 2017 to September, 2018 to assess the knowledge, attitudes and practices (KAP) on rabies among the community of Loma District. Cross sectional study design and simple random sampling procedures were employed to select kebeles for this study. Localities (Kebeles) were selected using lottery method from list of kebeles in each administrative area, followed by selection of households from each kebeles using systematic random sampling method. The data were collected from 384 households through face to face pretested structured questionnaires. Descriptive statics techniques analyses were used to manage the data. of the 384 respondents interviewed, 359 (93.5%) of them were males and 25 (6.5%) females and 312 (81.3%) were found to be medium aged respondents. The majority of the respondents 201 (52.3%) were Orthodox. Almost all of the respondents indicated that they had previously heard about rabies. From respondents' point of view, there are different sources of information for rabies, but about 56.8% of respondents were getting information from formal sources (media, newspaper). Among clinical signs stated in questionnaire, about 54.9% respondents knew all clinical signs. Generally, these findings indicated that the Loma district community has good knowledge about rabies. But need for educational outreach in Loma District to raise accurate knowledge on mode of transmission, symptoms and appropriate prevention and treatment measures.

Keys words: rabies, questionnaire, layssavirus, District, community

INTRODUCTION

The dictionary tells us that rabies is derived from the Latin *rabere*, "to rage or to rave", as is the corresponding adjective rabid; *rabere* possibly may have earlier origin in the *Sanskrit rabhas*, for "violence" (Oyda and Megersa, 2017; Drew, 2004). Rabies is encephalitis, almost inevitably fatal zoonotic disease. Etiologic agent of this disease is the rabies virus belonging to the genus *Lyssavirus* and family Rhabdoviridae (WHO, 2005). Humans and nearly all mammals are susceptible. Rabies virus infection most commonly occurs in all warm blooded animals/wild and domestic/ when a rabid animal bites an animal or a person (Rupprechet*et al*., 2006; Guadu*et al.,* 2014). Rabies is a viral zoonosis, and human infection usually occurs following a transdermal bite or scratch by an infected animal (WHO, 1992). Globally, human mortality from endemic canine rabies was estimated to be 55,000 deaths per year and 56% of the estimated deaths occur in Asia and 44% in Africa (WHO, 2007). About 98% of the human rabies cases occur in developing countries that possess large number of dogs, many of which are stray (WHO, 2004; Ali *et al.,* 2013).

Lyssavirus is a causative agent that the members of order are ribonucleic acid (RNA) virus that contains non – segmented, negative and singled stranded genomes (Radostits*et al*., 2007). It is an acute encephalitis illness caused by rabies virus and virus is the prototype species of the genus *Lyssavirus* in the family of *Rhabdoviridae*. The virus affects virtually all mammals and infected species invariably die from the disease once clinical signs are manifested (WHO, 1989; Drew, 2004) and is a fatal viral zoonosis disease which causes encephalitis in all warm-blooded animals and humans (Oyda and Megersa, 2017; Krauss *et al.,* 2003).

Rabies virus is usually transmitted from animal to animal through bites (Windsor, 2004, Shite *et al.,* 2015). A rabies exposure is any bite, scratch, or other situation in which saliva, cerebral spinal fluid, tears, or nervous tissue from a suspect or known rabid animal or person enters an open wound, is transplanted into, or comes in contact with mucous membranes of another animal or person. The common mode of transmission of rabies in man is by bite of a rabid animal or the contamination of scratch wounds by virus infected saliva (Chernet and Nejash, 2016).

The initial clinical signs are often nonspecific and may include fearfulness, restlessness, anorexia or an increased

appetite, vomiting, diarrhea, a slight fever, dilation of the pupils, hyper reactivity to stimuli and excessive salivation. The first sign of post vaccinal rabies is usually lameness in the vaccinated leg (Chernetand Nejash, 2016).Therefore, the objectives of the study were to assess community knowledge, attitude and practice of rabies, associated factors and community practice on rabies in Loma district.

MATERIALS AND METHODS

Description of Study Area

Loma district is one of five districts in Dawuro zone. It is the area which is far away from Hawassa (center of the region) in 325km and from the Tarcha 33 Km, the capital city of Dawuro zone and also 539km from the capital city of the Ethiopia (Addis Ababa in South Western Parts). The district has now day, 36 rural kebeles and 4 municipalities. The total land area of the district is about 125051 hectares and total population of human beings in the district(2016) is 137,341, of them, about 70,147 females and the remains 67,194 males. Altitudes (elevation) of the district ranges between 700 – 2600 meter above sea level (masl) and mean annual rain fall is about 900 – 1500 mm and temperature of the area also ranges from 12 – 28°C (on average 20 °C). The total population of livestock in the district is 174,479 cattle, sheep 48,429, goats 7924, equine 7724 and poultry 136,452. The district is defined in agro ecological (climatic) characteristic as *Dega* (highland, 12%) 15006.12 hectare, *WoinaDega* (midland, 28%) 35014.28 hectare and *Kola* (Lowland, 60%) 75030.60 hectare from total land area cover (LWFEO, LWLFDO and LWFNRDO profile, 2016).

Study Design

Community based cross-sectional quantitative study design was used to assess the knowledge, attitudes and practices (KAP) on rabies and associated factors among the community of Loma district. Questionnaires, with closed and open questions were translated into the local languages (Dawuroigna) and back translated into English for consistency checks. The questionnaire was attempted to capture information on dog population structure and husbandry as well as Knowledge Attitude Practice (KAP) of the interviewees regarding rabies.

Study population

Community of Loma district rural kebele living in four randomly selected administrative kebeles (Gessa Chare, Tulema Tama, Ela Batcho and BeroYamala) wastaken as study population. Four kebeles

from total 36 rural (Gessa Chare, Tulema Tama, Ela Bacho and BeroYamala kebeles) (with high dog population and road accessibilities) were randomly selected using lottery method from list of kebeles in district. The target populations were household heads or their spouses who is living in the area as permanent residents for more than six months.

Sample Size Determination

The required sample size for this study was estimated by considering 50% of population knowing about rabies since there is no awareness study on rabies in the area before. Thus, the sample size was calculated according to Thrusfield, (2005) using 95% confidence interval and 0.05 absolute precision. This is calculated by using the following formula:

$$N = \frac{1.96^2 \; x \; p \; (1-pexp)}{d^2}$$

Where,

- n = required sample size.
- P = Expected proportion of population knowing about expected rabies are 50%.
- d^2 = Desired absolute precision (0.05)

As a result, 384 study populations will be selected. The number of households to be included in district was determined by proportional allocation based on the total number of households found in each kebele. The data was collected via interview. The questionnaire was first developed in English and then translated in to local language (Dawuroigna) for appropriateness and easiness in approaching the study participants.

Data Collection

Data was collected using pre-tested interviewer administered structured questionnaire. The questionnaire was developed based on the information gathered from literatures and on what the community is practicing.

Data Management and Analysis

After collecting, the data was cleaned and checked for its completeness. Those incomplete and inconsistent was corrected when possible and removed otherwise. After complete check-up the data was entered to STATA version 12 and Microsoft Excel for analysis. Descriptive analytic methods were used to analyze the data collected from respondents from selected kebeles. Using tabular (percentage) and graphic presentation method was the ways of analysis presentation. **RESULTS**

Socio-Demographic Characteristics

Table 1**:** Demographic characteristics

Socio – demographic information of the study participants (in selected four kebeles: Tulema Tama, Bero, Gessa and Ella, N = 384) in Loma district, 2018

Demographic characteristic		Frequency	Percent
Sex			
	Male	359	93.5
	Female	25	6.5
Age (in years)			
	Youth	40	10.4
	Medium	312	81.3
	Aged	32	8.3
House holds			
	1 – 5	326	84.9
	6 – 10	47	12.2
	Above 10	11	2.9
Education status			
	Illiterate	263	68.5
	Primary	100	26
	Secondary	13	3.4
	Certificate	2	0.5
	Diploma	6	1.6
	Degree	0	0
Occupation			
	Student	17	4.4
	Farmers	339	88.3
	Merchant	25	6.5
	Public worker	3	0.8
Religion			
	Orthodox	201	52.3
	Protestant	155	40.4
	Catholic	26	6.8
	Muslim	0	0
	Others	2	0.5

Respondents have different characteristics. A total of 384 respondents were responded to the questionnaires. More than half 359 (93.50%) of the interviewed were males. Regarding age group, 312 (81.3%) of the study participants were medium aged groups. Concerning educational status, most of study respondents were 263 (68.5%) illiterate (rural person) but least participants' respondents with certificates 2 (0.5%). Among total participants, about 339 (88.3%) respondents were farmers since they were rural persons but public workers were about 3 (0.8%) and the next respondents next to farmers were (merchants 25 (6.5%). Regarding family size, about 326 (84.9%) participants were from family size of one to five persons. From total respondents', highest number were held by Orthodox religion 201 (52.3%) and there was no Muslim respondent but 0.5% of them were followers of other religion.

Livestock population in study areas

Table 2: Livestock population in study areas

Animal production in species in all selected kebeles (cattle, shoat, equine, dog and poultry)

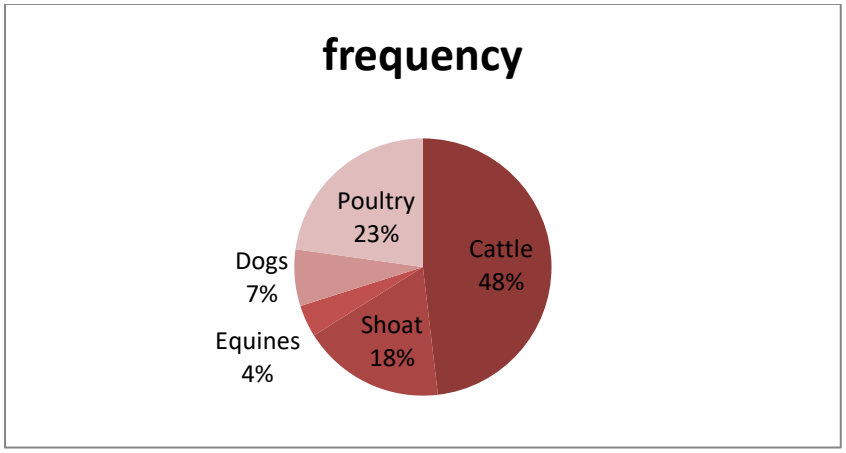

Figure 1: Livestock population in the study area

In study area as respondents information, high number of population of livestock were held by cattle 3464 (48.1%) and the least number (proportion) were occupied by equines 289 (4%).

Proportion of dog owner in study area

Table 3: Proportion of dog owner in study area

No. of dogs owned	Frequency	Proportion/percentage
1	297	77.3
2	72	18.8
3	11	2.9
>3	4	1
Total	384	

Concerning dog population, as stated by participants, most of participants owned only single dog 297 (77.3%) in their houses, but only 4(1%) of the respondents have more than three dogs in their houses.

Knowledge of participants related to dog keeping

Table 4:Knowledge of participants related to dog keeping

Purpose of dog keeping	Frequency	Percentage
Hunting	143	37.2
Protection (keeping)	231	60.2
Companion	10	2.6
Unknown	0	0

Among total of 384 respondents, about 231 (60.2%), 143 (37.2%) and 10 (2.6%) of respondents revealed that they were keeping dogs for protection, hunting and companion purpose respectively.

Knowledge of participants related to cause, susceptible hosts

Knowledge of participants related to cause, susceptible hosts, susceptible age of humans, rabid dogs, in selected kebeles of Loma district (N=384), 2018

Table 5: KAP to causes, susceptible hosts, susceptible age of humans, rabid dogs

Characteristics	Frequency/number	Percentage
Knowing rabies disease		
Yes	384	100
No	0	0

Saw rabid dogs			
	Yes	321	83.6
	No	63	16.4
Cause of rabies			
	Psychological problems	76	19.8
	Associated with Sprit	18	4.7
	Virus	271	70.6
	Unknown	19	4.9
Susceptible host			
	Human	2	0.5
	Dog	51	13.3
	Cattle	7	1.8
	Human and dog	52	13.5
	All warm blooded	279	72.7
Susceptible age groups of human			
	Young	302	78.6
	Medium	38	9.9
	Aged	44	11.5

All the respondents (study participants) were familiar with the disease, rabies, and gave it slightly different local names (e.g. *'Likifit', 'Yeebidwushabeshita'or in Local language (Dawuro Language "kana goshiyahargiya"*)) which all mean madness. Of those respondents, 271 (70.6%) were know that virus is the cause of rabies, about 323 (84.1%) respondents were said that dogs were more susceptible than others but 52 (13.5%) participants responded that both human and dogs were equal susceptible.

Knowledge of participants View to clinical signs and others

Knowledge of participants related to clinical signs, modes of transmission, common sources of rabies and nature of rabies in selected kebeles of Loma district (N=384), 2018

Table 6: KAP to clinical sign

Characteristics		Frequency	Percentage
Clinical sign			
	Stop eating	42	10.9
	Behavioral change	31	8.1
	Salivation	62	16.1
	Aimless move	38	9.9
	All	211	54.9
Transmissibility			
	Yes	384	100
	No	0	0
Mode of transmission			
	Biting	299	77.9
	Scratching	61	15.9
	Licking	24	6.25
Sources of rabies			
	Dogs	188	48.9
	Cats	0	0
	Equines	0	0
	Others (foxes)	196	51.1
Nature of rabies			
	Highly fatal	380	98.96
	None fatal	4	1.0400

Among all respondents, 164 (42.7%) participants said main sign of rabies was behavioral change and next stop eating and drinking, among respondents about 380 (98.96%) answered that the disease is dangerous and highly fatal and transmissible. As a source, about 196 (51.1%) of participants stated their opinion as foxes is major sources for the distribution of rabies.

Knowledge of participants related to controlling measures

Knowledge of participants related to controlling measures, organization supporting for control in selected kebeles of Loma district (N=384), 2018

Table 7: knowledge of participants to control measures practiced

Characteristic	Frequency	Percent

		/number	
Dog vaccination practice			
	Yes	0	0
	No	384	100
General measures to control dog/rabies			
	Massive killing (strychnine)	323	84.1
	Massive vaccination	0	0
	Other methods (wage)	61	15.9
Organization working for rabies control			
	Health office	12	3.1
	Livestock and fishery office	372	96.9
	NGO (CDC)	0	0

From above table 7: In the study area, the participants did not know what dog vaccination is, but general methods for control dog rabies distribution were massive killing (84.1%). The participants answered that about 372 (96.95%) rabies controls is made through Livestock and Fishery office support.

Participants'Practices and attitudes to prevent rabies after suspected animal bite

Participants' Practices and attitudes to prevent rabies after suspected animal/dog bite in selected kebeles of Loma District (N=384), 2018

Table 8: practices and attitude to prevent rabies

Characteristics		Frequency /numbers	Percent
Immediate	➢ Tie the wound with cloth	118	15.4

action after bite by rabid dogs	➢ Wash wound with water and soap	198	25.8
	➢ Apply herbal extract	85	11.1
	➢ I don't know	108	14.1
	➢ Traditional healers	161	21
	➢ Seek health center after bite rabid dogs	98	12.8
Effectiveness of anti-rabies vaccines after suspected animal bite	✓ Immediately	237	30.9
	✓ Later	182	23.7
	✓ At any time	21	2.7
	✓ I don't know	51	6.6
	✓ Let free	58	7.6
	✓ Tie	219	28.5

Among the participants, 198 (25.8%) of the respondents washing the wound with water and soap immediately, 118 (15.4%) tie the wound with cloth. About 237 (30.9%) had positive attitude for anti-rabies vaccine immediately and 182 (28.5%) of participants answered that it is better if tied.

Sources of Information for Rabies

Table 9: Source of information for rabies

Characteristic	Frequency	Percentage
Source of rabies		
informal	79	20.6
Formal	218	56.8
Mixed	87	22.7

Concerning information for source for rabies, most of participants were getting information (56.8%) from formal sources such as mass media, radio, newspaper and soon. But about 22.7% respondents were getting information for rabies from mixed sources (both formal and informal).

DISCUSSIONS

The findings of this study revealed most of respondents had good level of knowledge, attitude and practices about rabies. In contrast to this finding higher knowledge, more positive attitudes and higher scores in practice indicators regarding rabies was reported from Sri Lanka (Gino *et al.*, 2009). This difference probably is explained by the lack of health education programs about rabies in Ethiopia. Almost all respondents had heard about rabies from different sources. In the present study, 77.9% respondents knew the correct mode of

transmission as biting which is consistent with the finding of Lai (Lai *et al.,* 2005), who reported that 81.6% answered correctly concerning transmission. However, the study conducted in Addis Ababa (Abraham *et al.,* 2013) among the community indicated that higher proportion of study participants had correct responses regarding the route of exposure compared to the result found in this study which could be due to better source of information.

This KAP analysis revealed that 98.96% of respondents recognize rabies as danger and a fatal disease, 21.4% know that all warm blooded animals are susceptible to rabies and 71.3% aware that dogs are the most common source of rabies. This result is consistent with a study conducted in the city of New York, USA reported that 94.1% of the study participants know rabies as a killer disease and 48.9% and 51.1% of the respondents identified that dogs and others (foxes) are major sources for the spread of rabies in human population (Eidson*et al.,* 2004). However, in this study, majority of the respondents (72.7%) know that rabies can affect all warm blooded animals. A study conducted in canine rabies endemic countries also testify similar results (Syed *et al.,* 2009).

About 54.9% of the respondents were aware of common clinical signs of rabies in animals. This finding is supported by study done in Nigeria (Asabe*et al.,* 2012) Ethiopia (Guadu*et al.,* 2014). This study found that, 25.8% of the respondents know that wound washing is immediate action after dog bite. This result was highly lower than studies done in Bhutan (Tenzin and Bir, 2013;Guadu et al., 2014) in Ethiopia. This difference might be due to respondents believed that the infection could be treated with herbs. About 12.8% sought medical care from health centers after being bitten by dogs, in contrast in Sri Lanka almost all respondents agreed to consult health professional in case of animal bite (Gino *et al*., 2009 and Guadu et al., 2014). This may be due to lack information and unavailability of health centers in immediate vicinity. In agreement with India's surveyed population (42%) preferred household treatment such as chili application (Agarwal and Reddaiah, 2003), 21% participants of this study had strong belief on traditional medicine but this result was much more less than to result obtained by Guadu et al., 2014.

The present study agrees with the study conducted in Bahir Dar by Guadu*et al.,* 2014 in that the majority of the respondents indicated depopulation of stray dogs is

effective measure for controlling the disease. About 96.9% respondents indicated that the responsible organization working for rabies control is district livestock and fishery resource office but other (either government or non – government) organization is not truly working (Guadu et al., 2014).

CONCLUSION AND RECOMMENDATIONS

As conclusion, this study has indicated that the community level KAP about rabies is good in the study area, despite this fact, still there are some KAP gaps in the community regarding the modes of rabies transmission, clinical signs of rabies, prevention methods after suspected animal bite, the first action taken in the home, after bitten by a suspected animal (wound washing with soap and water) and attitude to anti-rabies vaccine. Sex, age, educational status, occupational status and house hold size of the respondents were the variables found to be significantly associated with KAP on rabies. The purpose of dog keeping in the study area, as the respondent's idea, mainly for protection following hunting because most of respondents were rural people and most households were having one dog in their houses.

Therefore, based on the above conclusion the following recommendations are drawn:

- Periodic education to raise community knowledge on rabies (disabled individuals mainly)
- For every dog owners, there should be community education to vaccinate all their dog in every year with anti – rabies vaccine.

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