Assessment of Knowledge, practice and its associated factors towards Rabies prevention among residents in North Wollo Zone, Ethiopia

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Abstract: This study was done in North wollo Zone, Ethiopia, from March 2018 to June 2018 to assess the knowledge and their practice to prevention of the disease in the area of study. Cross-sectional study design and multistage sampling procedures were employed to select households for this study. The data were collected from 785 households using pretested and structured questionnaires. Interviewer administered structured and pre-tested questionnaire was used to collect socio-demographic, knowledge and practice for prevention of rabies and related variables. Data entry was done using Epi info version 7statistical software. SPSS version 20 soft ware were used for data analysis. Both binary and multiple logistic regressions were fitted. P-value with 95％CI was used and p-value ＜ 0.05 were declared the significant association between knowledge and practice on rabies prevention and its associated factors. A total of 806 respondents were selected with 97.4％ (785) response rate. Among those, 785 respondents 671(85.5％) of them were males and 114(14.5％) were female. Respondent that had good awareness about rabies had more likely good knowledge than that of respondent that had low rabies awareness (AOR=4.45, 95%CI: 1.068-18.580). Respondents that did not use post exposure prophylaxis were 0.002 times unlikely less than that of respondents with good practice that used PEP. (AOR=0.002,0.001-0.019:, 0.001).

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Introduction

Rabies is a fatal animal disease of significant public health importance globally; it is responsible for tens of thousands of deaths annually, mostly in Asia and Africa. WHO. (2017). Domestic and wild animals are reservoirs for rabies. Kularane., et al (2016). Rabies is acute fatal encephalitis that affects all mammals and is a worldwide zonotic disease caused by Rabies virus; also the disease is one of the longest known infectious diseases in human history . kobayashi Y., et al. (2006) and Dabuma, T., et al.(2017). This virus is a highly neurotropic pathogen that typically leads to mortality of infected animals and humans. It is almost 100 % fatal once the clinical signs develop. Radostis, O., et al., (2007). It is estimated that over 10 million people are exposed to rabies annually Knobel, D, L., et al. (2007). Globally, at least 55,000 people die of Rabies each year Mc Collum, et al., (2007)).

The burden of Rabies falls mostly on poor rural communities and children in particular. WHO. (2005). Rabies is one of the most serious infectious diseases affecting mainly the low and middle income countries. Kakkar, M., et al (2012). It constitutes a serious public and animal health problem in Africa including Ethiopia.

According to the World Health Organization (WHO), the community knowledge and practices are important for prevention of deaths in humans due to Rabies and for control of the disease in animals. The World Health Organization considers Rabies to be a serious disease and declare it to be primarily a problem in areas troubled with poverty and with a lack of economic resources. Chrerent, B., et al (2016).

Materials And Methods

Study area

The study will be conducted in randomly selected four districts of North Wollo Zones, Lalibela, Lasta, Bugna and Gidan districts. North Wollo is located in North of the country at 11^0 30 North of the Latitude and 38^0 30 East of the Longitude. The Zone has the total area coverage of 12,706sq.km in which total human population of 1, 500,303 live in 355,974 households. The distances coverage is 350 km from Amhara Regional city Bahirdar. North Wollo is divided in to 12 districts. The altitude and annual rainfall of the Zone range from 1,200-4,700 masl and 800-1300 mm respectively. *Retrospective data North Wollozone (2016).*

Study design:

Community based cross-sectional quantitative study design will be used to assess the knowledge and practices towards Rabies prevention and its associated factors among the community of North Wollo Zone in those selected four districts.

Source population and Study population:

The source population will be all the residence of North Wollo Zone lives in those 12 districts. The study populations will be Lalibela, Lasta, Bugna and Gidan districts those selected by simple random selection. The sample population selected from randomly selected eight kebelles, among those four districts and household heads or their spouses will be selected by systematic simple random selection.

Sample size and sampling method;

The required sample size for this study was estimated by the study of Dedo district of Jimma zone, a community based cross-sectional study, the overall knowledge score revealed that 51.9% of the respondents had a good knowledge [22]. This is calculated by using the following formula: *Thursfield, M., et al (2005*). For single population proportion formula:

$$n=\frac{(1.96)^2 p_{exp}\,(1-p_{exp})}{d^2}$$

$$=\frac{(1.96)^2 0.52(1-0.52)}{0.05^2}$$

$$=384$$

Where n = required sample size

d^2 = Desired absolute precision (0.05)

As a result, 384 study population will be selected, 5 % non response rate,

Total sample size will = 403 subject.

With design effect of 2, 2 x 403=806

As showed in the below tables, the sample size calculated for the single population is greater than that of the double population. Thus, 806 will be the sample size used in this study.

The double formula was done with knowledge and practice of Rabies prevention and the calculated sample was smaller than the single population.

Data processing and analysis

Data entry was being using Epi info version 7statistical software. SPSS version 20 soft was used for data analysis. Both binary and multiple logistic regressions were fitted. P-value with 95％CI were used and p-value $<$ 0.05 was declare the significant association between knowledge and practice on Rabies prevention and its associated factors.

Results

Socio-Demographic characteristics

A total of 806 respondents were selected with 97.4 ％ (785) response rate. Among those, 785 respondents 671(85.5％) of them were males and 114(14.5 ％) were female. The majority of the respondent's age group were 18-49, (79.9 ％). concerning to their educational status 345(44.1％) were adult education, followed by primary education 164(20.9％) and unable to read and write 154(19.6％). From the total respondents about 517(65.9％) were farmers. Majority of the respondents were orthodox 761(96.9％). Regarding to their residence 535(68.2％) were from rural and 250(31.8％) were from urban. (This is stated in below Table 1).

Table 1: Socio-demographic characteristic of the residence (n=785) in North Wollo Zone Ethiopia, April 2018

	Variables	Frequency (n)	Percentage (%)
1	**age**		
	18-49	627	79.9
	50-64	136	17.3
	>65	22	2.8
2	**Sex**		
	Male	671	85.5
	Female	114	14.5
3	**Educational status**		
	Unableto read and write	154	19.6
	Adult education	345	44.1
	Primary education	164	20.9
	Secondary education and above	121	15.4
4	**Occupational status of the respondent**		
	Farmers	517	65.9
	Civil servants	65	8.3
	Merchants	97	12.4
	Students	106	13.5
5	**Religious status of the respondents**		
	Orthodox	761	96.9
	Muslim	24	3.1
6	**Residential status**		
	Urban	250	31.8
	Rural	535	68.2

Knowledge related characteristic with different variables in related to Knowledge on prevention of rabies

Table 2: Knowledge of the participants on rabies prevention in North wollo zone, 2018

Variable	Frequency (n)	Percent (%)
Cause of rabies		
With sprit	54	6.9
Virus	186	23.7
Starvation and trust	299	38.1
I dont know	246	31.3
Animal to human		
Yes	738	94
No	47	6
Information source		
Mass media	188	23.9
Neigbour	565	72
Veternary	35	4.1
Species affected by rabies		
Dog	57	7.3
Dog and human	272	34.6
Human and domestic	19	2.4
animal		
All	437	55.7
Seasons		
Autumn	144	18.3
Spring	36	4.6
Summer	365	46.5
Winter	240	30.6
Awearness about rabies		
Yes	763	2.8
No	22	97.2

From the total of respondent 763(97.2%) were good awareness and 22(2.8%) were poor awareness. The majority of exposure for information were neighbor 565(72%) followed by mass media (radio, magazine, television) were 188(23.9%). Among the respondent 745(94.5%) were good knowledge regarding to the rabies prevention and 40(5.1%) were poor knowledge. Most of the respondent belief that cause of rabies were starvation and trust 299(38.1%) followed by those said I don't know were246 (31.3%) and virus 186(23.7%) and the rest 54 (6.9%) said with sprit. Regarding to disease transmission from animal to human those respondent said yes were 738(94%) and those said no were 47(6%), and the season of occurrence for rabies answered by respondent were summer 365(46.5%) and winter 240(30.6%). Mostly affected species by rabies were dog and human 272(34.6%).

Factors associated with knowledge of the community

Table 3: Factors associated with knowledge of the community with bivariable and multivariable regression, North wollo Zone, Ethiopia 2018

Variable	Knoweledge		COR with 95%CI	AOR with 95%CI	P-value
	good	poor			
Rabies Awearness					
yes	733	26	49.606(19.134-128.606)		
no	8	14	1	4.455 (1.068-18.580)	0.040
Sign of rabies					
Yes	704	13	35.662(17.15-74.206)	20.756 (7.654-56.300)	0.001
no	41	27	1		
way of transmission					
biting	371	300	28.299 (10.366-77.255)		
scrach	69	45	8.532(3.023-24.084)	9.557 (1.915-47.708)	0.006
infected meat			1		
Symptom					
Salivation	153	16	1		
Stop eating and drinking	240	17	1.476 (0.724-3.009)		
All	352	7	5.29 (2.120-13.401)	4.978(1.425-17.383)	0.012
Rabies related problem					
Yes	721	21	27.181(12.943-57.08)	11.103(2.622-47.007)	
No	24	19	1	1	0.001

The knowledge of the community were significantly associated were rabies awareness, sign of rabies, measures for human bitten by dog, rabies related problem, seasons, susceptible species for rabies, vaccine for human, vaccine for dog, transmission of rabies, animal to human, rabies can treated, prevent rabies, were significant in binary logistic regression. In the adjusted analysis of knowledge: rabies awareness, sign of rabies, way of transmission, symptom, susceptible host, and rabies related problem were statically associated with knowledge of the community.

Respondent that had good awareness about rabies had more likely good knowledge than that of respondent that had low rabies awareness (AOR=4.45, 95%CI: 1.068-18.580).

Respondents that appreciated sign of rabies had more likely good knowledge than that did not appreciate. (AOR=20.756 (7.654-56.300).

Respondents that appreciated the way of transmission through bite and scratch had more likely good knowledge than respondents that did not appreciate at AOR=9.557(1.915-47.708) P-value 0.006.

Those respondents knows the ways of transmission were more likely with odds ratio of (AOR=9.55,1.9-47.7:P0.006) than those that does not know the way of transmission.

Respondent knows the symptom were more likely good knowledge than those had not by odds of (4.978,1.425-17.39:0.012). those respondent have good knowledge were more likely by (11.103,2.622-47.007:0.001) than those have poor knowledge with rabies related problem.

Factors associated with practice of the community

Regarding to practice of the community those significantly associated were in binary logistic regression and the adjusted analysis of practice were age, education, occupation, immediate action, action to human, post exposure prophylaxis (PEP), management for dog, treatment, training, traditional healer, frequent place of bite, crossing river, stray dog were statistically associated with practice of the community.

In the adjusted analysis of practice age, dog vaccine, post exposure prophylaxis, traditional healer, stray dog and frequent place of bite were significantly associated.

Respondents that did not use post exposure prophylaxis were 0.002 times unlikely less than that of respondents with good practice that used PEP. (AOR=0.002,0.001-0.019:, 0.001.

Respondents that decreased dog vaccine had 0.28 less likely were had good knowledge than respondents that did not vaccinate.

Respondent with age between 18-49 were good practice regarding to prevention of rabies than those have poor practice by odd of (0.174,0.32-0.939:0.042. Those participants knows the place of leg bite were more likely than those said hand by odds of (3.242,1.336-7.868:0.009.) and respondent who had practice of preventing stray dog were likely had good practice than those have poor practice by (0.001,0.016-0074:0.017).

Respondent has practice of traditional healer been less likely poor practice than those have good practice by (0.003, 0.001-0.009:0.001).

Table 4: Factors associated with practice of rabies prevention in the community with bivariable and multivariable regression, North wollo Zone, Ethiopia 2018

Variable	Practice		COR with 95%CI	AOR with 95%CI	P-value
	Good	Poor			
Age					
18-49	373(59.5)	254(40.3%)	3.147(1.265-7.827)	0.174(0.32-0.939)	
50-54	60(44.1%)	76(56.9%)			0.042
>65	7(31.8%)	15(68.2%)	1	1	
Dog vaccine					
Yes	436	237	0.081(0.041-0.160)	0. 28(0.009-0.088)	0.001
No	4	108	1	1	
Postexposure prophylaxis					
Yes	397	60	1	1	
No	43	285	0.192(0.090-0.410)	0.002 (0.001-0.019)	0.001
Traditional healer					
Yes	371	300	0.019(0.019-0.042)	0.003(0.001-0.009)	
No	69	45	1	1	0.001
Stray dog					
Yes	259	58	1	1	
No	181	287	0.001(0.10-0.19)	0.001(0.016-0.074)	0.017
Frequent place of bite					
Leg	337	222	1.813(1.327-2.476)	3.242(1.336-7.868)	
Hand	103	123	1	1	0.009

Discussion

The public awareness indicates that 96.6% of the respondent had heard about rabies from different source of information. This finding was in agreement with the report (96.4%) from Gonder zurya (gebeyaw et al) and (96%) reported from Bahirdar by. Tadesse et al., (2014). However it was higher when compared with reported proportion (68.7%) in survey of knowledge and practices about rabies in the community of India. Ichunpunani et al., (2006). The reason behind this variation is due to reason for my study result becomes:

The severity of the disease, Community awareness coordination of health extension workers, Similarity of study area with the previous study.

Those respondents knows about sign of rabies were 89% (704), in similar with study done in Dedo District of Jima (88.9%) knows sign of dog, and way of transmission in my study was 47% by bitting also in relation with 51.9% of dedo district. Nejash Abdela., et al., (2017)

This similarity may in relation with same agro ecological characteristics.

Conclusion

Rabies is a well known disease in the study area and is considered to be a disease of significant public health importance. The main modes of transmission were by biting. On the other hand, there is a lack of knowledge about what to do after exposure, like wound washing, immediate visits to health facilities, and use of anti-rabies post exposure prophylaxis. This might be mainly due to lack of education about the disease in the community. Therefore, continuous and strategic community awareness programs are very critical to prevent human cases in the current study area most of the participants had not received any form of education by professionals on what to do if bitten by rabid or rabies suspected animals. This strongly suggests that rabies is still a neglected disease, at least in the study area, and much has to be done by health and veterinary professionals so that prevention of rabies becomes a priority. Education of the community as many individuals rely on their practices.

Recommendation

Approach of one health is the best method for solving the problem in related with rabies. Training professional, Community awareness and education at the community level should be done in the study area.

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